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SAFE DRINKING WATER ACT AMENDMENTS OF 1977

GOVERNMENT

Storage

HEARING DOCUMENTS

BEFORE THE

SUBCOMMITTEE ON

HEALTH AND THE ENVIRONMENT

OF THE

COMMITTEE ON

INTERSTATE AND FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

NINETY-FIFTH CONGRESS

FIRST SESSION

ON

H.R. 5829 and H.R. 6160

BILLS TO AMEND THE PUBLIC HEALTH SERVICE ACT TO AUTHORIZE APPROPRIATIONS FOR CERTAIN FISCAL YEARS FOR PURPOSES OF PROVIDING ASSISTANCE TO THE STATES WITH RESPECT TO SAFE DRINKING WATER

H.R. 5830 and H.R. 6159

BILLS TO AMEND THE PUBLIC HEALTH SERVICE ACT TO EXTEND CERTAIN AUTHORITIES AND AUTHORIZE APPROPRIATIONS FOR CERTAIN FISCAL YEARS FOR PURPOSES OF PROVIDING ASSISTANCE TO THE STATES WITH RESPECT TO SAFE DRINKING WATER, AND FOR OTHER PURPOSES

H.R. 2317

A BILL TO AUTHORIZE GRANTS UNDER THE SAFE DRINKING WATER ACT TO PUBLIC WATER SYSTEMS TO CLEAN AND UPDATE WATERLINES FOR PURPOSES OF MEETING REQUIREMENTS UNDER SUCH ACT, AND FOR OTHER PURPOSES

APRIL 22, 1977

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SAFE DRINKING WATER ACT AMENDMENTS OF 1977

FRIDAY, APRIL 22, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON HEALTH AND THE ENVIRONMENT,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m. in room 2322 Rayburn House Office Building, Hon. Paul G. Rogers, chairman, presiding.

Mr. ROGERS. The subcommittee will come to order, please.

This morning the Committee on Health and the Environment meets to conduct oversight for the first time on the Safe Drinking Water Act of 1974 and to hear testimony on legislation to extend that act.

The timeliness of these hearings I think is highlighted by several recent events in the news. Only yesterday the local Washington Post carried a story headline "Chloroform in Northern Virginia Water Exceeds Safety Level." The story explained that last summer EPA test data found over 230 parts of chloroform per billion in the Northern Virginia water supply. This is more than three times the level of this known carcinogen than had ever previously been found there, and more than double the EPA's proposed safe level.

Other recent stories in the news emphasize the importance of this act, and the timeliness of these hearings. Among these recent developments are the following:

First, EPA's first use of its emergency authority under the act to stop carbon tetrachloride discharges in the Ohio River by an FMC plant in Charleston, West Virginia. It is my understanding now as a result of that action the plant is taking corrective steps, and will stop the discharges of that very dangerous material into the waters.

Two, the shutdown of the Cincinnati area sewage treatment plant and the consequent discharge of huge amounts of raw, untreated sewage into the Ohio.

Three, the concerns expressed about excessive lead content in Bennington, Vermont's drinking water, and other New England communities.

Recent arguments before the U.S. Court of Appeals in Washington alleging that EPA has failed to establish adequate standards for certain known or suspected carcinogens in drinking water.

Five, the assumption of primary enforcement responsibility by the first group of States under the act.

Six, the western drought and the recent U.N. Conference on Drinking Water, which make us aware of what a precious commodity water is, and that we must be concerned not only about assuring its safety, but also about the adequacy of supply for ourselves and our children.

There are many other recent developments, some basis for optimism, some basis for immediate and serious concern. Today we will hear more about the steps being taken to protect the public health from unsafe drinking water, and the concerns of States and municipalities primarily charged with administering the act.

We look forward to today's testimony and appreciate the attendance of witnesses who will be presenting it.

Without objection the text of H.R. 5829, H.R. 6160, H.R. 5830, H.R. 6159, H.R. 2317, H.R. 3750, and H.R. 4944 will be printed at this point in the record.

[Testimony resumes on p. 22]

[The text of the bills referred to follow:]

H.R. 5829, introduced by Mr. Rogers on March 30, 1977, and
 H.R. 6160, introduced by Mr. Rogers (for himself, Mr. Preyer, Mr. Scheuer, Mr.
 Waxman, Mr. Florio, Mr. Ottinger, Mr. Walgren, Mr. Madigan, and Mr.
 Staggers) on April 6, 1977,
 are identical as follows:

A BILL

To amend the Public Health Service Act to authorize appropriations for certain fiscal years for purposes of providing assistance to the States with respect to safe drinking water.

1 *Be it enacted by the Senate and House of Representa-*
 2 *tives of the United States of America in Congress assembled,*
 3 That (a) section 1442 (c) of the Public Health Service Act
 4 is amended by inserting "other than those relating to re-
 5 search" after "section"; by striking out "and"; and by
 6 inserting before the period at the end thereof "; and \$15,-
 7 000,000 for each of the fiscal years 1978 and 1979" after
 8 "1977".

9 (b) Section 1443 (a) (5) of such Act is amended by
 10 striking out "and" and by inserting before the period at the

1 end thereof “, \$35,000,000 for fiscal year 1978, and \$45,-
2 000,000 for fiscal year 1979”.

3 (c) Section 1443 (b) (5) of such Act is amended by
4 striking out “and”, and by inserting before the period at the
5 end thereof “, and \$10,000,000 for each of the fiscal years
6 1978 and 1979”.

7 (d) Section 3 (c) of the Safe Drinking Water Act is
8 amended by striking out “and” and by inserting “; and
9 \$1,000,000 for each of fiscal years 1978 and 1979” after
10 “1977”.

11 (e) Nothing in this Act shall be construed to authorize
12 the appropriation of any amount for research under title XIV
13 of the Public Health Service Act (relating to safe drinking
14 water).

To amend the Public Health Service Act to extend certain authorities and authorize appropriations for certain fiscal years for purposes of providing assistance to the States with respect to safe drinking water, and for other purposes.

SHORT TITLE

AUTHORIZATION OF APPROPRIATIONS

I

1 inserting before the period at the end thereof “; and \$15,000,-
2 000 for each of the fiscal years 1978 and 1979” after
3 “1977”.

4 (b) Section 1443 (a) (5) of such Act is amended by
5 striking out “and” and by inserting before the period at the
6 end thereof: “, \$35,000,000 for fiscal year 1978, and \$45,-
7 000,000 for fiscal year 1979”.

8 (c) Section 1443 (b) (5) of such Act is amended by
9 striking out “and”, and by inserting before the period at the
10 end thereof: “, and \$10,000,000 for each of the fiscal years
11 1978 and 1979”.

12 (d) Section 3 (c) of the Safe Drinking Water Act is
13 amended by striking out “and” and by inserting “; and
14 \$1,000,000 for each of fiscal years 1978 and 1979” after
15 “1977”.

16 (e) Nothing in this Act shall be construed to authorize
17 the appropriation of any amount for research under title
18 XIV of the Public Health Service Act (relating to safe
19 drinking water).

20 STUDIES

21 SEC. 3. (a) Section 1442 (a) (3) of the Public Health
22 Service Act is amended by inserting “(A)” after “(3)” and
23 by adding the following at the end thereof:

24 “(B) Not later than eighteen months after the date of

1 enactment of this subparagraph, the Administrator shall sub-
2 mit a report to Congress which identifies and analyzes—

3 “(i) the anticipated costs of compliance with in-
4 terim and revised national primary drinking water regu-
5 lations and the anticipated costs to States and local gov-
6 ernments in implementing such regulations;

7 “(ii) alternative methods of compliance with such
8 regulations;

9 “(iii) methods of paying the costs of compliance
10 by public water systems with national primary drinking
11 water regulations, including user charges, State or local
12 taxes or subsidies, Federal grants (including planning or
13 construction grants, or both), loans, and loan guaran-
14 tees, and other methods of assisting in paying the costs
15 of such compliance;

16 “(iv) the advantages and disadvantages of each of
17 the methods referred to in clauses (ii) and (iii);

18 “(v) the sources of revenue presently available
19 (and projected to be available) to public water systems
20 to meet current and future expenses; and

21 “(vi) the costs of drinking water paid by residential
22 and industrial consumers in a sample of large, medium,
23 and small public water systems and of individually owned
24 wells, and the reasons for any differences in such costs.

1 The report required by this subparagraph shall identify and
2 analyze the items required in clauses (i) through (v) sepa-
3 rately with respect to public water systems serving small
4 communities. The report required by this subparagraph shall
5 include such recommendations as the Administrator deems
6 appropriate.”.

7 (b) Section 1442 of such Act is amended by redesignat-
8 ing subsection (c) as (e) and by inserting the following
9 new subsection after subsection (b) :

10 “(c) Not later than eighteen months after the date of
11 enactment of this subsection, the Administrator shall submit
12 a report to Congress on the present and projected future
13 availability of an adequate and dependable supply of safe
14 drinking water to meet present and projected future need.
15 Such report shall include an analysis of the future demand
16 for drinking water and other competing uses of water, the
17 availability and use of methods to conserve water or reduce
18 demand, the adequacy of present measures to assure adequate
19 and dependable supplies of safe drinking water, and the prob-
20 lems (financial, legal, or other) which need to be resolved
21 in order to assure the availability of such supplies for the
22 future. Existing information and data compiled by the
23 National Water Commission and others shall be utilized to
24 the extent possible.”.

25 (c) Section 1412 (c) (2) of such Act is amended by in-

1 serting before the period at the end of the first sentence
2 thereof the following: “, and revisions thereof reflecting new
3 information which has become available since the most recent
4 previous report shall be reported to the Congress each two
5 years thereafter”.

6 (d) Section 3 (b) of the Safe Drinking Water Act is
7 amended by striking out “for transmittal” and inserting
8 “and” in lieu thereof.

9

TRAINING

10 SEC. 4. Section 1442 of the Public Health Service Act,
11 as amended by section 3 (b) of this Act, is further amended
12 by inserting the following new subsection after subsection
13 (c) :

14 “(d) The Administrator shall—

15 “(1) provide training for, and make grants for
16 training (including postgraduate training) of (A) per-
17 sonnel of State agencies which have primary enforcement
18 responsibility and of local agencies to which enforcement
19 responsibilities have been delegated by the State, and
20 (B) personnel who manage or operate public water
21 systems, and

22 “(2) make grants for postgraduate training of indi-
23 viduals (including grants to educational institutions for
24 traineeships) for purposes of qualifying such individuals
25 to work as personnel referred to in paragraph (1).

1 Reasonable fees may be charged for training provided under
2 paragraph (1) (B) to persons other than personnel of State
3 or local agencies but such training shall be provided to per-
4 sonnel of State or local agencies without charge.”.

5 GRANTS FOR STATE PROGRAMS

6 SEC. 5. (a) Section 1443 (a) of the Public Health
7 Service Act is amended by redesignating paragraph (5) as
8 paragraph (7) and by inserting after paragraph (4) the
9 following new paragraphs:

10 “(5) The prohibition contained in the last sentence of
11 paragraph (2) may be waived by the Administrator with
12 respect to a grant to a State through fiscal year 1978 but
13 such prohibition may only be waived if, in the judgment of
14 the Administrator—

15 “(A) the State is making a diligent effort to assume
16 and maintain primary enforcement responsibility for
17 public water systems within the State;

18 “(B) the State has made significant progress toward
19 assuming and maintaining such primary enforcement re-
20 sponsibility; and

21 “(C) there is reason to believe the State will assume
22 such primary enforcement responsibility by Septem-
23 ber 30, 1978.

24 The amount of any grant awarded for any fiscal year pur-

1 suant to a waiver under this paragraph may not exceed 75
2 per centum of the allotment which the State would have
3 received for such fiscal year if it had assumed and maintained
4 such primary enforcement responsibility. The remaining 25
5 per centum of the amount allotted to such State for such
6 fiscal year shall be retained by the Administrator, and the
7 Administrator may award such amount to such State only
8 if the State assumes such responsibility before the end of
9 such fiscal year. At the end of each fiscal year the aggregate of such amounts retained by the Administrator and not
10 awarded before the end of such fiscal year to the States to
11 which such amounts were originally allotted shall be removed from the original allotment and reallocated to States
12 which have assumed primary enforcement responsibility
13 before the end of such fiscal year and such reallocated funds
14 may be carried over to the next fiscal year.

17 “(6) The Administrator shall notify the State of the
18 approval or disapproval of any application for a grant under
19 this section—

20 “(A) within ninety days after receipt of such
21 application, or

22 “(B) not later than the first day of the fiscal year
23 for which the grant application is made,
24 whichever is later.”.

1 EXTENSION OF DEADLINE FOR STATE UNDERGROUND

2 INJECTION CONTROL PROGRAMS

3 SEC. 6. Section 1422 (b) (1) (A) of the Public Health
4 Service Act is amended by inserting the following new sen-
5 tence at the end thereof: "The Administrator may, for good
6 cause, extend the date for submission of an application by
7 any State under this subparagraph for a period not to exceed
8 an additional 270 days."

9 EXTENSION OF AUTHORITY TO ASSURE AVAILABILITY
10 OF CHEMICALS NEEDED FOR WATER TREATMENT

11 SEC. 7. Section 1441 (f) of the Public Health Service
12 Act is amended by striking out "June 30, 1977" and in-
13 serting in lieu thereof "September 30, 1979".

14 FEDERAL AGENCIES

15 SEC. 8. (a) Section 1447 (a) of the Public Health
16 Service Act is amended to read as follows:

17 "FEDERAL AGENCIES

18 "SEC. 1447. (a) Each Federal agency (1) having
19 jurisdiction over any federally owned or maintained public
20 water system or (2) engaged in any activity resulting, or
21 which may result in, underground injection which endangers
22 drinking water (within the meaning of section 1421 (d)
23 (2)) shall be subject to, and comply with, all Federal,
24 State, and local requirements, administrative authorities, and
25 process and sanctions respecting the provision of safe drink-

1 ing water and respecting any underground injection program
2 in the same manner, and to the same extent, as any nongov-
3 ernmental entity. The preceding sentence shall apply (A) to
4 any requirement whether substantive or procedural (includ-
5 ing any recordkeeping or reporting requirement, any require-
6 ment respecting permits, and any other requirement what-
7 soever), (B) to the exercise of any Federal, State, or local
8 administrative authority, and (C) to any process or sanc-
9 tion, whether enforced in Federal, State, or local courts or in
10 any other manner. This subsection shall apply notwithstand-
11 ing any immunity of such agencies, under any law or rule of
12 law. No officer, agent, or employee of the United States
13 shall be personally liable for any civil penalty under this title
14 with respect to any act or omission within the scope of his
15 official duties.”.

16 (b) Section 1401 (12) of such Act is amended to read
17 as follows:

18 “(12) The term ‘person’ means an individual, corpora-
19 tion, company, association, State, municipality, or Federal
20 agency (and includes officers, employees, and agents of any
21 corporation, company, association, State, municipality, or
22 Federal agency).”.

23 (c) Section 1449 (e) of such Act is amended by adding
24 the following at the end thereof: “Nothing in this section or
25 in any other law of the United States shall be construed to

1 prohibit, exclude, or restrict any State or local government
2 from—

3 “(1) bringing any judicial action or obtaining any
4 judicial remedy or sanction in any State or local court, or

5 “(2) bringing any administrative action or obtain-
6 ing any administrative remedy or sanction.

7 against any agency of the United States under State or
8 local law respecting the provision of safe drinking water or
9 respecting any underground injection control program. No
10 action brought against any agency of the United States in
11 any State or local court may be removed to a court of
12 the United States under any authority of law. For provi-
13 sions providing for application of certain requirements to
14 such agencies in the same manner as to nongovernmental
15 entities, see section 1447.”.

16 **ECONOMIC IMPACT ASSESSMENT**

17 **SEC. 9.** Part E of title XIV of the Public Health Service
18 Act is amended by adding the following new section at the
19 end thereof:

20 **“ECONOMIC IMPACT ASSESSMENT**

21 **“SEC. 1451. (a)** This section applies to action of the
22 Administrator in promulgating or revising any rule or regu-
23 lation under this Act if the notice of proposed rulemaking in
24 connection with such rule or regulation is published in the
25 Federal Register after the date ninety days after the date of

1 enactment of this section. In the case of revisions of such
2 rules or regulations, this section shall apply only to revi-
3 sions which the Administrator determines to be substantial
4 revisions.

5 “(b) Before publication of notice of proposed rulemak-
6 ing with respect to any rule or regulation to which this
7 section applies, the Administrator shall prepare an economic
8 assessment statement respecting such rule or regulation.
9 Such statement shall be reasonably available to the public
10 under regulations promulgated by the Administrator. Notice
11 of proposed rulemaking shall include notice of such avail-
12 ability together with an explanation of the extent to which
13 and manner in which the Administrator has considered the
14 analysis contained in such economic impact statement in pro-
15 posing the action. The Administrator shall also provide such
16 an explanation in his notice of promulgation of any such
17 rule or regulation.

18 “(c) Subject to subsection (d), the statement required
19 under this section with respect to any rule or regulation shall
20 contain an analysis of—

21 “(1) the costs of compliance with any such rule
22 or regulation, including extent to which the costs of
23 compliance will vary depending on (A) the effective
24 date of the rule or regulation, and (B) the development

1 of less expensive, more efficient means or methods of
2 compliance with the rule or regulation;

3 “(2) the potential inflationary or recessionary ef-
4 fects of the rule or regulation;

5 “(3) the availability of capital to procure the
6 necessary means of compliance with the rule or regu-
7 lation;

8 “(4) the direct and indirect effects on employment
9 of the rule or regulation;

10 “(5) the effects on competition of the rule or
11 regulation, particularly the effects on small business;

12 “(6) the effects of the rule or regulation on con-
13 sumer costs, including costs especially affecting economi-
14 cally vulnerable segments of the population;

15 “(7) the effects of the rule or regulation on energy
16 use or availability;

17 “(8) the impact of the rule or regulation on the
18 potential for long-term economic growth;

19 “(9) the impact of the rule or regulation on produc-
20 tivity;

21 “(10) the impact of the rule or regulation on the
22 Nation’s balance of payments;

23 “(11) the economic impact of postponing the rule
24 or regulation or of not promulgating such rule or regu-
25 lation;

1 “(12) alternative methods to such rule or regula-
2 tion for achieving equal or greater degree of protection
3 at lesser economic costs;

4 “(13) comparative expenditures required to achieve
5 incremental levels of enhancement of protection; and

6 “(14) any possible alternatives for minimizing or
7 eliminating part or all of any adverse economic impacts
8 of such rule or regulation.

9 “(d) (1) The assessment required under this section
10 shall be deemed a nondiscretionary duty of the Administrator
11 for the purpose of section 1449 of this title.

12 “(2) The assessment required under this section shall
13 be as extensive as practicable, in the judgment of the Admin-
14 istrator, taking into account the time and resources avail-
15 able to the Environmental Protection Agency and other
16 duties and authorities which the Administrator is required
17 to carry out under this title.

18 “(e) Nothing in this section shall be construed—

19 “(1) to alter the basis on which a rule or regulation
20 is promulgated under this title;

21 “(2) to preclude the Administrator from carrying
22 out his responsibility under this title to protect public
23 health and welfare; or

24 “(3) to authorize or require any judicial order stay-
25 ing, remanding or invalidating any such rule or regu-

1 lation on the basis of failure to comply with this
2 section.”.

3 TECHNICAL AND CONFORMING AMENDMENTS

4 SEC. 10. (a) Section 1416 (b) (1) of the Public Health
5 Service Act is amended by striking out “containment” wher-
6 ever it appears therein and by inserting in lieu thereof “con-
7 taminant”.

8 (b) Section 1442 (b) (3) (C) of such Act is amended
9 by striking out “1443 (d)” and by inserting in lieu thereof
10 “1443 (c)”.

95TH CONGRESS
1ST SESSION

H. R. 2317

IN THE HOUSE OF REPRESENTATIVES

JANUARY 24, 1977

MR. DRINAN introduced the following bill; which was referred to the Committee on Interstate and Foreign Commerce

A BILL

To authorize grants under the Safe Drinking Water Act to public water systems to clean and update waterlines for purposes of meeting requirements under such Act, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
 2 *tives of the United States of America in Congress assembled,*
 3 That section 1443 of title XIV of the Public Health Service
 4 Act (relating to grants under the Safe Drinking Water Act)
 5 is amended by redesignating subsection (c) as subsection
 6 (d) and by inserting after subsection (b) the following
 7 new subsection:

8 “(c) (1) The Administrator shall make grants to pub-
 9 lic water systems for cleaning and updating water supply

1 lines for purposes of assisting such systems to comply with
2 the requirements of this Act and other Federal and State
3 requirements respecting the provision of safe drinking water.

4 “(2) Grants under this subsection shall not be made
5 for any project unless such project has been approved by
6 the State agency charged with the responsibility for safety
7 of drinking water (or if there is no such agency in a State,
8 by the State health authority).

9 “(3) Grants under this subsection shall not exceed 75
10 per centum of the grant recipient's costs (as determined
11 under regulations of the Administrator) in carrying out the
12 project for which such grant is made.

13 “(4) In each fiscal year the Administrator shall, in
14 accordance with regulations, allot the sums appropriated for
15 such year under this subsection among the States on the
16 basis of population, geographical area, and other relevant
17 factors, and priority in such allotments shall be given to mu-
18 nicipalities which have outdated or inadequate waterlines
19 (as determined by the Administrator).

20 “(5) There are authorized to be appropriated \$75,-
21 000,000 for the first fiscal year beginning after the date of
22 enactment of this Act for purposes of making grants under
23 this subsection.”.

H.R. 3750, introduced by Mr. Johnson of Colorado on February 22, 1977, and H.R. 4944, introduced by Mr. Johnson of Colorado (for himself and Mr. Armstrong) on March 14, 1977, are identical as follows:

A BILL

To require the Administrator of the Environmental Protection Agency to exercise his authority under the Safe Drinking Water Act to make grants for certain demonstration projects.

1 *Be it enacted by the Senate and House of Representa-*
 2 *tives of the United States of America in Congress assembled,*

3 That (a) subsection (a) of section 1444 of the Public Health
 4 Service Act (42 U.S.C. 300j-3 (a)) is amended by striking
 5 out "The Administrator may make grants" and inserting in
 6 lieu thereof "The Administrator shall offer grants".

7 (b) Subsection (c) of section 1444 of the Public Health
 8 Service Act (42 U.S.C. 300j-3 (c)) is amended to read as
 9 follows:

10 "(c) For the purposes of making grants under subsec-

1 tions (a) and (b) of this section, there is authorized to be
2 appropriated \$10,000,000 for the fiscal year ending Sep-
3 tember 30, 1978."

Mr. ROGERS. Our first witness today is our own distinguished colleague, who is very much interested and concerned about the safe drinking water supply of this Nation, the Honorable Robert F. Drinan, who is from the State of Massachusetts.

We welcome you and will be pleased to receive your statement. It will be made a part of the record in full [see p. 23] without objection, and you may proceed as you desire.

STATEMENT OF HON. ROBERT F. DRINAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MASSACHUSETTS

Mr. DRINAN. Thank you very much, Mr. Chairman and Dr. Carter.

I will be very brief. I speak on behalf of not merely Brookline in my district but every municipality in the Northeast, representing the older communities in this country.

Shortly after the Civil War, Brookline laid 90 miles of pipe. This piping served the community well until the 1960's. It was then discovered 10 years before the enactment of the bill that we are discussing today that the town had a problem of turbidity. These pipes, which were iron cast and over 100 years old, needed a great deal of reconstruction and renovation.

As a result, 10 years before the Safe Drinking Water Act was passed, the town committed itself to a program to clean and repossess these pipes. Right now there are 110 miles that need this treatment in order to comply with the standards of the Safe Drinking Act.

Brookline recognizes that it has a commitment to make its drinking water truly clean and safe. Yet the town also recognizes that this commitment will cost \$1.4 million per year over the next 20 years. This great cost is the reason that I filed H.R. 2312, as I feel the cost represents a problem to which the Congress must eventually address itself. It affects all of the older communities, and I think therefore, Mr. Chairman, that a grant program of a modest sum in a matching amount should be considered by your subcommittee. In that way, the older communities would not have to put an undue burden on their people in the tax rate as a result of their desire and their need to comply with the Safe Drinking Water Act.

I thank you for the opportunity to testify. I know that you will give this bill every possible consideration.

[Mr. Drinan's prepared statement follows:]

STATEMENT OF HON. ROBERT F. DRINAN, A REPRESENTATIVE IN CONGRESS FROM THE
STATE OF MASSACHUSETTS

Mr. Chairman, members of the Subcommittee, I appreciate the opportunity to testify before you today on the Safe Drinking Water Act, P.L. 93-523. I am particularly interested in P.L. 93-523 in view of the fact that I have recently introduced legislation, H.R. 2317, which would authorize grants under the Safe Drinking Water Act. These grants would be made to communities to clean and update their water lines for the purpose of meeting the requirements under this Act.

The purpose of the Safe Drinking Water Act of 1974 was to "assure that water supply systems serving the public meet minimum national standards for protection of public health." This legislation was indeed a significant step toward the objective providing safe drinking water to the American public. It has opened the way for an all out effort by towns and municipalities all over the Nation to insure that its residents have the safest and cleanest water possible. However, the uniform minimum standards for drinking water quality that must be met under the act constitute a significant financial burden to many of those municipalities and townships which must comply with the regulations.

It is for this reason that I have introduced H.R. 2317. The bill is designed to alleviate the financial hardships placed on many towns by the regulations of the Safe Drinking Water Act. It would provide up to 75 percent grants for the cost incurred in the replacement of water pipes. An example of a town faced with a serious financial problem as a result of the Safe Drinking Water Act's provisions is the town of Brookline, Massachusetts.

Brookline is situated just outside Boston and is heavily settled with a population of 61,332. The sole source of the town's water comes from a reservoir overseen by the Massachusetts District Commission, located in the middle of the State, approximately 135 miles away. The Town of Brookline is responsible for the entire length of the system and must insure that the pipes meet the Safe Drinking Water provisions.

The major problem for Brookline has been encountered in attempting to comply with the Section of the Safe Drinking Water Act which governs the maximum level of minerals which may be permitted in the water, referred to as the water's level of "turbidity." Most of the pipes are more than 100 years old and are iron-cast. As a result, when water flows through the lines rust deposits form, allowing sediment and other foreign matter to be trapped. Added to this is the problem of pipes freezing, thus reducing the water lines to half their original size during cold winter periods. Often, when a large quantity of water is needed, as in the case of a fire, the mineral and rust deposits are further disturbed, thereby causing increased turbidity in the water lines.

These are but a few of the problems which have accrued from Brookline's old water lines and the Town's desire to replace them. Other problems, equally serious and costly, arise due to the need to replace the pipes. As I mentioned, most of the water mains are old and therefore not lined. In order to meet the Safe Drinking Water Act standards the town must first re-line these iron-cast pipes and then clean the renovated pipes. This process is carried out by re-lining the pipes with cement, and although it is less costly than constructing new lines, it will still constitute a tremendous financial burden. It is predicted that 92 percent (approximately 110 miles) needs to undergo re-lining and then cleaning.

In 1964, 10 years before the enactment of the Safe Drinking Water Act, the Town of Brookline recognized the necessity of improving and purifying their water system. To do this in a cost effective way the town adopted a 50 year program to upgrade the condition of their system's quality. A few years later, however, it was discovered that even with the costs of the project spread out over these many years the cost would still be too great for the town to absorb. Therefore, the plan was amended, making the program a 100-year program.

With the passage of the Safe Drinking Water Act, the Town of Brookline will be meeting the requirements in a much shorter period of time. They have had to implement a 20 year plan. Five hundred thousand dollars has already been appropriated for this year and it is estimated that it will cost almost \$1.4 million per year for the next 20 years. This will amount to a cost of over \$27 million for the 20 year period. For a community of Brookline's size, this represents a very acute financial burden. Even more alarming is the fact that this cost will not necessarily guarantee that the town will meet all the Safe Drinking Water Act requirements. It is possible that additional expenditures may be needed to achieve full compliance.

Mr. Chairman, the problem facing the Town of Brookline is not unique. It is a problem that is, or will be, affecting many older communities across the land which

have antiquated water systems. These townships and municipalities are being caught between compliance with a beneficial and much needed Safe Drinking Water Act and the financial burden that such compliance would cause the communities' residents.

In light of the above, I have introduced H.R. 2317. The need for assistance to municipalities that are attempting to carry out the law and the beneficial effects to be derived by millions of Americans from such assistance cannot be dismissed. It is up to, and in the best interest of, the Federal Government to promote the flowing of nothing but the purest water through the public water systems. This can only be done though, if the Federal Government is willing to aid in the cleaning and updating processes in this area.

Mr. Chairman, I appreciate the opportunity to appear before your subcommittee with regard to the Safe Drinking Water Act and my bill, H.R. 2317. I believe that your committee should carefully consider the need for a grant program such as the one embodied in this legislation. These grants would greatly help towns and cities to clean and revitalize their public water systems to better meet the purposes of the Safe Drinking Water Act.

Thank you.

Mr. ROGERS. Thank you. We are grateful for your presence, for bringing your concerns to the attention of the committee, particularly in situations where it is difficult for communities to make immediate corrections because of financial cost.

Dr. Carter?

Mr. CARTER. Thank you, Mr. Chairman.

We are glad to have the good Father here with us this morning. We certainly sympathize with him, and we want to be of help to him. Actually there are programs now which will help many communities and municipalities throughout our country in obtaining pure drinking water. In fact, we have been helped a great deal in Kentucky through the Farmers Home Administration, grants and loans in most cases, and by assistance from HUD which has made it possible for many areas of Appalachia to have pure water. I am thankful for it and I think that the people in your area deserve the same.

Mr. DRINAN. Thank you very much, Doctor. That is precisely what I wanted to say this morning. Thank you.

Mr. ROGERS. Thank you for your presence here today.

Our next witness will be the Deputy Assistant Administrator for Water Supply of the Environmental Protection Agency, Victor J. Kimm.

Mr. Kimm, we welcome you to the committee. Your statement will be made a part of the record in full and you may proceed as you desire.

STATEMENT OF VICTOR J. KIMM, DEPUTY ASSISTANT ADMINISTRATOR FOR WATER SUPPLY, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY THOMAS A. LARSEN, OFFICE OF GENERAL COUNSEL

Mr. KIMM. With me this morning is Mr. Thomas Larsen from our General Counsel's Office.

We have submitted a fairly lengthy statement, in view of the fact that this is the first time we have accounted to the Congress for our stewardship. However, rather than read it, I would prefer to summarize the principal points that we raised in our statement.

Mr. CARTER. [presiding] That will certainly be all right if you summarize. We have included the statement for the record.

Mr. KIMM. Thank you, sir.

Basically this statement covers three areas: the first is a summary report on where we are in implementing the requirements of the act. Second is a description of two problems facing the agency and how we are dealing with them; and the third consists of some comments on the legislative changes which will be necessary to continue the program.

To begin with, the legislation itself created two major programs, one dealing with the quality of drinking water at the tap, the public water supervision program, and the second dealing with the protection of underground sources of drinking water, the underground injection control program.

Concerning the tap water program, the legislation envisioned a three-phase process. Initially we were to promulgate interim regulations based primarily on the Public Health Service drinking water standards of record.

Secondly, to conduct through the National Academy of Sciences for a major study of health effects of all potential drinking water contaminants, and finally, EPA is to develop a more comprehensive set of drinking water standards, based primarily on the additional information gained through the National Academy studies.

The Congress expected that the States would assume primary enforcement responsibility; EPA was to exercise this responsibility only where the States were unable or unwilling to meet the necessary requirements.

The Interim Primary Drinking Water regulations were published in December 1975, and become effective this June. Thus, the public water system supervision program will become operational on June 24th when the utilities are required to begin the monitoring and reporting as prescribed in the Interim Primary Drinking Water regulations.

During the last year, we have mounted a major effort to work with the States to try to facilitate their assumption of primary enforcement responsibility. In practice this has turned out to be somewhat complex, in that the vast majority of the States, needed legislative changes—typically to change their coverage to make it comparable to the Federal requirements—to deal with details of variances and exemptions, and of public notification, and to provide a framework for related enforcement practices.

In addition the States also needed to go through their own administrative procedures to get the necessary implementation regulations established. This is a time-consuming process.

Our current assessment is that we will have about 10 States that will have qualified for primacy by June 24, 1977, when the interim regulations become effective. We expect that number to grow to about 20 by the end of September and 30 by the end of the calendar year.

At the moment, there are perhaps 10 States that seem to be leaning in the direction of not assuming primacy during the fiscal year 1978. That is our current status there.

EPA has not been able to move as quickly in implementing the UIC program. The heart of that program is the regulations which

we are to develop, to control underground injection practices which endanger the quality of present and future sources of drinking water.

Related to this program we are required to list the States for which such a program is necessary. Thereafter the States have 270 days to formulate a plan to implement the UIC regulations. Then by statute, EPA has 90 days to review each State plan and either approve it and grant the State primary enforcement responsibility or to promulgate a program which EPA must implement.

Three factors contribute to the lengthy development process of the UIC regulations. The first is the large number of injection practices that in fact are to be covered. The second is the limited data available on some of the practices to be regulated.

Third, there is institutional fragmentation of the related responsibilities within the various States. Rather than dealing with a single counterpart organization at the State level we often deal with numerous institutions, and there are major differences in the existing State programs across the country.

At any rate, after a lengthy development process, these regulations were proposed in August 1976. The public comment period closed in January 1977, and we are currently reviewing a large number of specific comments received on the proposed regulations. We would hope to have these regulations in shape to move forward within the next few months.

In terms of implementing the underground injection control program, our basic strategy will be initially to designate approximately 18 States which embrace the vast majority of the injection practices to be regulated. Our regulations will also allow any other State that wishes to be included in the initial designation of States to so petition EPA.

We are also very much concerned about an additional disposal practice. This is the use of pits, ponds and lagoons, which we believe from our studies to constitute a serious threat to groundwater quality. Generally, these practices are not regulated at this time, although there are about a half dozen States that have some type of program in this area.

In view of the lack of information about these practices, it is our strategy to provide funds to interested States to inventory such practices, assess the existing risks of groundwater contamination, describe current activities to control these practices, and suggest Federal roles that might be supportive of State efforts to control them.

With this information, we will then formulate a control strategy for these surface impoundments and either move ahead under the existing authorities available to EPA or consider other methods tailored to solving the problem.

Our written testimony also discusses major problems facing the program. The first deals with the regulation of organic contaminants in drinking water and the second relates to the economic impact the drinking water regulations may place on small community water systems.

The control of organic contaminants in drinking water is a complex problem, which literally takes us to the limits of existing

scientific knowledge. Based primarily on new information which has become available since the enactment of the act in 1974, we now have a better understanding than we had previously on the chemistry of formation, the analytical methods, and the treatment techniques to reduce the prevalence of such contaminants. We are getting more information on health effects, and we think that we now have a pretty good assessment of the situation.

Fundamentally we see the organic contaminant problem as having two very distinct parts. The first deals with the presence of a family of organic compounds called trihalomethanes, including chloroform, which are basically formed by the interaction of chlorine, a disinfectant in wide use in the United States, and humic acids which are naturally occurring materials in raw water, due to such factors as decaying leaves.

Mr. CARTER. What kind of acid did you say, sir?

Mr. KIMM. Humic. Humic acids are another broad family of organic compounds and include a number of different things. They interact with the chlorine, and produce trihalomethanes, including chloroform.

The second part of the organics problem is a large number, literally hundreds and perhaps thousands, of specific synthetic organic materials. These are manmade chemicals that are associated with upstream pollution. The monitoring studies which have been conducted mostly since we promulgated the interim regulations at the end of 1975, give us a fairly consistent pattern of occurrence in drinking water. The trihalomethanes, the materials that we are making in our conventional treatment processes are all but universal. The levels found are associated with the amount of precursor material in the raw water, so they rise in the spring and the fall and go down in the winter.

Our studies in 113 cities indicate that the amount of synthetic organic materials found are almost a random occurrence. There is no persistent pattern to them; they are usually found in lower concentrations than the trihalomethanes, with the exception of specific incidents like the recent carbon tetrachloride episode along the Ohio.

Based on our perception of the problem, we think the first effort should be to regulate the trihalomethanes. They are larger in terms of the concentrations and fairly wide spaced in occurrence.

We are also reviewing additional work on health effects associated with organic contaminants in drinking water. There are nine epidemiological studies by different research teams, all of whom are trying to see if there is an association between the organic contamination and increases in cancer rates. While each of these studies has a slightly different technique and argument, there is a persistent pattern coming forth from them. This reinforces our concern that organics in drinking water are in fact a problem and should be dealt with as soon as we are able to do so.

We now anticipate that we will propose a standard for the trihalomethanes which will initially be applicable only to the large systems. Our concern here is that in our desire to reduce trihalomethane exposure we don't inadvertently disrupt disinfection practices. Hence we would like to begin with the larger

systems where the capability exists to conduct added bacteriological assessments and to monitor these processes very carefully. Phasing in this way will also enable the States to keep careful track of how things are going. Also, a cutoff at a population level of 75,000, for example, would provide protection for a little better than half the people in the United States served by public water systems.

In the area of the synthetic organic materials, our initial approach was to try to find one or more general organic measures that we could use as a surrogate for a large number of specific materials about which we would be concerned from a health effects perspective. Here our efforts to date have not been very successful, that is none of the measurements seem to correlate effectively with the specific contaminants of concern. However, where we do encounter a particular problem like the carbon tetrachloride situation, we have, and we will take very vigorous action through all of the enforcement authorities available to the Agency to find the source of such contamination and try and deal with the problem at the source.

Our overall strategy is to begin to deal with some of these synthetic organic materials as part of the revised drinking water regulations, and this will draw heavily on the material which will be forthcoming very shortly from the National Academy of Sciences.

The second major problem discussed in my formal testimony deals with the economic impact on small systems. In water treatment as in most other things there are very clear economies of scale. The same level of treatment for a small system will be much more expensive on a per capita basis than equivalent treatment in a large system. Our original estimates with the interim primary regulations indicated that a small system which, for example, had been taking water from a surface supply and which now requires conventional treatment would face very, very serious per capita costs. However, we are also conscious of the fact that the communities themselves may have other alternatives that are less expensive. For example, a small community that discovers that its water quality is not in conformance with the standards may be able to inexpensively go to an alternative source, like a new well, or to connect to some nearby system which has adequate quantities of good quality water to to meet their needs.

We are very much concerned about this situation, but are very limited by the amount of available data in terms of the systems that are truly in and out of compliance, and the costs associated with bringing them into compliance. Our knowledge and basis for analysis will grow significantly after June when monitoring by the public water system begins. We will continue to study this situation and come forth with recommendations as the information develops.

Finally, in terms of the legislation, we basically support the Administration's proposals which were submitted to the Congress all by letters dated April 6 and 15. Simply stated, we recommend a straight extension of the existing programs similar to your H.R. 6159, although there are some difference in dollar amounts. We would also like to suggest some concern towards two additional problem areas.

The first deals with the continuing eligibility of the States for program grants during fiscal year 1978. As I mentioned earlier, there are a large number of States that are actively pursuing primacy, but just exactly when they will be able to comply is not certain, and we would very much like to avoid a situation in which there might be a disruption of the flow of Federal grant funds. If that were to happen, it would create serious problems at the State level in terms of budget and administration, and we would like to avoid this highly undesirable situation.

Secondly, based on our experience with the tap water program, we believe that the 270-day period for the State to put together a UIC program is unrealistic and that most States will not be able to meet that kind of a schedule under any circumstances. In our April 15 letter we requested that this deadline be extended from 270 days to 18 months.

Both of those concerns are very similar to sections 5 and 6 of H.R. 6160.

That concludes my summary of the testimony and I will be happy to answer any of your questions.

[Testimony resumes on p. 46.]

[Mr. Kimm's prepared statement follows.]

STATEMENT OF VICTOR J. KIMM, DEPUTY ASSISTANT ADMINISTRATOR
FOR WATER SUPPLY, ENVIRONMENTAL PROTECTION AGENCY

Mr. Chairman and members of the Subcommittee. I am Victor J. Kimm, Deputy Assistant Administrator for Water Supply and I am accompanied by Mr. Thomas Larsen of our Office of General Counsel. I welcome this opportunity to report on our efforts to implement the 1974 Safe Drinking Water Act (P.L. 93-523), and to describe the problems we currently face.

These remarks will be organized in the following sequence: a brief review of the major provisions of P.L. 93-523, a survey of accomplishments and the present status of the program, an identification of the major problems facing the program and how we plan to deal with them.

Review of P.L. 93-523

The Safe Drinking Water Act set in motion two major program initiatives, one aimed at ensuring the safety of the Nation's public water supplies and the other designed to protect underground sources of drinking water from contamination through injection wells.

The legislation envisioned a three-step process related to the public water system supervision program.

First, the Agency was to promulgate interim regulations based primarily on an update of the 1962 Public Health Service standards including both maximum contaminant levels and minimum monitoring frequencies.

Second, recognizing the limitations in our knowledge about health effects related to drinking water contaminants, EPA was directed to contract with the National Academy of

Sciences to conduct a two-year investigation of all of the contaminants in drinking water that may have an adverse impact on man.

Third, EPA is directed to promulgate more comprehensive revised drinking water regulations drawing upon the outcome of the NAS study and the results of the Agency research program.

The Safe Drinking Water Act covers an estimated 50,000 community water supplies serving year-round residents and some 200,000 non-community supplies serving the traveling public and other intermittent users. The Interim Regulations which have been promulgated and become effective in June of 1977 set limits for bacteria, turbidity, and a number of inorganic chemicals, pesticides and radiological contaminants. After June, the water utilities will be required to conduct periodic monitoring on a prescribed frequency to ensure compliance with the regulations and notify the public if they exceed the requirements.

The Act envisions that the States will exercise primary enforcement responsibility over the program, with EPA assuming this task only where the States are unable or unwilling to meet minimum requirements contained in the regulations.

The legislation related to the protection of underground sources of drinking water calls for EPA to formulate regulations for the control of underground injection well practices which may endanger present and future groundwater sources of drinking water. These regulations will cover

many types of injection wells, including practices related to brine disposal and secondary and tertiary recovery of oil and natural gas. EPA must also designate the States for which such programs are appropriate. Thereafter, those States have 270 days to submit a plan to implement the program, after which EPA has 90 days to approve the State plan and grant them primary enforcement responsibility or to prescribe a program which EPA must then implement.

For both the public water supervision program and the underground injection control program, Federal grants to the States are provided, but continuing eligibility for such assistance is tied to specific deadlines for the assumption of primary enforcement responsibility.

In addition, the Act provides for research, technical assistance, demonstration grants, training and a number of special studies designed to provide important information related to our efforts to ensure the safety of the Nation's public water supplies.

Implementation Strategy

Early in the process, EPA announced a strategy in which we committed ourselves to developing the regulations and major policies related to implementation using an open process through which advice would be sought from all interested parties, including industry, the utilities, and

the States as well as environmentalists and other interested members of the public. Since we expect the States to play a major role in implementing the program, we are especially concerned about building upon their existing expertise and providing them with as much flexibility as is consistent with our legislative mandate.

The establishment in the legislation of an independent National Drinking Water Advisory Council composed of members of State and local government, the water supply industry, and the public has been most helpful in this regard. The Council has been very active; they have provided advice and recommendations on almost all aspects of the program, including our regulations. The Council's public meetings have also provided a forum for interested parties, outside of EPA, to comment on a wide variety of issues facing the program. These activities have been very beneficial to the Agency and we expect them to continue in the future.

Review of Accomplishments and Present Program Status

One of the major activities of the program during the past year has been working with the States to assist them in assuming primary enforcement responsibility for the public water system supervision program. To support this effort, the Agency has so far:

- . Published national interim primary drinking water regulations (December 24, 1975);
- . Published special monitoring regulations for organic chemicals (December 24, 1975);
- . Published State public water system supervision program grant regulations (January 20, 1976);
- . Published State Program Implementation regulations; (January 20, 1976);
- . Published guidelines for Section 1424(e) for sole source aquifer designation and review of Federal financially assisted projects (December 16, 1975);
- . Published an Advance Notice of Proposed Rule Making requesting public comment on the options for the control of organic chemical contaminants in drinking water (July 14, 1976);
- . Proposed secondary drinking water regulations dealing with the esthetic quality of drinking water like taste and odor, etc., (March 31, 1976) and
- . Published guidelines for State emergency response plans and many other operational aspects of the program.

Among the 56 States and Territories, only two States, Indiana and Pennsylvania, initially indicated that they do not intend to apply for primary enforcement responsibility. Program grants were awarded to all other applicants.

In order to qualify for primacy, a State must have or adopt water supply legislation which provides coverage of all systems serving more than 25 persons and provides a basis for public notification and related enforcement authorities. The State agency responsible for the program

must promulgate implementation regulations and drinking water standards with appropriate provisions for public comment and hearings as required under the administrative procedures of each State.

In practice, this process is quite complex and time-consuming, and it is difficult to project the final outcome due to the large number of interests impacting the process. At this time, EPA expects that about 10 States will fully qualify for Primary Enforcement Responsibility (called "Primacy") by June 24, 1977, the date the Interim Primary Drinking Water Regulations become effective. By September 30, 1977, the beginning of Fiscal Year 1978, we anticipate that 20 States will attain primacy. By the end of calendar 1977, that number should be at least 30. At this time, there are about 10 States where the prognosis for primacy in fiscal year '78 is doubtful.

In support of this effort, EPA has conducted a number of support activities including technical assistance, training and public information. Of particular importance are our efforts to develop a Model State Information System. This is a general automated data processing system which can be installed by interested States on their own

equipment and will facilitate the storage and use of data received from the individual public water systems. The system has been designed to be machine-independent and was developed in cooperation with a committee of State officials. Our efforts will include significant training and installation assistance to help the States adopt the system. We plan to begin installation at the State level this summer and expect to install it in about 30 States this year and 10 more next year.

Among the public information and training efforts EPA has undertaken, the following are worth highlighting:

- o The planning and development of a broad program of public information to reach the general public and those particularly affected by the Act;
- o The development of various training materials for use by States in upgrading the professional skills and knowledge of water treatment plant operators, laboratory technicians, and other personnel required to implement the Act;
- o The distribution and administration of a share of the academic training grant funds appropriated by the Congress for this purpose;

- o The award of a grant, as directed by Congress, to the National Rural Water Association, thus funding training and technical assistance for small rural suppliers in the twelve participating States.

Mandatory Studies

It is also appropriate on this occasion to report on our progress with the several studies mandated by

P.L. 93-523. We have:

- . Completed the Preliminary Assessment of Suspected Carcinogens in Drinking Water Report to Congress;
- . Completed a study on Impact on Underground Sources of Application of Pesticides and Fertilizers;
- . Completed a Report to Congress--Waste Disposal Practices and their Effects on Groundwater;
- . Completed an initial draft now under review of an interim report on the Rural Water Survey to be submitted to Congress in June prior to the completion of the Final report in 1978;
- . Initiated a study of viruses in drinking water required by the Act--a final report is expected in Fall of 1977;
- . Initiated a study on the impact of pits, ponds, and lagoons on groundwater quality to be completed in August 1978;
- . Initiated a study on the prevention of surface spills to be completed in August 1978;
- . Initiated a study of underground injection methods which do not endanger underground water sources to be completed in May 1977;
- . Initiated a study of the impact of abandoned injection and extraction wells in recharge areas to be completed in May 1977; and

- . Been informed that the report on the study by the National Academy of Sciences will be delivered to EPA by mid-May 1977.

Underground Injection Control Program

The Underground Injection Control Program is about to become operational after a lengthy development process. Launching this program has turned out to be extraordinarily difficult due to the large number of injection practices to be regulated; the limited information on many of these practices; the fact that the implementation responsibilities are divided among three to five units of government within most States, and the differences in existing regulatory programs among the States.

Underground Injection Control Regulations and State Grant Regulations were proposed in the Federal Register on August 31, 1977. Due to the intense interest in these proposed regulations, the public comment period was extended until January 15, 1977. The Agency has completed a careful review of the comments received and is now formulating final regulations which we expect to promulgate in the next few months.

As part of the program, the Agency is required to list in the Federal Register those States which, in the Administrator's judgement, require an underground injection control program. Our current thinking is initially to designate about 18 States -- those which have the vast

majority of the injection wells to be regulated. Any State may petition EPA to be designated.

In addition, the Agency believes that another disposal practice, namely pits, ponds and lagoons, constitutes a major threat to groundwater sources. Therefore, we plan to provide financial assistance to interested designated and non-designated States for the purpose of inventorying such facilities, assessing their potential impact on ground water, outlining current regulatory efforts at the State level and suggesting appropriate Federal regulatory strategies which would be supportive of State efforts to control such practices. Thereafter, we shall formulate a control strategy using existing statutory authorities under existing EPA legislation or request additional legislation tailored to dealing with the problem.

When the basic elements of the program take final shape, EPA will direct technical assistance, training, and public information activities to those affected by the regulations. In all of these efforts, we plan to continue seeking a broad spectrum of outside views and recommendations.

Major Problems Facing the Program

Perhaps no problem facing the Agency is more complex than the establishment of drinking water standards for

organic contaminants. This problem takes us to the very limits of current scientific knowledge.

Our current assessment of the problem is based primarily on information developed since the passage of the Act about the chemistry of formation, prevalence, health effects, treatment alternatives and their associated costs. We now believe that the organic problem has two fundamentally different parts. The first deals with a family of organic compounds called trihalomethanes including chloroform. These compounds are formed at the treatment plant through the interaction of chlorine and naturally occurring humic acids in the raw water. Chlorine has been used effectively as a disinfectant in water systems for many years and has virtually eliminated many serious waterborne diseases in the United States. Thus, the health benefits of the use of chlorine are substantial and we must insure adequate disinfection practices in the future. The second part of the problem is the presence of small quantities of many man-made and potentially harmful organic contaminants caused by upstream pollution.

Our monitoring studies indicate that the trihalomethanes are all but universally present where conventional chlorination is practiced and that the levels vary over the year

in general proportion to the amount of precursor materials present in the raw water. On the other hand, our 113-city study data indicates that synthetic organic contaminants are randomly distributed and where found exist at relatively low levels. However, this does not mean that synthetic organics do not constitute a problem in some communities.

On the health effects side, there are serious limits to our knowledge. A number of these organic contaminants have been classified as carcinogens by the National Cancer Institute, based on feeding studies of laboratory animals. In addition, EPA has reviewed the epidemiological work of nine independent research groups, all of whom seem to be finding some association between organic contaminants in drinking water and increased cancer rates, although the magnitude of these relationships is far from clear. While much of this work has not yet been completed, these findings indicate a potentially serious public health problem.

In view of the widespread prevalence of the trihalomethanes, EPA concentrated much of its effort on alternative treatment techniques and their associated costs. We believe that a first regulatory effort in this regard

is appropriate at this time, at least for large systems, and we are preparing a proposed regulation setting a maximum contaminant level for trihalomethanes in finished drinking water as an addition to the interim primary drinking water regulations. We expect, initially, to apply the standard to large systems--perhaps those serving more than 75,000 people. Such an approach should enable us to gather experience on alternative control techniques without inadvertently reducing the effectiveness of disinfection. We anticipate that these regulations will be proposed in June.

Our efforts dealing with pollution-related organic contaminants have not moved along as quickly. Attempts to identify general measures for the large number of specific chemicals of cancer have not yet led us to a useful surrogate measure. We anticipate that EPA will begin to regulate the presence of pollution-related organic chemicals in the revised regulations.

As specific problems are discovered and the source of such material can be identified, the Agency has and will take vigorous action to control such discharges at the source. We are thus rapidly closing the loop between EPA's water supply and water pollution control programs. For example, EPA recently took vigorous action to curtail the discharge of carbon tetrachloride into a tributary of the Ohio River.

In addition, our basis for action should be improved when the National Academy of Sciences' study of the health effects of organics has been analyzed.

Economic Impact on Small Communities

Another major problem which will be better understood as the initial monitoring required by the Interim Primary Regulations begins in June, is the potentially serious economic burden faced by some small communities. There are economies of scale in water treatment and the per capita cost of the same level of treatment for small systems is considerably greater than corresponding per capita costs for large systems.

Small systems which become aware that their drinking water violates the standards may have a number of alternatives besides added treatment. For example, they may be able to use an alternative source of higher quality water or purchase good quality water by connecting to a nearby system which has the capacity to serve their needs. However, the exemption process in the law ought to allow adequate short-term flexibility with respect to the economic impact on small systems.

EPA will continue to improve its ability to assess such economic impacts and has:

- o prepared an economic impact assessment released with the promulgation of the interim primary regulations;

- o develop a computer model of the industry to facilitate the analysis of the impact of changes in the regulations on water utilities,
- o completed a survey of the financial characteristics of almost 1,000 community water systems,
- o completed cost analyses of alternative levels of trihalomethane standards.

Additional work on the economic impact of our present and future regulations will take place as added information on compliance becomes available.

Comments on Legislative Amendments

EPA supports the extension of authorizations and the other amendments set forth in the Administration Bill forwarded to the Committee on April 6, 1977.

In particular, EPA strongly supports two substantive changes in the legislation that are vital to the orderly progress of the program.

First, specific authority is requested to continue State grants through FY '78 for those States which are

actively working toward the assumption of primacy. If the legislation is not changed, we will be precluded from making State grants in FY '78 until all primacy requirements are met. This could result in a highly undesirable situation in which a discontinuity in Federal grants would create serious budget and operational problems for the States.

Second, the requirement that States formulate Underground Injection Control implementation programs within nine months appears infeasible based on our experience with the public water system supervision program and we recommend that this deadline be extended to 18 months.

Beyond these changes, we believe that the legislative framework is workable as we begin, together with the States, to implement the operational aspects of the program.

Conclusion

We believe that the implementation of the Safe Drinking Water Act is well underway although we face many problems in the future. Our strategy of trying to open up the regulatory process for review and comment by all interested parties appears to be working. The role of the National Drinking Water Advisory Council as an independent forum for periodic outside review has contributed significantly to shaping our actions. While we are dealing with many difficult decisions which take public policy-making and

regulations development to the limits of scientific knowledge, we are confident that the program will be effective and contribute to the safety of the Nation's water supplies in the years ahead.

Mr. ROGERS. Thank you very much.

Dr. Carter?

Mr. CARTER. Thank you, Mr. Chairman.

We have read about many of the problems we have. The chairman has encountered some of them in his State of Florida such as, chloroform in the water, and carbon tetrachloride. However, we did not mention asbestos in the Minnesota area. I would like to ask what has been done about this.

Mr. KIMM. The Congress did in fact provide funding for a demonstration project in Duluth. That construction project has been completed. Essentially it was a \$4 million demonstration project, which funded the construction of a filter plant designed to remove asbestos fibers at Duluth. Part of that project, however, is an 18-month evaluation assessment, that is in addition to building the physical facility, we want to see how effectively it works. We also want to try and define the operating parameters which should be used by similar plants in the future.

Mr. CARTER. As far as you can tell, it will take out the asbestos fibers; is that correct?

Mr. KIMM. Yes, sir.

Mr. CARTER. What about this discharge that has been going on. I believe it is in one of the Great Lakes, and that much of it comes from one of the large manufacturing companies in Minnesota.

Is that continuing at the present time or not? Are they still discharging?

Mr. KIMM. Although he is not here in that capacity Tom Larsen has been following that situation for EPA. If I might refer that question he can give you a better assessment.

Mr. CARTER. Does it affect water that is drawn from this particular lake?

Mr. LARSEN. Yes, Dr. Carter. The discharge from the reserve mining facility is continuing into Lake Superior. The risk from the asbestos particles in the water itself has been minimized in the Duluth area because of the installation of the new filter plant. However, the dangers still persist in smaller cities that use the lake as a source of drinking water and we are looking into this. However there has recently been a reversal by the Minnesota Supreme Court which reversed a previous order by the 8th Circuit Court requiring the plant to shut down by this July and it is unclear now as to whether the plant will in fact have to get out of the lake by this July. In fact, they will probably seek an extension of the ability to operate the plant.

Mr. CARTER. But you do have a plant whose purposes is to filter out such particles?

Mr. LARSEN. It is removing 99 percent of the asbestos particles.

Mr. CARTER. At Duluth?

Mr. LARSEN. Yes, sir.

Mr. CARTER. But the other cities along the lake are not protected; is that correct?

Mr. LARSEN. That is correct.

Mr. CARTER. I have been observing your work in other ways and I think you have done and are doing a good job. You mentioned the protection of underground water for protection. Could you elucidate on that a little bit?

Mr. KIMM. We will be prescribing through regulations minimum requirements which will be implemented by the States, and which basically will establish a control program through permits, case-by-case determinations, and through rule making, defining good engineering approaches. That particular part of the act makes it quite clear, we believe, that the burden of responsibility rests with the injector to show that his injection facilities do not endanger drinking water sources.

The UIC regulations will also cover brine disposal and secondary and tertiary activities related to oil and gas production. These are very difficult areas to regulate without significantly disrupting energy production.

Mr. CARTER. Have we had problems with the different aquifers as a result of injection?

Mr. KIMM. There is some evidence of damage or pollution of aquifers associated with injection practices. Unfortunately it is the kind of problem where contamination is a virtually irreversible problem, that is, once the aquifer is contaminated, there isn't very much that you can do about it.

Also, the almost universal presence of groundwater within the boundaries of the United States means that there are many areas of the country about which there is no certainty concerning the quality of groundwater.

Mr. CARTER. What effect would undertaking the studies called for in this bill have on your day-to-day operations?

Mr. KIMM. I assume you mean the longer bill, sir?

Mr. CARTER. Yes, sir.

Mr. KIMM. Perhaps I might run through the additional studies.

Mr. CARTER. The studies that are called for in this particular bill, yes, sir.

Mr. KIMM. Section 3(a) deals with the study of small systems. As I have indicated earlier, we clearly intend to continue our efforts along that line. We have done a fair amount of work and will be doing more in the future. The limiting factor there is not the will to do it, but the availability of reliable data on who is really in and out of compliance.

In section 3(b), the reference to future availability of adequate supplies of drinking water, frankly I think that is a serious problem that needs to be dealt with, but I am very much concerned that with our limited resources, we would be hard-pressed to take on such a broad additional burden at this time.

Mr. CARTER. Thank you so much for your testimony.

Mr. ROGERS. Mr. Kimm, what is your budget now?

Mr. KIMM. Basically the limitation is more a matter of people than of dollars. All together the water supply program has something in excess of \$53 million requested for fiscal year 1978. The increases of the last 2 years have been primarily devoted to increases in the State program grants, which is most critical to getting the program underway.

Mr. ROGERS. About \$50 million is your current budget?

Mr. KIMM. Yes, sir.

Mr. ROGERS. And what is proposed in the President's budget?

Mr. KIMM. The President's budget this year includes—I will give you the precise numbers for the record—it includes an increase in State grants of approximately \$6 million, an increase in the research area of about \$1 million, and it includes another increase of about \$1 million in the grant and contract area.

Mr. ROGERS. The total is what then, a total of how much, approximately? You can give us the exact figure for the record. Is it more or less than \$50 million?

Mr. KIMM. It is an increase of something between \$5 and \$7 million over our funding level in fiscal year 1977.

Mr. ROGERS. About \$5 million to \$7 million, so it is somewhere around \$50 million.

Mr. KIMM. Yes, sir.

[The following information was received for the record:]

OFFICE OF WATER SUPPLY

ATTACHMENT I

BUDGET SUMMARY
FY 1975 - FY 1978

April 22, 1977

	<u>\$</u>	<u>FY 1975</u>	<u>Pos</u>	<u>\$</u>	<u>FY 1976</u>	<u>Pos</u>	<u>\$</u>	<u>FY 1977</u>	<u>Pos</u>	<u>\$</u>	<u>FY 1978</u>	<u>Pos</u>
<u>Abatement & Control</u>												
Headquarters		1566.1	31		4790.6	57		6798.0	61		7800.0	67
Regions		1642.7	47		1835.3	77		3120.0	124		3284.0	144
Res. Support (Cinn.)		405.1	18my		416.1	18my		416.0	18my		416.0	18my
<u>Research</u>		4559.5	73		8461.0	(89)		13,227.0	86		15,200.0	91
<u>Enforcement</u>					81.0	4		154.0	7		154.0	7
Subtotal		<u>8173.4</u>	<u>169</u>		<u>15,584.0</u>	<u>245</u>		<u>23,715.0</u>	<u>296</u>		<u>26,854.0</u>	<u>327</u>
<u>Program Management & Support</u>		-	-		-	-		324.0	6		324.0	6
<u>Grants</u>		-	-		10,000.0	-		21,080.0	-		26,500.0	333
<u>TOTAL</u>		<u>8173.4</u>	<u>169</u>		<u>25,584.0</u>	<u>245</u>		<u>45,119.0</u>	<u>302</u>		<u>53,678.0</u>	

Mr. ROGERS. How many people do you have?

Mr. KIMM. There are 67 people in the Office of Water Supply, and there are approximately 90 people in the research program associated with supporting our activities. There are approximately 144 people currently in the regions associated with the program.

Mr. ROGERS. What do those in the regions do mainly?

Mr. KIMM. The regions have the direct interface with the States, and so are the Agency's operating arm. They are the people in daily communication with the States on a variety of ongoing issues. They also have a set of increased responsibilities related to Indian lands and Federal facilities, as a result of some Supreme Court decisions last year. We are also continuing the Interstate Carrier program, but the primary bread and butter regional activities are working with the States on water supply problems.

Mr. ROGERS. In June you anticipate how many States will assume primary responsibility?

Mr. KIMM. We assume 10.

Mr. ROGERS. Ten will?

Mr. KIMM. Yes, sir.

Mr. ROGERS. For the record would you let us have those 10 States?

Mr. KIMM. Yes, sir.

Mr. ROGERS. Not now, just for the record.

[The following information was received for the record:]

STATES WHICH WILL ASSUME PRIMACY BY JUNE 24, 1977

Connecticut
Oklahoma
Louisiana
Nebraska
Mississippi
Arkansas

Iowa
Massachusetts
New York
California
Alabama

Mr. ROGERS. Then you anticipate another 10.

Mr. KIMM. We think that that number will grow to 20 by the end of September.

Mr. ROGERS. Of this year.

Mr. KIMM. Yes.

Mr. CARTER. By the end of the year?

Mr. KIMM. Thirty.

Mr. ROGERS. And what indications from the other States?

Mr. KIMM. There are probably something like 10 States which appear unlikely to take primacy in the immediate future. There are two States that clearly said early in the game that they did not choose to take on primary enforcement responsibility; these were Pennsylvania and Indiana. At the moment there are probably another eight where the prognosis is very poor that they will in fact assume primacy during this calendar year.

Mr. ROGERS. But possibly come in the next.

Mr. KIMM. Hopefully.

Mr. ROGERS. Have you had any reaction of complete rejection by any State as yet?

Mr. KIMM. Yes, Pennsylvania and Indiana initially said they would not take the program. In Pennsylvania what we have done, and I think this is probably a model we will use elsewhere, is to

arrange with the State to continue its water supply activities, and so we will conduct some of the required functions and the State will undertake other functions. We will share the information, and should some subsequent Governor decide that he would like to work with the program, presumably it would be a fairly easy transition of responsibility.

Mr. ROGERS. Who is the Governor who has not wanted this program?

Mr. KIMM. I say the Governor. I don't know that it was personally the Governor. It was the State of Pennsylvania.

Mr. ROGERS. Have they had any water problems?

Mr. KIMM. Pennsylvania is a State with a large number of very old and small water supply systems, and I would expect as the monitoring starts to take place, they are going to discover all kinds of problems.

Mr. ROGERS. Have we had any studies to date that would indicate the severity of the problem in Pennsylvania?

Mr. KIMM. No, we really don't, and as I mentioned earlier, one of our problems is that there has not been in the past consistent monitoring across the country for a variety of contaminants.

Mr. CARTER. Mr. Chairman?

Mr. ROGERS. Yes.

Mr. CARTER. I believe there are a lot of privately-owned water systems in the State of Pennsylvania.

Mr. ROGERS. What about in the Pittsburgh area? I thought you had some rather severe problems there?

Mr. KIMM. There were some severe problems there about 2 years ago; as I remember it some specific remedial activities were undertaken there. One of the impacted systems added granulated activated carbon in its treatment plant. Also we have done a lot of work in and around Philadelphia.

Mr. ROGERS. Let me just ask this before I get away from it.

Do all of the 144 people work exclusively on the drinking water supply problem?

Mr. KIMM. Yes, sir.

Mr. ROGERS. Could you supply for the record a list of those instances of water-related disease outbreaks which have been reported since the 1973 hearings? We would like a record of those, setting forth the extent of the problem and what has been done. I think also it would be good to supply for the record a list of those underground aquifers which have been designated as sole or primary source aquifers under the act, and a list of petitions which have been filed to have the Agency designate other aquifers under this provision.

Also I would think it might be well to supply for the record a copy of the letter which the Agency sent to me in response to my inquiry about the authority you have to protect drinking water from seepage from pits, ponds, and lagoons.

[Testimony resumes on p. 64.]

[The following information was received for the record:]

INCIDENCE OF WATERBORNE DISEASE SINCE 1973

The most recent tabulations of waterborne diseases are attached. The relationship of these numbers to actual incidence is unknown because etiology is difficult to establish and reporting and identification is incomplete. The majority of outbreaks occurred in semi-public systems but the majority of cases occurred in municipal systems.

SEMI-PUBLIC WATER SYSTEMS
DEFICIENCIES ASSOCIATED WITH WATERBORNE OUTBREAKS
1971 - 1975

	OUTBREAKS	CASES OF ILLNESS
UNTREATED SURFACE WATER*	7	237
UNTREATED GROUND WATER	27	3,859
TREATMENT DEFICIENCIES	30	4,817
DISTRIBUTION DEFICIENCIES	0	0
MISCELLANEOUS	6	145
	70	9,058

*INCLUDES THREE OUTBREAKS OF GIARDIASIS IN WHICH SURFACE WATER WAS CHLORINATED BUT NOT FILTERED

ETIOLOGY OF WATERBORNE OUTBREAKS
1971 - 1975

	<u>OUTBREAKS</u>	<u>CASES</u>
ACUTE GASTROINTESTINAL ILLNESS	63	17,752
HEPATITIS-A	14	358
SHIGELLOSIS	14	2,903
GIARDIASIS	13	5,136
CHEMICAL POISONING	12	511
TYPHOID	4	222
SALMONELLOSIS	2	37
ENTEROTOXIGENIC <u>E. COLI</u>	1	1,000
	123	27,829

W A T E R B O R N E O U T B R E A K S

1 9 7 6

35 OUTBREAKS

5053 CASES OF ILLNESS

	<u>OUTBREAKS</u>	<u>CASES</u>
GASTROENTERITIS	26	1454
GIARDIASIS	3	639
CHEMICAL	3	35
SHIGELLOSIS	2	2175
SALMONELLOSIS	1	750

WATERBORNE DISEASE OUTBREAKS BY TYPE OF DEFICIENCY

1971 - 1975

	<u>OUTBREAKS</u>	<u>CASES OF ILLNESS</u>
UNTREATED SURFACE WATER*	19	5,729
UNTREATED GROUND WATER	38	3,953
TREATMENT DEFICIENCIES	39	10,139
DISTRIBUTION SYSTEM DEFICIENCIES	15	1,463
MISCELLANEOUS	12	535
TOTAL	123	27,829

*INCLUDES SEVEN OUTBREAKS OF GIARDIASIS IN WHICH SURFACE WATER
WAS CHLORINATED BUT NOT FILTERED

WATERBORNE OUTBREAKS BY TYPE OF SYSTEM

1971 -1975

	<u>OUTBREAKS</u>	<u>CASES OF ILLNESS</u>
MUNICIPAL SYSTEMS	37	18,633
SEMI-PUBLIC SYSTEMS	70	9,053
INDIVIDUAL SYSTEMS	15	133
	123	27,829

MUNICIPAL WATER SYSTEMS
DEFICIENCIES ASSOCIATED WITH WATERBORNE OUTBREAKS
1971 - 1975

	<u>OUTBREAKS</u>	<u>CASES OF ILLNESS</u>
UNTREATED SURFACE WATER*	6	5,404
UNTREATED GROUND WATER	4	74
TREATMENT DEFICIENCIES	9	5,322
DISTRIBUTION DEFICIENCIES	15	7,468
MISCELLANEOUS	3	355
	---	---
TOTAL	37	18,633

*INCLUDES FOUR OUTBREAKS OF GIARDIASIS IN WHICH SURFACE WATER WAS CHLORINATED BUT NOT FILTERED

SEASONAL DISTRIBUTION OF WATERBORNE OUTBREAKS
1971 - 1975

	<u>MUNICIPAL</u>	<u>TOTAL</u>	<u>SEMI-PUBLIC</u> <u>AFFECTING VISITORS</u>
JANUARY	1	2	1
FEBRUARY	2	1	0
MARCH	3	2	1
APRIL	2	4	4
MAY	1	9	6
JUNE	5	14	12
JULY	4	12	10
AUGUST	5	12	11
SEPTEMBER	4	4	4
OCTOBER	3	3	1
NOVEMBER	4	3	1
DECEMBER	2	4	3
UNKNOWN	1	-	-
	---	---	---
TOTAL	37	70	54

WATERBORNE DISEASE OUTBREAKS

1971 - 1975

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>total</u>
OUTBREAKS	19	29	26	25	24	123
CASES OF ILLNESS	5182	1638	1774	8356	10,879	27,829

Status of 1424(e) Designation Determinations

Designated Areas:San Antonio, Texas

Petitioner: Sierra Club, Citizens for a Better Environment,
League of Women Voters

Date of submittal: January 3, 1975

Status: Area designated in Federal Register notice of
December 16, 1975

Designation Petitions Under Consideration:

Nassau-Suffolk Co. Aquifers, Long Island, New York

Petitioner: Environmental Defense Fund (EDF)

Date of submittal: January 21, 1975

Status of petition: A Federal Register notice acknowledging receipt and asking for public comment was published on June 12, 1975, only EDF submitted comments. All background documentation has been compiled by EPA and demonstrates that area qualifies for designation. Early on 1977 additional press releases were issued offering one more opportunity for comment. EPA is ready to designate the area but is holding up at the request of the regional Citizen Advisory Committee of which EDF is a member. The reason for the requested delay is that the committee wishes to first see the technical guidelines which EPA is preparing (These guidelines will tell Federal agencies the type of hydrogeologic and other data which should be included in the Environmental Impact Statement (EIS) and which must be submitted to EPA on three types of federal financially assisted projects, i. e. multi-unit housing developments, highways, and sewage facilities; they should be ready by 9/77). EPA has notified the Citizen Advisory Committee that unless the petitioner himself officially requests a delay, the designation action can no longer be withheld. However, if the petition is withdrawn, EPA must decide whether to go ahead on its own initiative or take no action.

Fresno Co. Aquifers, California

Petitioner: Gerald V. Lysdahl

Date of submittal: August 9, 1976

Status of petition: EPA published a Federal Register notice on December 6, 1976 acknowledging receipt of petition and asking

for public comment; at the requests of local government representatives the deadline for public comment was postponed until May 1, 1977. These groups have expressed their concern over a designation action. However, the petitioner has submitted all information required by EPA and the agency is legally bound to make a decision. Starting on May and taking three months, the US Geological Survey will, under EPA's guidance, begin to review vast quantities of hydrogeologic data and prepare a background summary document to assist the Agency in making an impartial and objective decision. Public workshops have been scheduled for the area during the month of May and additional public hearings will be held before any decision is made.

Northern Groundwater System of Guam

Petitioner: Ricardo J. Bordallo, Governor of Guam

Date of Submittal: November 20, 1975.

Status of Petition: A Federal Register notice was published by EPA acknowledging receipt of petition and asking for public comment. EPA has gathered all required documentation which demonstrates the area qualifies for designation. These documents have gone through interagency review and are now up to the Governor for comment. It appears that the regulation of military installations was the Governor's primary concern. Such projects, however, do not, according to our General Counsel, fall under the definition of "federal financially assisted projects" and may, therefore, not be subject to EPA's veto. As a consequence, the Governor is now considering withdrawal of his petition and, while the area does qualify for designation, EPA must decide whether to designate on its own initiative or take no action.

Spokane Valley-Rathdrum Prairie Aquifer, Idaho and Washington states

Petitioner: Idaho Coalition for Shorelands Preservation, Spokane Audubon Society, Spokane Vera Valley Citizens Committee and Spokane Sierra Club.

Date of Submittal: August 14, 1976

Status of Petition: A Federal Register notice was published by EPA on January 31, 1977, a public hearing was held on March 4, 1977. There is considerable public interest on this petition and the USGS is conducting a hydrogeological study which will be completed on mid-May.

Snake Plains Aquifer, Idaho

This petition is in our regional office and have not yet reached the Office of Water Supply.

Tenmile Creek, Montgomery Co., Maryland, amended to include the upland plateau of Parr's Ridge.

Petitioner: Tenmile Creek Conservation Committee

Date of Submittal: Original petition amended as of February 12, 1976.

Status of Petition: Petitioner is supplying EPA with additional information, whenever the petition is complete and if the area appears to qualify for designation, a USGS study might be necessary; the area in question is rather large and boundaries must be defined.

Biscayne Aquifer, Florida

Section 1424(e) allows EPA to designate on its own initiative and the Regional Administrator for EPA in Atlanta, Jack E. Ravan, is considering the designation of what appears to be a classical sample of a sole source aquifer. This decision will be supported by the Office of Water Supply. Hydrogeological studies and public hearings will take place before any decision is made.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 17 1977

THE ADMINISTRATOR

Dear Mr. Chairman:

Your letter of January 3, 1977 raises several questions regarding the authority of EPA to protect underground water supplies.

EPA has authority to protect underground water supplies under the Resource Conservation and Recovery Act (RCRA), the Safe Drinking Water Act (SDWA), the Toxic Substances Control Act (TSCA), and indirectly, the Federal Water Pollution Control Act (FWPCA). The Agency authority has particular limitations under each Act, however.

As you know, RCRA regulates the disposal of hazardous wastes and solid wastes under separate subtitles. Under the Solid Waste subtitle, EPA will influence solid waste disposal through its criteria for sanitary landfills and open dumps which State solid waste plans must meet in order to qualify for Federal grant funds under Section 4007. Disposal practices which may endanger groundwater (including pits, ponds, and lagoons) are susceptible to EPA classification as "open dumps" (Section 4004(a)) and would be prohibited if so classified. "Open dumps" can be temporarily allowed to exist under State compliance schedules. However, RCRA does not provide for direct Federal enforcement of the open dump criteria nor does it authorize EPA to issue compliance schedules if the States fail to act. Thus, the criteria governing State solid waste plans must be enforced by the State or by citizen suits. EPA's recourse would possibly be to bring direct Federal injunctive actions after the deadline for ending improper disposal, or to withhold Federal financial assistance from States whose plans or enforcement are deficient, or employing the "imminent hazard" process of the Act on a case-by-case basis.

Under the Hazardous Waste subtitle of RCRA, EPA has the authority to regulate by a permit system the disposal of substances designated as hazardous (Section 3001) to insure the protection of groundwater. Thus, the disposal of certain wastes on land, or into pits, ponds, and lagoons will be strictly regulated, once the wastes have been determined to meet the criteria for "hazardousness."

The Agency also has authority in two respects under SDWA to protect sources of underground drinking water. First, Section 1431 grants the Administrator broad emergency authority to prevent activities which may endanger public water supplies. Insofar as this authority must be exercised on an ad hoc basis, though, it has obvious limitations as a national policy tool. Second, Section 1421 requires the Administrator to promulgate regulations setting forth minimum requirements for State Underground Injection Control Programs in order to protect existing and potential underground sources of drinking water. Unlike the solid waste provisions of RCRA, if the Administrator designates a State to adopt an Underground Injection Control Program, EPA may enforce such a program if the State does not adopt and enforce an acceptable program.

Nonetheless, the definition of "underground injection" in Section 1421(d)(1) is not as broad as the definition of "disposal", "hazardous waste" or "solid waste" in RCRA. Accordingly, in the proposed underground injection regulations issued on August 31, 1976, the scope of the regulations is limited to injection wells "where the depth is greater than the largest surface dimension." (Proposed 40 CFR, Sec. 146.1(r)). This definition does not include surface landfills, pits, ponds, or lagoons. The preamble to the proposed regulations notes:

When enough data is available to determine which dug wells should be regulated and how they should be regulated, EPA will endeavor to amend the definition of "well injection" to the extent possible to cover additional dug wells or will seek such additional legislation as may be necessary. (41 F.R. 36732, August 31, 1976).

TSCA also enables EPA to regulate the disposal of toxic substances (Section 6A). As with hazardous wastes under RCRA, though, a substance must be classified as toxic before it can be regulated and thus EPA's authority under TSCA is really

limited to the overall control of individual substances rather than the control of disposal practices in general. Regulations have not yet been drafted under TSCA, and it is difficult at this time to predict how EPA will implement its authority to control the disposal of toxic substances.

Pursuant to Section 208(b)(2)(J), (K) of the FWPCA, Congress clearly contemplated that States and localities would adopt plans to control the disposal of all wastes which could lead to the pollution of ground and surface water. EPA may review and approve such State plans. However, if a State does not adopt a plan under Section 208, EPA may not independently adopt and enforce such a plan, although additional EPA sanctions and incentives to encourage States to undertake appropriate actions are available under the FWPCA.

In sum, EPA has overlapping, but in some respects incomplete jurisdiction over the disposal of substances in order to protect ground water under four legislative mandates.

Nonetheless, it is clear that the disposal of wastes in surface landfills, pits, ponds, or lagoons does pose a risk to underground sources of drinking water (see, Report to Congress -- Waste Disposal Practices and Their Effects on Ground Water).

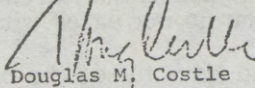
Therefore, in order to determine whether disposal practices such as pits, ponds and lagoons should be directly regulated by EPA and, if so, how they should be regulated, the proposed SDWA Underground Injection Control Regulations would require States, which are designated, to adopt an Underground Injection Control Program and to assess the risks posed to underground drinking water sources by disposal practices such as pits, ponds, and lagoons in that State. (Proposed 40 CFR §146.16(b)) These studies will be partially financed by Federal grant funds made available under SDWA in order to assist States in the implementation of Underground Injection Control Programs. EPA is also seeking approval to allocate \$2.5 million of grant funds available under SDWA to non-designated States in order to allow them to inventory and to assess the hazards associated with disposal practices such as pits, ponds and lagoons. This additional study is necessary inasmuch as disposal practices such as pits, ponds and lagoons are more widespread than those underground disposal practices which would be covered by the proposed regulations. Furthermore, EPA is presently engaged in an independent study of the disposal of wastes into pits, ponds and lagoons under Section 1442(a)(8)(c) of SDWA.

Once these studies on pits, ponds and lagoons are completed and evaluated, EPA will be in a much better position to define the nature of the problems associated with such disposal practices, formulate reasonable programs to reinforce State regulatory efforts and either implement such programs under existing legislation or seek new legislation specifically tailored to protecting underground sources of drinking water.

Until these studies are completed though, it would not be practical for EPA to implement a national regulatory program aimed at such practices. Rather, the studies under SDWA should provide a sound, defensible and precise means of doing so in the near future. In the meantime, EPA will deal with some aspects of these problems as we implement the hazardous wastes program mandated in RCRA and the related programs outlined above.

I hope that this information is responsive to the concerns raised in your letter. Please let me know if the Agency may be of further assistance.

Sincerely yours,



Douglas M. Costle

Honorable Paul G. Rogers
Chairman, Subcommittee on Health
and the Environment
Committee on Interstate and
Foreign Commerce
House of Representatives
Washington, D.C. 20515

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Mr. ROGERS. I have a letter from the Governor of Oklahoma, the Honorable David L. Boren, who claims that if your proposed regulations on underground injection were to be carried out, that perhaps it would reduce oil and natural gas production by some 25 percent.

Would you explain the Agency's position on that?

Mr. KIMM. Yes. Probably there is no area of the underground injection control program which has run into more criticism and concern than these. In part the regulations as proposed were not the clearest document we have ever put together, and so in the face of uncertainty one could assume that we were going to take an inflexible approach. Such assumptions have been used by commentators to inflate the damage estimates. I believe that the regulations in the final form will not constitute a serious problem for the oil and gas industry, although clearly there are some practices within their current operations that are undesirable environmentally and from a health perspective and contrary to Part C of the Act. Those should be regulated and either upgraded or terminated. However, I don't think that there is anything that we are doing that has the specter of substantial dislocation of energy production.

Mr. ROGERS. So you do not agree with that statement that that would happen.

Mr. KIMM. I would have to see the basis for the statement, but there is nothing that I am aware of that would cause such a large dislocation.

Mr. ROGERS. I think it might be well that we furnish this letter to you and ask you to make comment on it for the record.

Mr. KIMM. Yes, sir.

[See letter dated June 10, 1977, p. 83.]

Mr. ROGERS. I notice there were reports in the newspaper originally from Oklahoma City that they have the possibility of rather severe salt intrusion into their freshwater wells, and into the third largest underground freshwater basin. It would appear that oil producers, by injecting salt water are probably responsible for such contamination, and with the severe shortage of water that we are experiencing in many parts of the country, I think this is one of our main concerns, that we simply don't ignore one problem for another.

Now what would be your feeling about giving primary responsibility to municipalities or cities, if the State does not move in to assume a proper role?

Mr. KIMM. In many instances where the municipality owns and operates the water supply system, this might become a bit difficult. Also there is a problem of numbers, but it would seem to me that there are probably situations in which some kind of a sharing of responsibilities between the State and municipalities would be feasible, and in practice local health departments in many States carry out some of the water supply supervision activities.

Mr. ROGERS. You think it would be well then in the law to permit a choice, if a State refuses? If a State assumes it I would think that would be fine, but if it doesn't, then perhaps we should.

Mr. KIMM. Frankly that is a new one on me. I would like to think a little bit about it. The flexibility of doing it I think is desirable. We would have to think of a way of making it workable just in terms of numbers of people to be dealt with, et cetera.

Mr. ROGERS. Yes. I understand. I think it might be well for you to look at that and let us have your reaction.

[See letter dated June 10, 1977, p. 83.]

Mr. ROGERS. What have your studies that were mandated by the public law shown? What have been the results of those studies?

Mr. KIMM. We have a large number of such studies.

Mr. ROGERS. I think you completed three.

Mr. KIMM. Yes, sir. The rest are all under preparation.

Mr. ROGERS. Yes, if you will let us know for the record on that.

Mr. KIMM. That is in my testimony.

Mr. ROGERS. Just summarize the main points.

Mr. KIMM. I am feverishly looking for the list.

Mr. ROGERS. Page 9.

Mr. KIMM. The study of carcinogens was the first time we pulled together all of the data that we had, and that was very instrumental in setting priorities as we revamped the entire water supply research program in 1975 to focus on organic contamination. That was really a very helpful study in terms of us getting ourselves together to proceed on the problem.

The study of pesticides and fertilizers provided enough data to convince us in the short run that the problem wasn't as serious as we had thought earlier. The contractor analyzed raw and finished water samplings from 350 communities and did not find many pesticides in the finished water.

The waste disposal report to Congress focused on the question of pits, ponds, and lagoons. Many State people reviewed our findings and suggested that surface impoundments in many parts of the country are more of a threat to groundwater than injection wells we were proposing to control in the UIC regulations. This led us to a decision to split our efforts to pursue injection wells as we have, as well as develop additional information on pits, ponds, and lagoons.

The rural water survey is a rather complicated situation. We have basically adopted a 3-phase approach. We will have an interim report shortly based primarily on material that has been published to date. With this material we will identify the factors that appear to be key bottlenecks limiting drinking water quality in rural areas. The second phase of the project will be a sample survey which will involve both analyzing drinking water samples and a questionnaire to see if we can confirm that the particular bottlenecks which have been identified in the past are truly associated with poor quality water. The third phase will be a final report which will include the data collected and the major findings of our studies.

The rest of the studies are all at particular points of development.

Mr. ROGERS. If you will let us know for the record. Also the impact on underground sources in the application of pesticides and fertilizers. I would like to have the specific findings. Of course I presume the staff has these reports or they have been furnished. If not, they should be furnished to the staff.

Mr. KIMM. Yes, sir.

[Testimony resumes on p. 77.]

[The following information was received for the record:]

SUMMARY OF FINDINGS AND RECOMMENDATIONS OF REPORTS REQUIRED UNDER SDWA

Report on Carcinogens

Under the Safe Drinking Water Act (PL 93-523), the Environmental Protection Agency (EPA) has the task of ensuring that the nation's drinking water is safe. This task is formidable as many factors involved in determining whether drinking water is "safe" are far from resolved.

Some of the principal problems facing EPA in the control of the quality of the nation's drinking water are pressing the limits of current research capabilities in health, science, and technology. Regulatory decision making is further compounded by the dearth of definitive information, and the lack of agreement within the scientific community, on such questions as identification and characterization of carcinogens, significance of human exposure to minute quantities of potentially hazardous substances, and interpretation of results of high dose animal exposure tests in relation to human experience. EPA is trying to answer a variety of questions in the areas of hazard evaluation, epidemiology, and analytical and treatment technology development. These questions include:

1. Which compounds occur in a sufficient number of locations and in sufficient quantity to warrant possible regulation?
2. What are the effects of those compounds on human health?
3. What analytical procedures are needed to monitor finished water supplies to assure compliance with regulations?
4. What changes in treatment practices are required to minimize the formation of these compounds during transport, storage, treatment and distribution?
5. What treatment technology can be applied to reduce contaminant levels to concentrations specified in regulations?
6. What are the National and local costs of regulations?

Only within the last few years has instrumentation sophisticated enough to measure very small quantities of contaminants been applied to drinking water. Despite recent intensive efforts, investigations to date have only identified a small fraction of the contaminants present. Further, extensive additional research is necessary to determine the health effects, if any, of ingesting these substances occurring at concentrations near the microgram per liter (parts per billion) level.

Work is proceeding to provide the answers to many of those questions. The specific activities underway or planned and the progress to date are discussed in this Report.

Before the enactment of the Safe Drinking Water Act (PL 93-523) on December 16, 1974, the Federal Government's program in this area was limited primarily to preventing the spread of communicable diseases resulting from drinking water in interstate commerce. Under the authority

of the Public Health Service Act, EPA assists in the enforcement of regulations that require interstate carriers to utilize only water from sources that are in compliance with certain required drinking water standards. This authority, however, affects only 700 of an estimated 240,000 public water systems. Moreover, these drinking water standards focus on microbiological contaminants associated with waterborne diseases such as typhoid fever and cholera and do not provide legally enforceable limits for chemical contaminants associated with carcinogenic or other toxic properties. The Federal Water Pollution Control Act (PL 92-500) has had some limited effect in protecting underground drinking water supplies and is gradually improving surface waters by requiring monitoring and limiting discharges as specified in permits issued under the National Pollution Discharge Elimination System. The authorities in that Act, however, have proven inadequate to ensure the safety of all sources of drinking water.

A 1969 survey showed serious deficiencies such as the lack of trained operators and adequate surveillance and monitoring programs in over one-half of the water supply facilities investigated. Reported outbreaks of disease and poisoning attributed to drinking water allegedly resulted in thousands of illnesses and some deaths. Further, the possibility of chronic health effects resulting from the presence of organic chemicals, asbestos, and heavy metals in drinking water indicated the need for additional authority to address this problem. To a great extent, concern over these substances and their potential carcinogenic effects prompted the passage of the Safe Drinking Water Act.

The primary responsibility to operate and maintain safe drinking water systems remains with the water supplier. Under the Safe Drinking Water Act, EPA is required to prescribe national drinking water regulations for contaminants that may adversely affect health. The local utility is then required to monitor its water and to give public notice if the water fails to meet the drinking water regulations. To the maximum extent possible, State Governments are to be responsible for enforcing the regulations and for providing necessary technical assistance to the local utility.

Pursuant to Section 1412(a)(1), EPA promulgated Interim Primary Drinking Water Regulations in December 1975 to be effective in mid-1977. Maximum contaminant levels are prescribed for microbiological contaminants, certain organic pesticides, selected inorganic chemicals, and turbidity. Maximum contaminant levels for radioactivity were proposed in August 1975 and should be promulgated in early 1976. Because the Interim Primary Drinking Water Regulations do not contain maximum contaminant levels for organic chemicals other than certain pesticides, EPA concurrently published Special Monitoring Regulations that will provide a national evaluation of the presence in drinking water of approximately 20 specific organic chemicals and simultaneously attempt to correlate their presence with several general organic parameters. The results of this survey, anticipated by the end of 1976, should provide the basis for establishing maximum contaminant levels for additional specific organic contaminants that are found to be widespread or for a general organic parameter(s) that may be incorporated in the Primary Drinking Water Regulations, or both.

Activities and Results to Date

Section 1442(a)(9) directs the Administrator to report to the Congress on the contamination of drinking water by substances suspected of being carcinogenic. Although the criteria for predicting the carcinogenic potential of chemicals have been reviewed extensively during the last decade and many experts have agreed on certain guidelines, no official consensus exists as to what evidence is required to categorize a substance as "carcinogenic". This Report considers a large number of chemicals in addition to those that have been demonstrated as human carcinogens. No attempt is made to distinguish among the various degrees of evidence of carcinogenicity that apply to different "suspect carcinogens."

In the past year, EPA has undertaken an extensive program to characterize the nature of drinking water problems. One step, initiated in November 1974, was the National Organics Reconnaissance Survey designed to provide an estimate of the nationwide distribution of organics in drinking water. Other projects have involved sampling and analysis of drinking water for selected inorganics, pesticides, asbestos, and radioactivity. Several studies are underway to investigate the toxicity of these substances when ingested. Still other efforts are designed to identify the sources of these contaminants and various treatment techniques effective in removing them.

Organics

November 1975 data identify 253 different specific organic chemicals in drinking water in the United States. The occurrence of these compounds in drinking water suggests that other organics not yet identified may also be present, and that the total number of compounds could be considerably larger. The range of concentration for individual organics was from a high of 366 µg/l for chloroform (based on EPA Region V's survey) to a low of 0.001 µg/l for dieldrin. Another analytical procedure that approximates the total organic carbon content showed concentrations ranging from below the level of detection (0.05 mg/l) to over 12 mg/l.

The majority of chemicals identified in drinking water have not been examined for potential carcinogenicity, although some have been classified as carcinogens or suspected carcinogens by bioassay experiments. On the other hand, even in the case of recognized carcinogens, the actual risk posed by ingesting very low concentrations is not known at this time.

Among the identified sources of these chemical compounds are industrial and municipal discharges, urban and rural runoff, natural sources, and water and sewage chlorination practices. Water treatment techniques involving modification of current processes, use of adsorbents such as granular activated carbon, or the use of oxidants such as ozone, are being investigated for their value in reducing the concentration of organics. Research is underway to develop the most cost effective treatment technology.

Inorganics

Several inorganic chemicals might be carcinogenic in drinking water under certain circumstances: arsenic, beryllium, cadmium, chromium, nickel, selenium, and nitrogenous compounds (possible nitrosamine precursors). Research is underway to determine the occurrence of these and other inorganics that may prove to be carcinogenic. A 1969 study found that a small percentage (two percent or less) of drinking water supplies sampled contained levels of arsenic, nitrate-nitrogen, and selenium that exceeded the limits in the U.S. Public Health Service Drinking Water Standards. Treatment technologies are available for the control of all three, although selenium in its oxidized form can only be removed by reverse osmosis, a rather expensive process at the present time.

Radionuclides

The presence of radionuclides in drinking water results from natural contamination, primarily from ground waters flowing through radium bearing geological formations, and from man's activities. These activities may release naturally occurring radioactivity into the environment, through phosphate and uranium ore mining operations, for example. In addition, man-made radioactivity may enter from various sources such as nuclear tests, nuclear power generation, and the use of radionuclides in hospitals, scientific research, and industry. Several treatment techniques, including lime softening, ion exchange softening, and reverse osmosis, are effective for removing radium 226.

Recent monitoring data from interstate carrier water supply utilities indicate that the average concentrations of radium 226 were 0.28 pCi/l (46 samples in 1975); strontium 90, 0.82 pCi/l (46 samples in 1975); and tritium, 200 pCi/l (71 samples in 1974). Of these samples, 22 to 59 percent contained radionuclides below the detection limit of the analytical method used. Following the recommendation made by the National Academy of Sciences, EPA bases its estimates of the health effects of radiation exposure through ingestion of drinking water on the assumption that no harmless dose level exists and that health effects will be proportional to the radiation dose delivered by drinking water.

Asbestos

Over one-half of the 63 drinking waters tested had asbestos fiber counts so low that they could not be quantified by the analytical method used. Nine had fiber counts in excess of 500 thousand fibers per liter and five had counts in excess of one million fibers per liter. In order to clarify the effects of ingested asbestos, several studies are underway to examine various aspects of this problem: asbestos absorption in the gastrointestinal tract, possible correlation between cancer incidence and asbestos in drinking water, and toxicology of ingested asbestos in rats.

Techniques for the removal of asbestiform fibers have been demonstrated in pilot plants in Duluth, Minnesota. Pursuant to this research,

the city of Duluth is constructing a full-scale water treatment plant for fiber removal. Because the health effects of ingesting asbestos are not fully understood, a maximum contaminant level for asbestos is not included in the Interim Primary Drinking Water Regulations.

Recommendations

Although recent efforts outlined in this Report have dramatically enhanced our understanding of the problems associated with drinking water contamination, they represent only the beginning of the research needed to assess confidently the character, extent, and health implications of drinking water contaminants and the most cost-effective approach to control them. The following general recommendations are presented to identify the major areas of future research needs.

Future Monitoring

In order to address the problem of drinking water contamination, additional research is needed to clarify the nature and extent of the contamination. Although the National Organics Reconnaissance Survey in 80 locations was important in that it indicated that chlorinated by-products were found in all the finished waters of the chlorinating water utilities investigated, its focus was limited to six volatile contaminants. The more comprehensive organic analyses in ten cities were not extensive enough to demonstrate conclusively that the environmental contamination found was likely to be present nationwide. The expansion of this survey is critical to provide data on the qualitative and quantitative occurrence of selected compounds and of total organic chemical concentrations in water supplies representing a wide distribution of geographical areas and various types of raw water sources. Such information is a prerequisite for promulgating maximum contaminant levels for specific contaminants, or for establishing a general organic parameter(s), or both. As discussed later in the Report ("Monitoring to Assess Parameters"), an expanded survey is about to be initiated. Ongoing surveillance programs directed to organics, inorganics, asbestos, and radioactivity in drinking water may show the need for further research.

Health Effects Research

Several projects are underway to examine the health effects of compounds found in drinking water. The results of these studies will provide information needed to assess the health risks associated with exposure to these contaminants. As emphasized by EPA's Science Advisory Board, additional health effects research is greatly needed. Specifically, EPA feels that long-term animal laboratory and epidemiological studies of the effects of various concentrations of specific contaminants are needed. Likewise, various epidemiological studies relating exposed populations to known common patterns of water contamination are important to clarify the health risks involved. Although some epidemiological studies are in progress, they are limited by inadequate data concerning the presence of various contaminants, estimates of populations at risk, and the accuracy of morbidity and mortality data.

New Analytical Methodology

When the drinking water regulations are in effect, monitoring will be required for each regulated contaminant or parameter. Research will be initiated to make existing surveillance and analysis methodologies practical or to develop new ones. In particular, methods to monitor the effectiveness of contaminant removal unit processes are needed.

Water Treatment Research

Research is continuing to develop treatment technology capable of reducing exposure to environmental contaminants to acceptable concentrations. Water treatment plant studies are now planned to test the effectiveness of certain treatment techniques developed in the laboratory. Methods of curtailing or eliminating potentially harmful contaminants are being investigated while the needed health effects research is taking place.

Future Regulation

An extensive study of possible drinking water contaminants by the National Academy of Science (NAS), mandated by Section 1412(e)(1), should be completed in about one year. EPA will consider these NAS findings in developing Revised Primary Drinking Water Regulations. Other revisions will be made as additional data on the presence and effects of various contaminants indicate that such revisions are warranted to protect the public health. These will include amendment of the Interim Primary Drinking Water Regulations prior to their June 1977 effective date if adequate data become available.

SUMMARY OF THE REPORT TO CONGRESS:
WASTE DISPOSAL PRACTICES & THEIR EFFECTS ON GROUNDWATER

JANUARY, 1977

Pursuant to Section 1442(a)(4) of the Safe Drinking Water Act, a study of waste disposal practices which result in the actual collection and disposal of liquid, semi-solid and solid wastes and which may endanger underground water that supplies, or can reasonably be expected to supply any public water systems and of the means of control of such practices was undertaken. For the purpose of this study, groundwater contamination is the degradation of the natural quality of ground water as a result of man's activities. The study focused on those contaminants which result from waste disposal activities.

Half of the Nation's population depends on groundwater as a source of drinking water and in many cases it is the only high quality and economic water source available. The use of ground water is increasing at a rate of 25% per decade.

Waste disposal practices have affected the safety and availability of ground water but have not diminished the overall suitability for human consumption. Innumerable waste materials and natural and man-made products which may potentially contaminate groundwater are stored or disposed of on or beneath the land surface. The rate of attenuation is a function of the type of contaminant and of the local hydrogeologic framework, but decades and even centuries are required for the process to be completely effective. Under the right conditions, contaminants invading a body of natural ground water can move great distances with little change in toxicity by the processes of attenuation.

Industrial impoundments are a serious source of groundwater contamination because of their number and their potential for leaking hazardous substances. Current data indicate that there are at least 17 million waste disposal facilities emplacing over 1,700 billion gallons of contaminated liquid into the ground every year. Groundwater has been contaminated on a local basis in all parts of the country, and on a regional basis in some heavily populated and industrialized areas. The degree of contamination ranges from a slight degradation of natural quality to the presence of toxic concentrations of such substances as heavy metals, organic compounds and radioactive materials. Land disposal of wastes will increase as a result of increased regulation against and the rising cost of disposal of potential contaminants to the air, ocean, rivers, and lakes. These land disposal sites can be sources of groundwater contamination because of the generation of leachate caused by water percolating through the bodies of refuse and waste materials. Currently, there is no effective Federal regulatory control of land disposal of solid waste except as it may enter navigable waters.

Almost every known instance of groundwater contamination has been discovered after a drinking water source has been affected. Few State or local agencies systematically collect data on incidents of contamination, wells affected, or water supplies condemned as unsafe. Monitoring programs are almost nonexistent. Detailed national inventories of all potential sources of groundwater contamination are not available; however, some States have begun some inventories and assessments of some waste disposal sources. The number of documented cases reported is evenly divided between incidents related to waste disposal practices and those related to non-waste disposal problems.

Waste disposal practices of principal concern relate to industrial and urban activities. The opportunity for severe contamination is greatest from industrial waste-water impoundments and sites for land disposal of solid wastes. Septic tanks and cesspools discharge large volumes of effluent directly to the subsurface. In many cases, the degree of treatment is inadequate to protect groundwater. Contamination resulting from the collection, treatment and disposal of municipal waste water exists but the magnitude is unknown.

Other waste disposal practices have also contaminated ground water. Contamination from oil and gas field activities is caused primarily by improperly plugged and abandoned wells. Mine wastes have contaminated groundwater but adequate documentation of the problem is not available. A relatively new environmental problem is the disposal of animal feedlot wastes for which a few contamination cases have been reported.

Existing technology cannot guarantee that soil attenuation alone will be sufficient to prevent groundwater contamination from a groundwater source. The groundwater system controls the methodologies available to prevent, monitor and abate instances of contamination. Prevention must be directed toward the source where proper design, construction and siting can help protect the groundwater or at least minimize the problem. Technology e.g. advanced treatment and physical containment play a preventive role where economics dictate that sites be located in areas of critical groundwater use. Land disposal of wastes is not environmentally feasible in many areas. Other alternatives may be more environmentally acceptable.

Existing Federal and State programs address many of the sources of potential contamination but they do not provide comprehensive protection of groundwater. Existing EPA programs which address groundwater are: (1) the Federal Water Pollution Control Act Amendments of 1972, (2) the Safe Drinking Water Act of 1974, and to a lesser degree (3) the Solid Waste Disposal Act of 1965 and (4) the National Environmental Policy Act of 1969. There are no direct Federal controls on site selection, an important parameter in preventing groundwater contamination; States are encouraged to establish site selection programs within the context of their land use planning and control authorities. Broad statutory authorities, deficiencies in budgets and staffs force State and local agencies to act on groundwater

contamination cases after the fact. However, States are beginning to develop programs preventing contamination from some waste disposal sources. State actions have been directed toward condemning the affected water supply and legal action is seldom taken against a specific source of contamination.

A national strategy of groundwater protection will require consideration of the following. Regulatory programs need to reflect the close relationship between land, groundwater and surface water. For maximum effectiveness, rules and regulations should be designed to (1) prevent and control unwanted contamination/degradation of both ground and surface water quality, (2) provide data necessary to evaluate the nature and areal extent of groundwater contamination and the number of sources of contamination, (3) provide a basis for correcting or mitigating existing cases of groundwater contamination; and (4) provide a regulatory framework within which aquifers can be used for waste treatment and storage.

There are two approaches to protecting groundwater resources. The first is to manage groundwater as a resource and to concentrate on limiting waste discharges and preventing causes of contamination. The second is to take into account the ability of aquifers to treat or store wastes and to consider these characteristics as the prime resource to be managed or controlled. The most effective means for protecting groundwater is to control and monitor the potential source of contamination and not the aquifer itself. New potential sources of contamination should be evaluated on a case-by-case basis. Existing potential sources should be reviewed in order to develop control strategies that are instituted in accordance with local priorities. Increasing Federal regulation of surface water and air discharge and ocean disposal may result in land disposal practices which could contaminate groundwater.

THE IMPACT OF INTENSIVE
APPLICATION OF PESTICIDES
AND FERTILIZERS ON UNDERGROUND
WATER RECHARGE AREAS
WHICH MAY CONTRIBUTE TO
DRINKING WATER SUPPLIES

January, 1976

This report presents an Assessment of the impact of intensive application of pesticides and fertilizers on underground water recharge areas which may contribute to drinking water supplies; and also presents a Plan for developing additional information required to define the nature and extent of the impact of agricultural practices on groundwater supplies for public water systems, as required by the Safe Drinking Water Act (PL-93-523).

In the perspective of what additional information is needed to determine the time extent of agricultural impacts on underground water recharge, the operation of feedlots represents a significant concern. Special emphasis is therefore placed on this subject. Feedlots, in addition to being a most concentrated source of potential pollution, may also offer the greatest range of choices for abatement, some of which might even be economically profitable.

Pesticides appear to offer only a marginal threat to groundwater because of their adsorptive properties on soil structure and/or their short-lived persistence. The exception to this statement might be where pesticides are improperly applied, or there exist sandy soils or thin soils overlaying fissured rocks. Groundwater recharge from streams and lakes polluted with pesticide-contaminated runoff has not been considered to fall within the scope of the present study even though such runoff originated from agricultural areas. Pesticide pollution from "home garden" applications may also represent a genuine problem in terms of use by unqualified persons and improper disposition of residues, containers and excess supplies, but is defined as being outside the scope of the present study.

Fertilizers are usually applied at rates designed to give maximum agronomic return for the quantities of fertilizers applied, but this is often done on a "rule of thumb" basis. The application rates, methods and associated tillage practices have generally been established without regard to groundwater quality. Surface water runoff considerations have usually been assigned a greater importance. More information is required as to how much nitrate is reaching groundwater because the total annual fertilizers requirement was applied in one or two heavy treatments, rather than lighter applications made several times during the growing season.

Septic tanks on farms present an insignificant source of pollution to groundwater as related to public drinking water supplies. However, the well water supply on that particular farm may be susceptible. Often the design, construction, or maintenance of a septic system or a water well has been inadequate to protect against contamination. On the other hand, cesspools are considered to have a higher pollution potential to groundwater because essentially raw sewage may move directly to the groundwaters.

Cesspool installations are now widely prohibited, however, and even though thousands are still in use, it is not deemed necessary to investigate this problem further.

There is a need for greater knowledge of the process of nitrification and denitrification in various soils and subsoils as a function of soil temperature, climate, and biochemistry. Such studies are needed for both animal waste applications, and for fertilizer and crop cover sources of nitrogen. With regard to possible changes in law dealing with agricultural practices to protect groundwater from toxification it is recognized that impact on the farmer could be dominant. Not all these effects are expected to be detrimental; in fact, some changes may, in the long run, contribute to increased productivity of the land.

Consideration is given to the geologic, edaphic, climatologic, and hydrologic aspects of the problem. In addition, the economic impact of modification of agronomic practices is taken into account. It is to be hoped that the cost of abatement measures may be offset, at least in some instances, by the opportunity for waste recovery as fertilizer or fuel.

The findings of the studies on the intrusion of toxic substances into groundwater recharge areas, whether from nitrates or pesticides, ought to be modeled to provide predictions of future consequences as a result of the continued use of these substances. Modeling will also permit parameters to be varied so as to determine the application levels at which these substances would no longer toxify the groundwater.

The Plan for the future work consists of a series of tasks designed to fill the gaps in current knowledge of the degree--and by what mechanisms--groundwater becomes polluted from agricultural practices, and to provide information important for pollution abatement and control. The tasks are grouped under four major headings: (a) Nitrates; (b) Pesticides; (c) Economic Impacts; and (d) Modeling and Simulation. Under the heading of Nitrates, sub-tasks deal with feedlots, fertilizers, septic tanks and problems which relate to several nitrate sources.

Mr. ROGERS. Dr. Carter?

Mr. CARTER. I would like to know about trihalomethanes which come from interaction of the humic acids that you mentioned. Are they carcinogenic?

Mr. KIMM. Yes, sir. It is a very complicated kind of problem. The end products of that interaction of chlorine and material are the trihalomethanes we have measured in our surveys. These materials include chloroform which the NCI found to cause increased cancer rates in animal studies. In terms of the effect on humans, there is a debate within the scientific community as to whether animal studies are conclusive indicators of effects on humans. However, EPA has always assumed that chemicals which are carcinogenic in animals are matters of serious concern concerning human exposure.

As we get more epidemiological information, we think we will have an improved basis for regulatory action. However, there continues to be scientific debate about scaling exposure levels from animals to people.

However, the agency's approach consistently has been to try to minimize human exposure whenever it is feasible to do that for materials that cause increased cancer rates in experimental animals.

Mr. ROGERS. It is just about universally present. I notice you state where conventional chlorination is practiced, and in that case it might present quite a problem.

Mr. KIMM. The first thing we obviously looked at was the question of alternative disinfectants and there are three or four prime candidates. However, all of the materials that are active enough to be effective disinfecting agents all have chains of disintegration products that are very active and in some instances not a great deal is known about their health effects. Chlorine dioxide, chloramines, and ozonation are among the alternative disinfectants under study. We are trying to bring together the best information we have and make that available to all interested parties.

An alternative approach is treatment. We know that with sharpening up our treatment process, we can effect a 15 or 20 percent reduction in the trihalomethanes just by getting the water cleaner before it is chlorinated. Beyond that we can add absorption to our treatment trains, like granulated activated carbon to remove organic materials.

Mr. CARTER. Almost all of our water is chlorinated, isn't it?

Mr. KIMM. The vast majority of it, yes, sir.

Mr. CARTER. And almost all of it contains humic acid you say; is that correct?

Mr. KIMM. Yes, sir.

Mr. CARTER. You made that statement. It seems to me to be quite a problem. Trihalomethanes are quite prevalent in every bit of the water we drink, and they are carcinogenic, according to what I believe you state here.

Thank you, Mr. Chairman.

Mr. ROGERS. I think it would be well for you to set forth in the record all of the new methods of treatment that have been proved out, and those that have been set forth that offer great promise.

[See letter dated June 10, 1977, p. 83.]

Mr. ROGERS. What additional measures other than the two if any is the administration's recommendation for this year's legislation; any?

Mr. KIMM. None.

Mr. ROGERS. Those two. Do you recommend an increase in funding for grants to communities that may have some difficulties?

Mr. KIMM. The current administration really has not dealt with that problem yet, but it is a matter that they will have to address.

Mr. ROGERS. What about the Agency's strategy for dealing with contamination which results from lead or cast iron water pipes? Would you set forth that for the record?

[The following information was received for the record:]

OWS STRATEGY TO CONTROL HIGH LEAD LEVELS IN DRINKING WATER

A. The National Interim Primary Drinking Water Regulations, promulgated on December 24, 1975, to become effective June 24, 1977, contain a Maximum Contaminant Level for lead of 0.05 milligrams per liter. On January 11, 1977, OWS issued a guidance memorandum, directed to Regional personnel and other holders of Water Supply Guidance Manuals, recommending that no variances or exemptions be granted for lead in drinking water. As outlined in the guidance memorandum, this recommendation was based on the fact that lead levels can be readily controlled and on the fact that excessive lead levels constitute an unreasonable risk to health.

In May 1977, OWS, in cooperation with the Water Supply Research Division, ORD, is publishing a "Manual of Treatment Techniques for Meeting the Interim Primary Drinking Water Regulations." That Manual outlines the techniques applicable to the reduction of lead levels when lead is present in source waters.

On March 31, 1977, OWS proposed National Secondary Drinking Water Regulations containing Secondary Maximum Contaminant Levels for corrosivity and pH. These two interrelated parameters are major factors in the occurrence of lead in drinking water resulting from the use of lead pipe. In individual cases, OWS, through the Regional water supply staffs, is cooperating with States and municipalities in activities designed to reduce lead levels where lead pipe is in use. Typical programs now in operation are in Boston, where the water is being treated with stabilizing chemicals, and Bennington, Vermont, where corrosion control is being incorporated into the treatment plant design. Emergency measures are in effect in Bennington pending completion of the treatment plant, as outlined in the attached summary.

BENNINGTON, VERMONT

The water supply of Bennington, Vermont, is very low in hardness and alkalinity, which results in a highly corrosive water. The situation is compounded by the fact that as many as 30% of the service connections may have lead service lines leading from the water mains to the housing units.

An investigation of blood lead levels, carried out by CDC in connection with a storage battery plant, revealed that Bennington citizens were exposed to lead from other than industrial sources. This is apparently what led to the discovery of the

lead pipe problem in the water system. The State of Vermont, the town of Bennington, the Board of Water Commissioners and the EPA Regional Office were apprised of the situation and began taking action immediately. Those actions are as follows:

1. Public watering points have been established from which citizens can obtain lead-free water for drinking and culinary purposes.
2. The final design of a filtration plant is approximately 90% completed, and the design engineer has been instructed to include corrosion control treatment in the plant.
3. The Vermont Department of Health has consulted with the medical staff of the hospital to assure awareness of the problem in the medical staff.
4. The problem has received extensive State, local and regional publicity.

A local citizen, Mr. C. Frank Velkas, has requested that the Administrator of EPA take action under Section 1431 of the Safe Drinking Water Act, but since emergency corrective measures are already under way, it appears that EPA action is unnecessary.

Analyses of Bennington water have revealed that lead concentrations are as much as eight times the MCL of 0.05 mg/l. Citizens have been cautioned to flush water lines before using, particularly when the water has remained in the pipe overnight. The EPA Regional Office is continuing to monitor the situation and will report periodically to the Administrator.

Mr. ROGERS. I would like to know for the record what your strategy will be for helping rural areas attain compliance with the act, and what problems are peculiar to rural drinking water systems, and do employees of these systems have requisite experience in educational background, and here again possible alternative drinking water systems for rural areas?

[See letter dated June 10, 1977, p. 83.]

Mr. ROGERS. I think too it would be well to have a comment on the finding of the U.S. Geological Survey in Oklahoma. It appears to be the Geological Survey agency is doing more than we are in finding out about the infiltration of salt water into the freshwater supplies; is that true or not? Do you use them or do we have our own people looking at that?

Mr. KIMM. We have a number of contracts with them. They are doing work for us.

Mr. ROGERS. You do it mainly by contract. Do you use any private contractors?

Mr. KIMM. We have used private contractors as well.

Mr. ROGERS. Set forth for us in the record what contracts are existing, what has resulted from them and the cost, the numbers involved.

[See letter dated June 10, 1977, p. 83.]

Mr. ROGERS. What about the record of States planning for deep well injections since the passage of the law. Could you give us a comment for the record on that?

[See letter dated June 10, 1977, p. 83.]

Mr. ROGERS. I would also like for you, for the record, to clarify the Federal facilities issue. In other words, how do you handle Federal facilities? Are we doing anything about Federal facilities or are we exempted? Could you tell us that quickly? Yes?

Mr. KIMM. Yes. We originally assumed that the States would control them. In line with the Supreme Court decision we now assume the States will not and we are working through interagency agreements under which EPA will assure compliance with the Interim Primary Drinking Water Regulations.

Mr. ROGERS. Do you have sufficient statutes and laws to assure the facilities to comply?

Mr. KIMM. I believe so, yes, sir.

Mr. ROGERS. Let us know and set that forth for the record.

[The following information was received for the record:]

EPA'S POSITION RELATED TO FEDERAL FACILITIES

In *Hancock v. Train*, 96 S. Ct. 2006 (1976) and *EPA v. California State Water Resources Board*, 96 S. Ct. 2022 (1976), the Supreme Court held that a State could not exercise jurisdiction over Federal agencies unless Congress "clearly and unambiguously" waived the sovereign immunity of the Federal agencies. In the enclosed memorandums, EPA's General Counsel found that Section 1447 of the Safe Drinking Water Act does not clearly and unambiguously subject Federal agencies to unfettered State jurisdiction. Rather, the General Counsel determined that States could exercise jurisdiction over public water systems within the State which are owned or operated by Federal agencies if the applicable State regulations are no more or no less stringent than national primary drinking water regulations established under Section 1412 of the Act. In light of EPA's requirements for State primary enforcement responsibility (40 CFR sec. 142.10), this determination effectively requires a State to establish a separate set of regulations in order to regulate federal facilities.

Accordingly, the Office of Water Supply has determined that the implementation regulations should be amended to make it clear that States are not *required* to assume jurisdiction over Federal facilities in order to qualify for primary enforcement responsibility (see, 40 CFR sec. 142.3(b)(3)). In fact, the Office of Water Supply does not encourage States to seek primary enforcement responsibility over Federal facilities. Federal agencies have facilities located in many States, and, administratively, it is easier to regulate a system of military installations, for example, through an office in Washington than it is to regulate the system through an *ad hoc* patchwork of State and Federal regulations within the States. However, States may regulate public water systems operated by Federal agencies if they apply standards no more stringent than the national standards.

Mr. ROGERS. What program do you have for controlling sodium in the drinking water? Do you require any notice, or do you have authority to require notice to consumers as to the presence of a concentration of unregulated pollutants in drinking water, or would you need that? I know the actual standards being set, that notice is given. What about those which may appear but are not really regulated? Must notice be given or can you do that?

Mr. KIMM. I will let Tom pick up on the law. Basically what we did in the case of sodium was to put in regulations, recommendations to the States that they all do what many of them now do which is monitor and inform the health community so that they can advise people on sodium.

Mr. ROGERS. Set forth what you plan, and if you need additional authority on that.

[The following information was received for the record:]

EPA CANNOT REQUIRE PUBLIC WATER SYSTEMS TO MONITOR AND REPORT SODIUM LEVELS WITHOUT AN MCL

EPA cannot require a public water system to monitor and report to the public levels of a particular contaminant in drinking water in the absence of a national primary drinking water standard for the contaminant.

Section 1445(a) of the Safe Drinking Water Act authorizes monitoring in the absence of a national primary drinking water standard. However, it only authorizes EPA to require a public water system to report back to EPA—not to the persons served by the system.

Conceivably, EPA has authority to require systems to monitor and report to the public in the absence of a standard under Section 1450 of the Act—the general power

provision. However, the Office of General Counsel does not believe that Congress intended to allow EPA to adopt a new scheme of regulation on the basis of the general powers provision.

Mr. ROGERS. Thank you for being here. We will be in touch with you as we go along. We appreciate your presence today.

The committee stands in recess for 10 minutes.

[Brief recess]

Mr. ROGERS. The subcommittee will come to order, please, continuing our hearings on the amendments to the Safe Drinking Water Act.

Our next witness will be the Honorable William E. Fulford, who is Chairman of the House Natural Resources Committee, Florida State Legislature on behalf of the National Congress of State Legislatures.

We are particularly pleased to have a distinguished member of the State Legislature from my State here, and I am very anxious to have the comments representing the State legislatures.

Mr. OTTINGER. Mr. Chairman?

Mr. ROGERS. Yes.

Mr. OTTINGER. I wonder if I might ask some questions to be submitted to EPA. While I hate to interrupt Mr. Fulford, particularly since he is from the State of Florida and we are anxious to hear from him, unfortunately we have two hearings going on at once. I have been participating in the Energy and Power Subcommittee hearing on automobile efficiency.

Mr. ROGERS. Yes.

Mr. OTTINGER. There is just a considerable amount of concern with the chlorine treatment of water being carcinogenic.

Mr. ROGERS. Causing chloroform, yes.

Mr. OTTINGER. There are other methods that have been advanced, including one by a company in my district that is involved in ultraviolet purification systems that I think has not received adequate emphasis, and the questions that I am submitting to EPA which I hope that we would provide they answer, are directed to their permitting these alternative methods, particularly ultraviolet ozone and heat treatment as methods for purifying water as an alternative.

Mr. ROGERS. Mr. Kimm is just about to leave. I will give you these questions now.

Mr. KIMM. I wasn't leaving.

Mr. ROGERS. I thought you might like to get these questions from Mr. Ottinger.

Mr. OTTINGER. I did not mean to scare him away, but there is evidence of a very marked carcinogenic effect.

Mr. ROGERS. Yes. We got into that.

Mr. OTTINGER. Apparently there was a study made 12 years ago that ultraviolet treatment is effective and does not pose these dangers, and there is considerable evidence that the various Government agencies have been ignoring this alternative, why I am not quite sure.

I would like to make sure that those alternatives are adequately explored.

Mr. ROGERS. The committee would share the concern of the gentlemen from New York, and we will ask that the Agency look into your questions, and also into that particular system that has been proposed that would perhaps handle the matter.

[The following letter and attachments were received for the record:]



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D. C. 20460

June 10, 1977

Honorable Paul G. Rogers
Chairman, Subcommittee on Health
and the Environment
Committee on Interstate and
Foreign Commerce
House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

The following materials are provided in response to questions posed at the oversight hearing for the Safe Drinking Water Act on April 22, 1977. Materials provided to the Committee earlier respond to the other questions posed at the hearing.

Comments on letter from Governor Boren on impact of UIC regulations.

As requested we have reviewed the basis for Governor Boren's letter of April 11, 1977, expressing alarm over the potential serious impact on oil and gas production in Oklahoma if the UIC regulations are promulgated as proposed in the Federal Register.

In checking with Mr. Sam F. Shakely, Manager of Pollution Abatement, Oklahoma Corporation Commission, we learned that these estimates are based primarily on the impact of two provisions of the proposed regulations.

First - Section 146.42(a)(1) and (a)(3).

These sections require surface casing and cement thru 3,000 mg/l TDS and long string cement to prevent migration.

Discussion - Wells drilled prior to 1932 did not use cement and therefore cannot meet this requirement. However, according to Mr. Shakely, they will be able to show non-endangerment.

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Second - Section 146.42(a)(6).

This section requires proper plugging or completion of the wells within a 1/2 mile radius which "in the judgement of the Director" present a potential threat to underground drinking water sources.

Discussion - Plugging and abandonment techniques of the 1930's did not protect fresh water adequately. However, Mr. Shakely states that based on a history of non-contamination, he believes these wells are properly abandoned and plugged. Therefore, the "judgement of the Director" would be that they did not present a "potential threat."

Based on this discussion with Mr. Shakely and the revisions currently being developed, it appears that the adverse impacts caused by the above sections will be significantly reduced or virtually eliminated in the final regulation. Mr. Shakely's statement regarding plugging indicates that section 146.42(a)(6) was misinterpreted.

Thus the assessment of potential dislocation was due in part to a misunderstanding of the regulations as proposed and in part due to some inflexibility in the regulations. In the revisions currently being developed we expect to provide the States with added flexibility to deal with localized conditions wherever it is possible to do so without endangering underground sources of drinking water.

Grants to municipalities in States without primacy

We believe that granting primacy to cities is not practical. In general, cities only have one water system in each city and in large numbers of cases the water supply is a municipal supply run by the city itself. For example, if we granted primacy to 200 cities we might only have 300 public water systems receiving surveillance and many of these public water systems would be operated by another agency of the city with primacy.

A better alternative might be to allow counties to obtain grants for primacy activities in States where EPA has primacy. Many counties have quite effective local health departments and are providing surveillance activities throughout the county now. EPA would have a relatively small number of counties to deal with but the counties could provide surveillance over large numbers of small community and non-community water supplies. These small supplies will be the ones which have most of the problems. In addition, a very small percentage of the water supplies in a county would be owned or operated by the county. This would minimize the problem of the surveillance agency enforcing requirements against itself.

Allowing cities or counties to obtain primacy would require changes to the Act, the Implementation Regulations, and the Program Grant

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Regulations. It would be of short-term assistance to EPA, but we believe it would hinder our long-term goal of granting primacy to States. EPA would prefer to retain primacy until the States are ready to accept it. During the interim period it would be beneficial to be able to contract with selected County Health Departments for negotiated surveillance activities. This would allow EPA to obtain the field services of trained local personnel and still be in a position to eventually grant primacy to the States.

EPA's strategy for helping rural water systems

EPA is in the process of formulating its strategy for dealing with the problem of small (mostly rural) public water systems. Three sets of activities will contribute to this effort.

First, as the Interim Primary Drinking Water Standards take effect in June 1977, public water systems will begin to monitor and report the results of bacteriological and chemical analyses of their water. This will give the Agency a more firm estimate of the extent of the problem. As violations of the chemical standards are discovered, many of the affected systems will be granted variances or exemptions, if the requirements of the Act are met.

Second, EPA is already beginning a major study of the problems of small systems along the lines of the study required by the amendments under consideration by the Committee. We now have underway some preliminary overall assessment of the problem and several contracts to provide better estimates of the costs and applicability of treatment technologies for small systems. Further studies will focus on the nature and magnitude of the problems, alternatives available to affected systems, costs, and options for Federal actions (including various subsidy proposals).

Finally, the Rural Water Survey will improve our understanding of both smaller systems and the drinking water problems of people served by individual water systems.

With the results of these activities, EPA will be able to make informed recommendations to the Congress on ways to deal with this serious problem.

Other questions

The following items are attached in response to other questions:

(1) A copy of EPA's Interim Treatment Guide for the Control of Chloroform and Other Trihalomethanes*, which describes the available treatment technologies for removal of these contaminants from drinking water.

*May be found in the committee's files.

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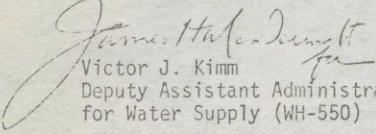
(2) A list of EPA's contracts relating to the extent of groundwater contamination.

(3) A list of the 18 States we plan to designate as requiring a program to control underground injections.

(4) Responses to questions on ultraviolet disinfection.

If you need additional information in any of these areas, please let me know.

Sincerely,



Victor J. Kimm
Deputy Assistant Administrator
for Water Supply (WH-550)

Enclosures

List of Designated States

Arkansas
California
Colorado
Florida
Illinois
Indiana
Kansas
Kentucky
Louisiana
Michigan
Mississippi
New Mexico
New York
Ohio
Oklahoma
Pennsylvania
Texas
West Virginia

Contracts and Grants Relating
to Ground Water Contamination

1. Title: Report to Congress "Waste Disposal Practices and Their Effects on Ground Water"
Contract Number: 68-01-3215
Status: Final Report Completed
Contract Value: \$250,000
2. Title: "A Study to Determine the Nature and Extent of Industrial and Municipal Surface Impoundments on Underground Sources of Drinking Water"
Contract Number: 68-01-4342
Status: Draft Report Due in July
Contract Value: \$225,000
3. Title: "Preliminary Evaluation of Well Injection Practices"
Contract Number: 68-01-4417
Status: Final Report Completed
Contract Value: \$68,000
4. Title: "System for Evaluation of Ground Water Contamination Potential from Waste Disposal Sites"
Contract Number: 68-01-4405
Status: Draft Report Completed
Contract Value: \$31,000
5. Title: "Impact of Abandoned Wells on Ground Water"
Grant Number: R80-388-901
Status: Draft Report Completed
Grant Value: \$142,000

Mr. OTTINGER. I thank the Chairman and Mr. Fulford for his indulgence.

Mr. ROGERS. I thank the gentleman.
You may proceed.

**STATEMENT OF HON. WILLIAM E. FULFORD, ON BEHALF OF THE
NATIONAL CONFERENCE OF STATE LEGISLATURES**

Mr. FULFORD. Chairman Rogers, members of the subcommittee, I am pleased at this opportunity to testify on behalf of the National Conference of State Legislatures on your proposed amendments to the Safe Drinking Water Act.

I am Bill Fulford, a member of the Florida House of Representatives, Chairman of the House Natural Resources Committee and member of the House Appropriations Committee. I have served on these committees through the past 7 years when significant and costly changes have occurred in our public policy relating to the conservation and management of our natural resources.

I am speaking to you today to urge passage of a number of specific sections in H.R. 6160, one of the bills you have before you. Passage of these sections will make my job less difficult when we attempt to implement the safe drinking water program in a fiscally responsible manner.

One reason your more comprehensive bill is so essential is that additional time is at least as important as additional money. In enacting the Safe Drinking Water Act of 1974, Congress intended that States take primary responsibility for the implementation and enforcement of Federal enforceable standards for community drinking water to protect public health and welfare. The costs of State enforcement make it difficult, especially in States with fiscal problems, to push through such legislation without extensive debate. However, if Congress is serious that its intent be carried out, it will have to recognize that the legislative process is often as painful and time-consuming in the States as it is in Washington. The alternative is for Congress to fund the Environmental Protection Agency sufficiently to do the enforcing itself at higher costs and more administrative headaches.

Grants to the States were authorized for those States wanting to assume these primary enforcement responsibilities. The law provides that no State may continue to receive funds unless, within 1 year after the first grant award, the State has established an acceptable program to supervise public water systems and has assumed primary enforcement responsibility. I assure you that the State of Florida and many other States are having difficulty complying with these provisions.

There are good reasons for this. Many States have legislative sessions Constitutionally restricted to 90 days, and several, such as Florida, have even less. A number of legislatures also meet only biennially. This is precious little time for the enactment of enabling legislation for so costly a program that affects so many people's lives and pocketbooks.

The State-Federal Assembly, which is the policy-formulating body of the National Conference, recommends in its policy on safe

drinking water that the act be amended to allow the Administrator to continue providing grants to any State through fiscal year 1979, providing that the State is making diligent efforts to assume primacy or the Administrator has reason to believe primacy will be assumed by September 30, 1979. I urge you to amend section 5 of H.R. 6160 accordingly.

Section 2 of the amendments before you would provide an additional \$132 million over the next 2 years, with \$100 million in State program grants. On the basis of State agency estimates that the annual cost of State public water supervision programs alone will be \$78 million, we can strongly support the authorization levels now in your bill.

On the basis of NCSL policy, however, I urge you to consider extending the authorization period several years, at least to fiscal year 1982. We believe this is imperative if State legislators are to be assured that there is an adequate Federal commitment to this Act. Extended authorization will make it clear that our legislatures will not wind up holding the bag for the full costs of State implementation in a few years.

I believe that many States are facing similar fiscal constraints as Florida. Perhaps Florida will fare better than most in years to come because of our climatic drawing card for tourism. Under our tight budget conditions, however, the need for Federal programs must be sold to the public and the legislature. We will be expanding bureaucracy and raising taxes to pay for the expanded services. Even with our growing urban centers Florida still is a conservative and rurally-oriented State, depending on agriculture to carry a large share of our economy after the tourists leave.

Because of the primary primacy, Florida may take the same position it took on the primacy of OSHA program, Federal OSHA program. Florida said let the Federal Government do it. We will save our money for more important needs of our growth in the State and the people we have to take care of.

I will have to sell your program to my fellow legislators, and without sufficient time and money, that, gentlemen, will indeed be a difficult job. Next Wednesday I have scheduled bills for hearing in my Natural Resources Committee, all containing the language needed for Florida to assume primacy in the safe drinking water program. In addition, I also have daily appropriations hearings with our agencies where we try to find the "new" dollars to fund all the new programs to conserve and protect our resources.

This is the fourth time in recent years that I will be faced with considering a Federal program and pondering its long-term fiscal implications. We reacted to Public Law 92-500 and have been upgrading our disposal systems and implementing other facets of that act.

We put together a revolving loan fund in the State of Florida to us. As the Federal matching share remains nearly the same, the State share has risen five fold over the 1973 appropriation. Implementation of the Clean Air Act has shown similar trends. The solid waste recovery program has floundered since 1972, and our Federal money runs out this fiscal year. This is unfortunate since resource recovery may take the edge off our energy crisis over the short haul.

I point out these programs only as likely examples of the problems I can expect in the future. I urge that you fund the drinking water program at an adequate level and for a period of time sufficient to let us implement and demonstrate the merits of the program at the State level.

Section 3 of the bill speaks to various studies that will be conducted. These studies are to document the economic impact, a critically important step before committing to a course of action.

We know the costs of implementing and complying with Public Law 92-500 to upgrade waste treatment facilities and State and local governments are proceeding on a multi-billion dollar effort to treat waste water. Now we are to begin a new program to upgrade the potable water side of the same water equation. It will be costly, and we all must be aware of the costs we are to incur. The section requiring an economic impact study is an essential amendment to the bill.

The State of Florida has been one of the front runners in water resource planning and program development. In 1972 we passed our Water Resources Management Act. We have the technical staff available with our five regional water management districts to conduct most of this work on contract basis. I believe many States will not be so fortunate as to have a water management system on line. The drinking water portion of our annual hydrology budget is small but vital. We have water quality problems because of salt water intrusion and poor land planning, caused prior to Florida's Land Use Planning Act of 1971, and our Water Resource Act of 1972.

Climatic change may be setting the stage for a "dust bowl 80's." South Florida is in the 14th year of drought. Our municipal users are making every effort to control the management of water to ensure their own supplies. Water management, including safe drinking water, is a tough political area to enter, as I can attest, having been one of the members of the Select Committee on Water Resources Management that drafted and passed the 1972 Water Management Resources Act of Florida, and then trying to get this last year ad valorem taxation through the constitution for the people of the State of Florida. We must enter it. All water-short States will face similar problems as competition causes reuse of water.

Water management to ensure drinking water is expensive. We currently levy ad valorem taxes to fund our water management districts. The Miami-Dade County area has recently passed authority for a \$100 million bond issue to construct a well field and distribution system to supply its needs.

Our research shows that in Florida there are 800-9000 water supply systems that will be affected by the act. I think this is a low estimate. Judging on past performance with the wastewater program, EPA may indirectly require treatment requirement that will cost from 10 percent to 30 percent more than equipment now in use.

When we take all the water supply systems, all the small systems down to 15 connections or 25 residents and require them to meet these new standards, it will cost several hundred million dollars in the State of Florida alone.

I am confident that this is a very conservative estimate. Our outside projection is so frightening I hesitate even to offer it, for fear you will find it incredible. This figure—and I emphasize that it is a maximum—is \$2 billion. It is in addition to our other estimates that it will cost us \$1 million annually for State agency implementation, and \$2.6 million for local governments to enforce the act's requirements. You can see, then, why I am so concerned that there be adequate long-term authorizations and a survey of systems to determine the financial impact of compliance.

Turning to another of our concerns, I would like to point out that drinking water problems are not new to many State legislatures. State health departments have been enforcing drinking water standards for decades, and State lawmakers have authorized, overseen, and funded this activity. Because State legislators have been asked to play such an important role in the prompt and effective implementation of the Safe Drinking Water Act, they deserve representation on the National Drinking Water Advisory Council commensurate with their responsibilities.

I hope you will consider an amendment to specify State legislative membership on the Council.

Finally, let me offer strong support for section 8 of your bill, which would subject Federal facilities to State and local substantive and procedural requirements. Under current judicial interpretation of the law EPA has to stand in for a State in litigation to secure Federal agency compliance with State requirements in question. This is a needless redundancy that drains the Agency's already inadequate staff resources, and it should be remedied with the clear language in your amendment.

In sum, I want to stress again the importance of the more substantive amendments in addition to the simple reauthorizations of this act. Florida has learned—and I hate to keep referring to what we are doing in Florida—but having served in the legislature and starting my ninth year, I am a little bit proud sometimes, but we have learned we can not maybe date programs from the State level down to our local governments without fully funding them.

To mandate programs to local government is, without proper funding, acting in an irresponsible manner. Unless States are given more time, more authority and more funds to implement their programs, the burden will be on EPA to carry out the mandate of this law. I am sure this eventuality is something the Agency, the States, and you yourselves would like to avoid. I therefore urge you to give serious consideration to a favorable report on H.R. 6160.

I think Congressman Rogers' amendments deserve your serious consideration and a favorable report.

Thank you.

[The NCSL policy statement follows:]

POLICY STATEMENT—NATIONAL CONFERENCE OF STATE LEGISLATURES SAFE DRINKING WATER ACT AMENDMENTS

In enacting the Safe Drinking Water Act of 1974, Congress intended that States take primary responsibility for the implementation and enforcement of federally-enforceable standards for community drinking water to protect public health and welfare. Congress also intended States to assume primary responsibility for regulating underground wastewater injection to protect groundwater.

Grants to the States were authorized for those States wanting to assume these primary enforcement responsibilities, but the law provides that no State may continue to receive funds unless, within one year after the first grant award, the State has established an acceptable program to supervise public water systems and has assumed primary enforcement responsibility.

Most States, particularly those with biennial legislative sessions, will not be able to enact the necessary enabling authorities to assume these responsibilities, however. These States face the prospect of Federal enforcement after the expiration of their first year's grant. Also, Congressional authorizations for these grants expire in 1977, and there is some question among the States as to how long Federal assistance will continue and whether it will be adequate to cover State responsibilities.

Drinking water problems are not new to many State legislatures. State Health Departments have been enforcing drinking water standards for decades, and State lawmakers have authorized, overseen, and funded this activity. Because State legislators have been asked to play such an important role in the prompt and effective implementation of the Safe Drinking Water Act, they deserve representation on the National Drinking Water Advisory Council commensurate with their responsibilities.

NCSL therefore urges that:

1. Congress amend P.L. 93-523 to permit the Administrator of the U.S. Environmental Protection Agency to continue providing grants to any State through fiscal year 1979, provided the State is making diligent efforts to assume primary enforcement responsibility or the Administrator has reason to believe that the State will assume such responsibility by September 30, 1979.

2. Authorizations for grants to the States be extended at adequate levels through fiscal year 1982.

3. The Administrator be required to approve or disapprove a State grant application and notify the State within 45 days after receipt of such application, or by the beginning of the new fiscal year, whichever is earlier.

4. Authorizations for grants to develop and demonstrate new drinking water technology be extended at adequate levels through fiscal year 1982.

5. Authorizations for research, technical assistance, information, and training of personnel be extended at adequate levels through fiscal year 1982.

6. Appropriations be made for the Environmental Protection Agency to guarantee loans to enable small public water systems to meet national drinking water regulations.

7. Federal agencies operating public water supplies be required to comply with all applicable State laws, rules, and regulations to the same extent as non-federal suppliers of public drinking water.

8. States, in enforcing State program requirements of Federal agencies, be allowed to initiate legal action in State courts.

9. Adequate State legislative representation be specifically assured on the National Safe Drinking Water Advisory Council.

Upon its adoption by NCSL, this policy shall supercede existing NCSL policy on the National Safe Drinking Water Advisory Council.

Mr. ROGERS. Thank you for a very helpful statement. I think the committee would be inclined to give additional time where there is a showing of good faith effort, as you have suggested.

Mr. FULFORD. We are concerned about the appropriations running out along the line being left holding the bag.

Mr. ROGERS. I do think so, we normally write bills for about 3 years, every 3 years. I think we could indicate we intend to continue and give an additional 3 years of authorization of the funding. Would that meet your need so we show we are at least looking at it?

Mr. FULFORD. This would be very helpful, Chairman Rogers, in attempting to sell this program to the State legislature. Many of the legislators I have spoken with in the State of Florida say let's save our money, let the Federal Government come in, let EPA do it.

Mr. ROGERS. What would be your feeling for those States which may not want to assume primacy? I hope there will be none, of

allowing arrangements to be made for municipalities to carry out the functions or county governments, if they desire.

Mr. FULFORD. If the funding would be available, then I think this would, especially in the large metropolitan areas, would be an excellent idea, Chairman Rogers.

One of the problems, as you well know in Florida, however, without the funding we have a Constitutional limitation on millage for ad valorem taxes.

Mr. ROGERS. Sure. Thank you.

Mr. McDougal, delighted to see you before the committee, too, and we know of the good work you do for the organization.

Dr. Carter?

Mr. CARTER. Thank you, Mr. Chairman.

I was very interested in your statement. What part of Florida are you from?

Mr. FULFORD. I am from Orlando.

Mr. Carter. Down in Orange County?

Mr. FULFORD. Yes, sir, Mickey Mouse land also.

Mr. Carter. Have you had problems with your drinking water in Florida over the years?

Mr. FULFORD. Quality or quantity?

Mr. Carter. Quality.

Mr. FULFORD. Yes, sir. In the Dade County area I understand there has been some very high chloroform counts. This is why they have had to go to the interior about 30 miles.

Mr. CARTER. How do you account for the high chloroform counts there?

Mr. FULFORD. Tremendous growth without proper planning. When we started back in the 1950's and 1960's with the very great growth, without any planning on how the sewage treatment would be affected, they used canals as conveyance systems. We found some terrible instances down there. So, the Federal law on sewage treatment plants I think was an excellent law to come along before we were cranked up entirely.

Mr. CARTER. Yes, sir. Have you received considerable assistance from EPA in helping to improve your water system?

Mr. FULFORD. I don't believe I am properly qualified to answer that at this time, because our present water systems are based on local needs and municipalities, counties, and private water systems. It's been handled through our county health departments and municipal health departments as well as our Division of Health.

Mr. CARTER. Yes, sir. I believe that most of the funding has been toward sewage disposal systems, which in turn affect the quality of the water.

Mr. FULFORD. Yes, sir. We received a great deal of help along these lines.

Mr. CARTER. That's right.

Mr. FULFORD. And some hindrance also.

Mr. CARTER. Then again the training center for water plants, you think that is vital.

Mr. FULFORD. Yes, sir. Florida adopted a certification program for water operators.

Mr. CARTER. Yes, sir, we have that too and I think it's vital. I think fees should be paid for these individuals as the bill provides. They need to be carefully trained to help assure that our water is pure.

We did have a little outbreak of typhoid there in one area of Florida a few years ago, as I recall.

Mr. ROGERS. In 1973?

Mr. CARTER. Yes, sir, in a migrant camp, I believe. It is the only incidence of anything like that I have heard, and I have never been afraid of the water in Florida.

Mr. FULFORD. Thank you. I guess the lesson to be learned there is to stay out of the migrant labor camps. Overall we have a very fine aquifer system; our major aquifer systems are the Florida and Biscayne and in the Panhandle we have a minor aquifer.

Mr. CARTER. You say you have had a drought in Southern Florida for 14 years; is that correct?

Mr. FULFORD. Yes, sir; we are far below the average rainfall.

Mr. CARTER. That is around the Everglades?

Mr. FULFORD. Yes, from Lake Okeechobee to the south, generally speaking. I believe we are running something like—off the top of my head—10 inches per year in average rainfall.

Mr. CARTER. Has it affected your crop production?

Mr. FULFORD. It has affected it to some degree. In the area when they have been able to get into drainage canals, and to irrigate, we have been able to do that in the central portion of the State where we have lakes available, in the agricultural sections, and we have been irrigating from the lakes.

Of course, some of the large grove areas in Central Florida do have wells down to the aquifer.

Mr. CARTER. I certainly would hope we don't have this problem over the country as you have had down there, but it seems many parts of the country are affected.

What kinds of trained personnel do you think are most needed and should be given special consideration under the authority of this bill?

Mr. FULFORD. I would think, sir, that possibly the water plant operators, and, then, of course, the training for the scientific inspection of the water quality.

Mr. CARTER. They are the ones who can find this chloroform in the water or carbon tetrachloride or lead or whatever.

Mr. FULFORD. Yes, sir.

Mr. CARTER. Thank you for an excellent statement.

Mr. FULFORD. Thank you.

Mr. ROGERS. May I just say Florida has had some problems with its drinking water, without question, as Chairman Fulford has said. That 1973 outbreak which the gentleman from Kentucky mentioned, we went down there.

Mr. CARTER. The reason I knew, it was you who brought it up before this committee.

Mr. ROGERS. That's right. The committee looked at that. It affected about 200 people, and then later than that the Miami Beach City Commission had to issue a boil water situation. Then we have had the septic tank problems which contaminated the water system in

another part of the State causing about 1,200 persons to become ill, and over the last 18 months there have been 40 boil water notices in Florida.

Then, as you have mentioned, Miami particularly has had a problem with this chlorination because of the chloroform.

Mr. FULFORD. It has about the highest level of chloroform I think of all 80 cities.

Mr. CARTER. If you would yield?

Mr. ROGERS. Yes, sir.

Mr. CARTER. I am about to take my vacation in Florida. I don't know what I am going to do now.

Mr. ROGERS. We will get you some bottled water. But, I do think it is a problem that we need to meet, but we will get you to the right places where you will be safe.

I commend you, Mr. Fulford, for the fine effort you have made personally in your committee and the work of the Florida Legislature in trying to prepare the State for the problems you see coming up.

Mr. FULFORD. I think your leadership will be needed to articulate the problem we have, and the need for Florida to assume primacy in enforcement. So we look forward to cooperating with you in any way. Your suggestions have been most helpful, and I think the committee will be receptive to your suggestions.

Thank you so much for your appearance here today. We are grateful for your giving of your time to be here.

Thank you.

Mr. FULFORD Thank you, Mr. Chairman.

Mr. ROGERS. Our next witness is Mr. John E. Vogt of the Michigan Department of Public Health, on behalf of the Congress of State Sanitary Engineers.

Mr. Vogt, we welcome you to the committee. We appreciate your being here. Your statement will be made a part of the record in full, and if you could summarize it for us and give us the high points, it would be helpful.

STATEMENT OF JOHN E. VOGT, CHAIRMAN, WATER SUPPLY COMMITTEE, CONFERENCE OF STATE SANITARY ENGINEERS

Mr. VOGT. Mr. Chairman and Members of the committee, it is indeed a privilege to appear before this distinguished committee which has such an impact on the direction of Federal legislation in the area of environmental and public health. We are here today on a matter of continuing environmental health concern, that of assuring safe drinking water for this Nation.

I am John E. Vogt, past chairman of the Conference of State Sanitary Engineers and currently chairman of the Water Supply Committee. I have been designated by the Chairman of the Conference to represent and speak on behalf of the membership. I had the pleasure of appearing before this committee during the time that Public Law 93-523 was being considered in bill form.

In accordance with your instructions, I will present a shortened version of my testimony, and, Mr. Chairman, I appreciate your entering my complete statement in the record.

Mr. ROGERS. Yes; without objection it will be done [see p. 99.].

Mr. VOGT. The United States Environmental Protection Agency and the States have had limited opportunity to get into the implementation of this program in depth to this point in time.

However, to date we are pleased with the working relationship which has developed between the Agency and the States in getting this national program off the ground.

As a bit of background, we in the States have been deeply involved in reviewing our present State legislation and regulations and determining whether our present laws and regulations meet the criteria established in the Federal law, and the regulations adopted by the Administrator.

The regulations for program grants and the implementation of State public water supply supervision programs were promulgated in January, 1976. Thus, the States have not had much time to move very far in getting our legal authority in compliance with Federal requirements.

During the past year, the States have worked to complete the Federal requirements. As you know, in some States the legislatures meet on a biennial basis, and many of the States that need additional legal authority have been unable to obtain it.

Further, in those States in which the legislature meets annually, it's just not as simple to have a bill introduced, thoroughly considered and debated and passed at the first session in which the legislature considers it.

Also, thereafter regulations must be developed and promulgated, and in most of our States the rule promulgation process is much more complex than merely publication in the Federal Register.

Therefore, of the 48 States that applied for the initial program grant and indicated they would make every effort to assume primary enforcement responsibility within a year from receiving the grant, only 3 States, Connecticut, Oklahoma, and Louisiana qualify for primacy at this time.

Mr. Kimm has also brought out other figures as far as attainment of primacy is concerned, and we agree with the figures that have already been put into the record, sir.

After reviewing H.R. 5829 and H.R. 6160, it is apparent that these bills address only the funding authorizations of the Act. On the other hand, H.R. 5830 and H.R. 6159 are more comprehensive, and include extending of the funding authorizations as well as addressing certain very important substantive issues which are most important to the States in implementing the Federal Act, and hopefully are not controversial. Mr. Chairman, we support the more comprehensive bills, sir.

The funding authorizations are of paramount concern to the State water supply agencies. However, some of the substantive issues are so very necessary in order to make the Federal financial assistance workable to permit a State to be eligible for program grants, that these rank in importance with the grants themselves.

Therefore, we strongly support the two more comprehensive bills.

Turning to the funding authorizations for program grants under section 2, for public water system supervision, and underground water source protection programs, in H.R. 5830 and H.R. 6159 we strongly support the proposed levels.

We, of course, would like to see the extension for 3 years rather than 2. However, the 2 year extension signals a continuing commitment of financial assistance to the States.

As the Chairman pointed out earlier when the gentleman from Florida testified, I think, sir, if in some way it could be clearly indicated that it is the intent of Congress to continue funding program grants, even though you don't authorize further extension at this point in time than contained in the bills, this would be very helpful. I have had such questions posed to me by our Governor's office, by members of the legislature, and they look at the terminal date and consider that to be the end of any financial assistance. Perhaps this point could be covered in the committee report accompanying the bill.

Mr. ROGERS. Certainly.

Mr. VOGT. With regard to the studies provided for in section 3 of the bills, these are far-reaching and comprehensive. We believe they will be costly and can foresee that the States may be involved in doing some of the leg work. If this is so, it will be important for EPA to provide resources to the States, that is staff and financing, to assist in obtaining the necessary data.

The Conference was particularly pleased with the language in section 1442, when testifying in support of the legislation, in bill form, especially the subparagraph that focuses on training persons for occupations involving the public health aspects of providing safe drinking water.

It is most important in many of our program elements that we have individuals who are especially well grounded academically.

To date, EPA has done nothing to carry out this provision of the act. No funds have been allocated to the universities to provide the traineeships which, among other things, would be most important to recruit the undergraduate civil engineering student to select environmental engineering during his junior or senior year, and then go on for a master's degree with emphasis on water supply engineering with the assistance of a traineeship.

During the last approximately 9 months we have employed eight engineers in our public water supply program in Michigan. Not one of these has a master's degree, because we just have been unable to find any. So as an employer intent upon building quality into our staff, this is disturbing.

Thus, we are most pleased with the manner in which section 4 of H.R. 6159 addresses the subject.

We are especially supportive of the proposed amendments to section 1443 of the act contained in section 5 of the bills dealing with grants for State programs.

I mentioned earlier that many of the States could need changes in their legislation and regulations, and have been unable to obtain such changes up to this time.

In most instances, it's not a lack of will or interest, but rather merely a matter of not enough time.

Currently, a provision in section 1443 of the act prohibits the Administrator from making a program grant to a State for a period of more than 1 year after the date of the State's first grant, unless the State has assumed primary enforcement responsibility.

The status of the States on primacy has already been discussed. Thus, it is most important that appropriate modification be made in the language to give the Administrator of EPA latitude to make grants for periods beyond the initial grant period, even though a State is not in a position to assume primacy.

We believe the language in section 5 of the bill solves this problem very adequately. The only modification we would recommend is extending the authority for 1 additional year, i.e., through fiscal year 1979.

This recommendation is based upon recent information I have received from my colleagues which suggests that some may need 1 more year to either mesh with their legislative sessions or to resolve other issues and concerns raised by their policy boards or commissions, or the legislatures.

We are pleased with the language specifying that the Administrator must notify the States within 90 days after receipt of a grant application, or not later than the first day of the fiscal year to which the grant applies.

We feel certain that without continued Federal financial assistance momentum which has been generated will be short-lived, and the States will not be able to continue their efforts to assume primacy.

Recently the States have been advised of an opinion of the attorneys in EPA that if our State law or regulations are more restrictive than the Federal act and regulations, then we cannot apply our regulations or our requirements to Federal agencies operating water supply installations within our State boundaries.

We are very pleased to note that section 8 of the bill rectifies this matter, and we strongly support the provisions.

One further concern of the Conference has to do with the authority of a State to enforce its requirements in a State court against a Federal agency which for some reason or other does not comply with State requirements on a voluntary basis rather than going into a Federal court.

Section 8 of the bill very adequately covers this point.

My complete statement recommends consideration of one additional amendment based upon a questionnaire I circulated among my colleagues. This has to do with the carryover of program grant funds into the next fiscal year and would allow some flexibility so that instead of hurriedly obligating funds by the end of the fiscal year, better planning could go into the expenditures to assure a wiser and more judicious budgeting and use during the following fiscal year.

In conclusion, the Conference of State Sanitary Engineers strongly supports H.R. 5830 and H.R. 6159. We would recommend adding the couple of minor modifications discussed in our testimony

Thank you, Mr. Chairman.

[Testimony resumes on p.113.]

[Mr. Vogt's prepared statement and attached resolution follow:]

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TESTIMONY OF

JOHN E. VOGT

ON H.R. 5829, H.R. 5830, H.R. 6159 AND H.R. 6160

BEFORE THE

SUBCOMMITTEE ON HEALTH AND ENVIRONMENT

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

APRIL 22, 1977

Mr. Chairman and members of the committee, it is indeed a privilege to appear before this distinguished committee which has such an impact on the direction of federal legislation in the area of environmental and public health. We are here today on a matter of continuing environmental health concern, that of assuring safe drinking water for this nation.

I am, John E. Vogt, Past Chairman of the Conference of State Sanitary Engineers and currently Chairman of the Water Supply Committee. I have been designated by the Chairman of the Conference to represent and speak on behalf of the membership. I had the pleasure of appearing before this committee during the time that PL93-523 was being considered in bill form.

I have been in the field of public health and environmental engineering for my entire professional career. I am employed by the Michigan Department of Public Health as

Chief of the Bureau of Environmental and Occupational Health, and have been in this position for 17 years. Prior to that I was a sanitary engineer assigned to the department's community water supply program for 20 years.

The Conference of State Sanitary Engineers comprises the chief sanitary engineering official of each of the departments of public health, and the chief officials of other agencies assigned environmental responsibilities of the states, territories and possessions of the United States. Among responsibilities for programs aimed at a quality environment and protecting the health of people, our members are responsible for the administration of the public water supply programs in their respective states and thereby have close day-to-day responsibility for implementation of the national safe drinking water program under PL93-523. Thus, we are vitally interested in these bills which propose to amend the Federal Safe Drinking Water Act. Our Conference has been a viable organization since its founding in 1920.

The Environmental Protection Agency and the states have had limited opportunity to get into the implementation of this program in depth at this point in time. EPA has of course adopted the Interim Primary Drinking Water Regulations and is moving ahead with other elements of the program in a collaborative manner with the states. To this point we are pleased with the working relationship which has developed between the Agency and the states in getting this national program off the ground. The Administrator has listened to the advice of the National Drinking Water Advisory Council. Although we interpreted the intent of the Congress that state water supply programs would be represented by a minimum of two members on the Council we actually have only one of our members with day-to-day program responsibility. We are hopeful that in the future the Administrator will see fit to add a second member from CSSE to the Council.

CSSE has been and continues to be represented on several advisory committees within the Agency on various elements of the program. We believe this is most important in order to bring to the attention of EPA staff the views, observations, experience and recommendations of those of us who have managed public water supply programs for many years. Although this would seem like a sensible approach, it is not necessarily mandated in the act and we would like to take this opportunity to commend the Administrator and his key staff people in establishing such advisory committees and seeking out the experience of knowledgeable state administrators.

To this point in time the states have been deeply involved in reviewing their present state legislation and regulations and determining whether their present laws and regulations meet the criteria established in the federal program. For example, in the case of my own State of Michigan, we determined that it would be necessary to change our state law and add more specificity to it as well as certain provisions to conform with either the philosophy or the particular provisions of the federal law. An appropriate bill was introduced into the Michigan Legislature last spring which was passed near the end of the session and signed by the Governor to become Act 399, P.A. of 1976. At this time we are in the process of preparing rules to implement this law. We also are currently conducting an inventory of the noncommunity public water supplies and recruiting to find competent sanitary engineers and environmental sanitarian specialists to further implement the program.

My colleagues in the other states are at about the same point of development, although many have not progressed as far as we because of various valid reasons and a few are further along than we. For example, in some states the Legislatures meet on a biennial

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basis and many of the states that need additional legal authority have been unable to obtain it. Of the 48 states that applied for the initial program grant and indicated they would make every effort to assume primary enforcement responsibility within a year from receiving the grant, only three states -- Connecticut, Louisiana and Oklahoma -- qualify for primacy at this time. Our best estimates are that 29 states have the necessary legislative authority with 19 of these requiring new or modified regulations. Thus, by June 24, ten states likely will be ready to accept primacy. It is estimated that six states will not seek primacy and 15 more are not at all close to taking primacy for various reasons.

After reviewing H.R. 5829 and H.R. ~~6159~~⁶¹⁶⁰, it is clear that these bills are identical and address only the funding authorizations of the act. On the other hand, H.R. 5830 and H.R. ~~6160~~⁶¹⁵⁹ are more comprehensive and include extending the funding authorizations as well as addressing certain very important substantive issues which are most important to the states in implementing the federal act and hopefully are noncontroversial.

The funding authorizations are of paramount concern for the state water supply agencies. However some of the substantive issues are so very necessary to permit a state to be eligible for program grants to the end that these rank in importance with the grants themselves. Therefore we would strongly support the two more comprehensive bills.

Turning now to H.R. 5830 and H.R. ~~6160~~⁶¹⁵⁹ we are generally pleased with the proposed extensions and levels of the funding authorizations. It is noted that funding for research is not addressed in this bill. I understand that this will be considered by another committee and hopefully this information is correct and that funding authorization for research will in fact be continued. There has been a dearth of research in the field of water supply over the past 20 years and there is great need for basic research. We note that the funding authorizations for Sec. 1444 covering "Special Study and Demonstration Project Grants" likewise is not included in the bill. Again these projects are crucial and pick up the findings coming out of the basic research to evaluate such findings on a

plant scale basis. We assume this matter will be considered by the same committee handling research funding.

Turning to the funding authorizations for program grants under Sec. 1443 for public water system supervision and underground water source protection programs we strongly support the proposed levels. We of course would prefer to see the extension for three years rather than two, however the two year extension signals a continuing commitment of financial assistance to the states.

In preparing for this testimony I sent a questionnaire to my colleagues in the other states. One of the questions I posed was: "What do you estimate will be the total annual program costs (state plus federal dollars) including surveillance, enforcement, laboratory and other costs to fully implement PL 93-523 in your state, exclusive of the underground injection control program?" When the returns were tabulated the total amount was \$78.0 million annually. When we get further into the program this figure may be adjusted slightly -- up or down -- but at this time it will provide the committee with our best estimate as to a target figure. It further supports the levels of funding authorization contained in the bill.

With regard to the studies provided for in Sec. 3 of the bill these are far reaching and comprehensive. We believe they should probably be made, however, it needs to be recognized that they will be costly and EPA will no doubt require special funding to carry out the various elements of the studies. We can foresee that the states may be involved in doing some of the leg work on the element in Sec. 3(b) of the bill dealing with the availability of adequate and dependable supplies of safe water. Likewise, under Sec. 3(a)(i) regarding anticipated costs of compliance -- this could be very costly in terms of staff time and dollar cost considering the several hundred thousand noncommunity water supplies unless some kind of an average figure is used based upon a pilot survey and then this applied to the total number. It will be important for EPA not to expect states to reassign personnel from surveillance and monitoring activities, but rather to provide

resources, staff and financing to assist in obtaining the necessary data. We assume the particular element dealing with the adequacy and dependability of drinking water supplies is a gross study possibly by region of the country and not, for example, an investigation of the adequacy of water in a particular river basin in Michigan or groundwater aquifer in a certain part of the state.

The Conference was particularly pleased with the language in Sec. 1442 when testifying in support of the legislation in bill form prior to its adoption as PL93-523 and especially the subparagraph that focuses on training persons for occupations involving the public health aspects of providing safe drinking water. We interpreted this, and believe it was your intent, that this language would authorize providing funds to the universities for fellowships or traineeships for students to earn Masters Degrees in environmental engineering and related fields of water supply to prepare them for employment by agencies responsible for implementing the program.

I am sure you can understand that this is a major task finding people who are trained and qualified to work on the many facets of this national program. This is not only a problem for the states but also the water suppliers and the EPA. It is most important in many of our program elements that we have individuals who are especially well grounded academically so that we can build on this strong foundation through in-service and on-the-job training to handle the many complexities of the more sophisticated elements of the program. Such an approach had proven very helpful under the Water Pollution Control Act, and our Conference testified in strong support of traineeships and fellowships at the universities in the field of water supply.

To date EPA has done nothing to carry out this provision of the act. No funds have been allocated to the universities to provide the traineeships which, among other things,

would be most important from a recruitment standpoint. For example, there would be an incentive for undergraduate civil engineers to focus on the field of water supply engineering recognizing that there was financial support available for likely candidates to go on for a Masters Degree in environmental engineering with specialization in water supply. The carrot would be there to attract the undergraduate civil engineering student who was undecided as to his specialized field to select environmental engineering during his junior or senior year and then go on for the Masters Degree with the assistance of a traineeship. The extreme shortage and, in fact, almost total lack of candidates coming out of Masters Degree programs in the engineering schools throughout the nation is hampering our recruitment programs when we are so desperately in need of well trained people for this complex program. During the past year of the eight engineers we have employed in our public water supply program, not one has a Masters Degree simply because we have been unable to find any. As an employer intent upon building quality into our staff, this is disturbing. I am not taking anything away from the fine young men we have recruited with Bachelors Degrees, however when it comes to getting deeply involved in, for example, the technology of water treatment, they have not had the depth in their undergraduate curriculum. I have discussed this with the major environmental engineering professors in our Michigan universities and they have the necessary facilities and staff and fine curriculum to accept students in such postgraduate programs but they are not getting the students, in large measure because of the considerable cost of higher education. Thus, we are most pleased to note that Sec. 4 addresses this subject loud and clear and specifically requires that the Administrator shall make grants to educational institutions to provide such postgraduate training.

We are especially supportive of the proposed amendments to Section 1443 of the act contained in Sec. 5 of the bill dealing with grants for state programs. I mentioned

earlier that many of the states do need changes in their legislation and regulations and have been unable to obtain such changes up to this time. In most instances it's merely a matter of not enough time. This of course impacts adversely upon the state being able to accept primary enforcement responsibility for the program. Currently a provision in Section 1443 prohibits the Administrator from making a program grant to a state for a period of more than one year after the date of the state's first grant unless the state has assumed primary enforcement responsibility. For various reasons the initial program grants were not made until May or June of 1976. Michigan and most of the states in Region V received their program grants the latter part of July, 1976. The problem is that most initial state grant periods will expire in May, June or July of 1977. By that date there will be very few states in a position to assume full primary enforcement responsibility for public water supply systems within their state. As stated earlier, there are only three states that presently qualify for primacy. Our figures indicate that by June 1977 there may be only ten states eligible for primacy. The status of the other states was discussed earlier in this statement.

Thus, it is most important that appropriate modification be made in the language to give the Administrator of EPA latitude in making grants for periods beyond the initial grant even though a state is not in the position to assume primacy. Obviously there must be some guidelines provided by the Congress for the Administrator in making such a judgment. We believe the language in Sec. 5 of H.R. 5830 and H.R. ~~6159~~⁶¹⁵⁹ solves this problem very adequately. The only modification we would recommend is extending the authority in line 23, page 6, to one additional year to September 30, 1979. Recent information I have received from my colleagues suggests that some may need one more year to either mesh with their legislative sessions or to resolve other issues.

We feel certain that without continued federal financial assistance the momentum which has been generated will be short-lived and the states will not be able to continue their efforts to assume primacy. Many of the federal funds already committed to the state program effort will be lost and EPA will require funds to take over primacy and the entire program will receive a set back.

The matter of notification of the states by Regional Administrators of approval or disapproval of grant applications and making a grant award has been particularly troublesome to the states. The problem has been with the Administrators' grant offer being received several months into the new fiscal year, thereby impacting on the ability of the state to judiciously obligate the funds prior to the end of the fiscal year. We are very pleased with the language in Sec. 5 of the bill which provides a remedy for this problem.

We support Sections 6 and 7 of the bill extending a deadline in connection with the underground injection control program and the terminal date for a certificate of need under the section of the act assuring the availability of chemicals needed for water treatment.

Recently the states have been advised of an opinion of the attorneys in EPA regarding the application of state requirements for the safe drinking water and underground injection program being applicable to federal agency installations. We have been informed that if our state law or regulations are more restrictive than the federal act and regulations then we cannot apply our restrictions to federal agencies operating water supply installations within our state boundaries. The clincher of the legal opinion is that if under our program we cannot carry out primary enforcement responsi-

bility of the federal act over federal installations within our state, this automatically makes us ineligible for primary enforcement responsibility of the entire federal program for all water suppliers in our state. The rationale behind this is most difficult to understand, but in any event, it is most important that the law address this matter and correct the situation. It is a well known fact that in the case of any military base there are many local citizens that work as civilians on the base. If it so happens that the state desires to be slightly more restrictive in a certain area of the program and by so doing the citizens of the state are afforded a slightly higher degree of protection by the community water supply they are served in their home, but when they enter the boundaries of the military base or any other federal installation they then become second class citizens. This does not seem to be right and Sec. 8 of the bill rectifies the matter and we strongly support its provisions.

We do raise a question about the proposed amendment to the definition of "person" on page 9 beginning on line 18. It properly adds "Federal agency" in keeping with the other modifications, however it deletes "partnership" which is currently included in the definition of "person" in the act. We believe that this may have been inadvertently deleted as we believe partnerships should be covered by the act and therefore we recommend it be reinserted in the bill.

One further concern of the Conference has to do with the authority of a state to enforce its requirements in court against a federal agency which for some reason or another does not comply with state requirements on a voluntary basis. We believe it is important that we should be able to initiate and retain legal jurisdiction in a state court and that the federal agency would not be able to use as its defense that we were operating in the wrong court. We are addressing this issue because the present law is silent on

state enforcement against federal entities and it is our understanding that under such circumstances the U.S. Courts automatically have jurisdiction. We believe it should be clear that if the state needs to enforce a provision of its requirements it may do so in a state court and there should be a prohibition to removing the action from a state court to a court of the United States. Sec. 8 of the bill very adequately covers this point.

We are supportive of Sec. 9 which requires the Administrator to prepare an economic assessment respecting a proposed regulation. It would appear that this emphasizes the repeated cautions in PL93-523 and the Committee Report that the Administrator shall "keep costs in mind" in implementing the act and in developing regulations. This section extends the general cautions and adds specificity. We are particularly impressed with subparagraph (13) on page 13 which focuses on comparative costs to achieve incremental levels of enhancement of protection. To provide that last small incremental increase of protection can add significantly to the overall costs of a project or compliance with a regulation but often may not buy that much added protection.

We would recommend consideration of one additional amendment. This stems from a questionnaire I circulated among my colleagues in the states. It was noted that some of the states are not going to be able to obligate all of the federal program grant monies and that this would appear to be somewhat of a problem during the next couple years. This comes about for a variety of reasons inherent in implementing a new regulatory program. Certainly a major difficulty in some of the states is the recruiting of qualified staff. With all the states and EPA seeking trained people, competition is great. Therefore, we would recommend that authority be granted for the states to carry over program grant funds from one fiscal year to the next, through FY 80.

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We do not believe that each year it would be expected that each state would be carrying over funds; rather it would occur once or twice in any state over the next three years and in some states possibly not at all. The flexibility however would be there so that instead of hurriedly obligating funds near the end of a fiscal year better planning could go into the expenditures to assure a wiser and more judicious budgeting and use during the following fiscal year. By FY 80 we believe the state programs will be more stabilized and expenditures following more closely to plans envisaged during budget preparation.

Mr. Chairman, with your permission I would like to enter into the record a resolution adopted on April 6, 1977, at the annual meeting of the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers pertaining to needed amendments to the Safe Drinking Water Act. This Board represents the ten states surrounding the Great Lakes and Upper Mississippi Valley. The resolution addresses many of the points covered in H.R. 5830 and H.R. ~~6160~~ ⁶¹⁵⁹.

In conclusion, the Conference of State Sanitary Engineers strongly supports H.R. 5830 and H.R. ~~6160~~ ⁶¹⁵⁹. We would recommend adding the small number of modifications discussed in our testimony.

Thank you, Mr. Chairman, for affording the Conference this opportunity for providing testimony on this very significant piece of legislation. I will be pleased to respond to any questions from the committee.

Attachment

RESOLUTION
GREAT LAKES-UPPER MISSISSIPPI RIVER BOARD OF STATE SANITARY ENGINEERS
FEDERAL SAFE DRINKING WATER ACT

WHEREAS, the Congress enacted U. S. Public Law 93-523, the Federal "Safe Drinking Water Act", to assure a uniform program for upgrading the nation's public water supplies for the provision of safe and adequate drinking water for its citizens; and it is believed the basic intent of Congress was to assure a leadership role for the act's implementation by the states in a collaborative and cooperative effort with the U. S. Environmental Protection Agency, through that agency's coordination of the program; and

WHEREAS, forty-six states in the country have indicated a positive desire to assume primary enforcement responsibility of PL 93-523 and, through Federal assistance in the form of public water supply system supervision grants, those states have been working diligently toward upgrading state statutory and regulatory authorities and expanding professional staffs to take on the implementation of the various facets of this important environmental health legislation; and

WHEREAS, in developing and expanding the respective state programs, the states have been counting on and utilizing the Federal program grants which, according to the provisions of PL 93-523, are due to expire at the end of Fiscal Year 1977; furthermore, other provisions of the Federal act which are just now surfacing as state programs are being readied for the assumption of primary enforcement responsibility are of concern to the states; it is important that these provisions be modified by Congress to permit and assure the continued high level of state participation in this national public water supply supervision program; now therefore be it

RESOLVED, that the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers representing the 10 states around the Great Lakes and Upper Mississippi Valley, at its annual meeting April 4-6, 1977, hereby goes on record to urge Congress to consider as soon as possible, legislation to amend certain provisions of Public Law 93-523 as follows:

- a. Under the provisions of the act, the program grant funding authorizations expire at the end of fiscal year 1977. The states have planned on and need this financial assistance and Congress is urged to extend the funding authorization for program grants at increasing levels for a period of at least 3 years.
- b. Many of the states require changes in their legislation and administrative regulations to assume primacy. The majority have been unable to complete such changes up to this time and this impacts adversely upon the state being able to accept primary enforcement responsibility for the program. A provision in Section 1443 prohibits the Administrator of EPA from making

a program grant to a state for a period of more than one year after the date of the state's first grant unless the state has assumed primary enforcement responsibility. Very few states will be able to assume primacy at the expiration of that one year period. Thus, it is most important that appropriate modification be made in the language to give the Administrator of EPA latitude in making grants for periods beyond the initial grant even though a state is not in the position to assume primacy, providing that the Administrator is satisfied that the state is making a sincere effort and is progressing toward the assumption of primary enforcement responsibility. Therefore, Congress is urged to amend Section 1443 of the act to permit the Administrator of EPA to waive the prohibition in the last sentence of paragraph (2) of section 1443(a) through Fiscal Year 1979.

- c. States have been informed, based on an opinion of U. S. EPA legal counsel, that if an individual state program contains provisions which are more restrictive than the Federal act and regulations, the state would be unable to apply its requirements to Federal agencies operating water supply installations within the state boundaries. Accordingly, if under an individual state program, that state cannot carry out primary enforcement responsibility of the Federal act over Federal installations, the state automatically becomes ineligible for primary enforcement responsibility of the entire Federal program for all water supplies in that state. Therefore, it is recommended that all state requirements regarding the provision for safe drinking water and the underground injection program be made to apply to Federal agencies to the same degree and extent as to non-Federal entities.
- d. Because of various reasons, the majority of the states have been unable to obligate all of their program grant funds for individual fiscal years. A major difficulty in some of the states is the recruiting of qualified engineering and sanitarian staffs. In order to prevent the states from being put into a position of losing unobligated Federal grant funds, and further to allow flexibility and assure that Federal funds for the safe drinking water program are being appropriately and efficiently spent, Congress is urged to provide authority to carry over program grant funds from one fiscal year to the next, through fiscal year 1980.

IT IS FURTHER RESOLVED that the Chairman be instructed to transmit this resolution to the Chairmen of the subcommittees in the House of Representatives and the Senate which would consider such amendatory legislation and also to the Administrator of the U. S. Environmental Protection Agency.

Adopted April 6, 1977

Richard Martin, Secretary

Mr. ROGERS. Thank you, Mr. Vogt, for a very helpful statement. I think your suggestions have great merit, and we certainly will give them favorable consideration.

Mr. VOGT. Thank you very much.

Mr. ROGERS. Thank you for your presentation here today.

There is another vote. I think we might as well take a break now for lunch, so I think we will recess the committee until 1:30 this afternoon.

The committee stands in recess until 1:30 this afternoon.

[Whereupon, the subcommittee recessed until 1:30 p.m.]

AFTER RECESS

[The subcommittee reconvened at 1:30 p.m., Hon. Paul G. Rogers, chairman, presiding.]

Mr. ROGERS. The subcommittee will come to order, please.

Our next witness will be Mr. Paul Lane, Los Angeles Department of Water and Power, City of Los Angeles.

Mr. Lane, we welcome you to the committee. We hope that you will give us the benefit of your thinking. Your statement will be made a part of the record in full [see p. 114.] without objection, and you may proceed.

STATEMENT OF PAUL H. LANE, CHIEF ENGINEER OF WATER WORKS AND ASSISTANT MANAGER, DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES, ACCOMPANIED BY DON McBRIDE

Mr. LANE. Thank you. For that reason I would like to be brief and summarize my written statement.

My name is Paul Lane, Chief Engineer of the Los Angeles Water System, and I am also Assistant Manager of the city's Department of Water and Power.

I have Mr. Don McBride with me.

Mr. ROGERS. Mr. McBride, we welcome you to the committee.

Mr. LANE. Thank you.

I might say it warms the heart of an old water works engineer to see all this water on the tables. We don't have that any more in California.

Mr. ROGERS. You really have had a severe problem, have you not?

Mr. LANE. Our problems now are in quantity and not quality. I would like to briefly tell you that 80 percent of our water supply, for a city which has over 3 million people and if you add in our uncounted friends from the South we have about 3.3 million people, comes from the High Sierras, and it is very carefully controlled. The city owns 307,000 acres in the High Sierra watershed. The water falls on either the forestry land or the Bureau of Land Management and it is carefully controlled. There is recreation on it. For 62 years we have not required any treatment other than natural treatment in the reservoirs and disinfection. The supply meets all of the other Federal standards, and all of the new ones except turbidity and that is what we are working on now.

We have just gotten a study which cost about \$1 million from consultants to see just what we need to meet the new turbidity standards. In order to comply with the standards we are right now looking at the possibility of having to construct about a \$100 million filtration system.

Really there are two problems that I want to bring up to the committee that are covered in our statement which primarily have to do with the magnitude of this project and the timing. Both of them may very likely be solved if the State Health Department is given discretion on some of these matters. We figure it would take at least 5 or 6 years to build this filtration system that would be required, which would put the acceptable date for an exemption, if we are considered a single utility, which we are.

As you know, the single utility exemption would run out on January 1, 1981, whereas the regional would run out in 1982. If we can be considered a regional we would not have a problem of meeting the 1981 deadline.

The other part of our concern is the public notification, and we understand the reasons for that. We don't hold it in disfavor. Our problem is that while we are under this exemption, it will be maybe 2 or 3 years before we will really have to make the public aware and have our water rate increases when we start in with our construction. There is no question about our being able to get an exemption with the State. There is no health problem, but while we have the exemption, we do not feel it would be beneficial to keep notifying the public for a 2-year period when we are not really needing their support for money. It will be probably 2 or 3 years before we will be going for rate increases to our council.

If that is something that can be interpreted by the State health, this would be helpful to us. We are not against the notification, but it is the timing of it that will be a problem.

I have no other comments to make. We did with our April 1st letter send you a copy of a study we made of the other utilities, and we would like to furnish this as part of the record.

Mr. ROGERS. That will be helpful and without objection, it will be made a part of the record.

Mr. LANE. Unless you have questions, that is all, sir.

[Testimony resumes on p.134.]

[Mr. Lane's prepared statement and study referred to follow:]

STATEMENT OF PAUL H. LANE, CHIEF ENGINEER OF WATER WORKS, AND ASSISTANT MANAGER, DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES

Mr. Chairman, thank you for allowing me to address your committee. I will discuss two provisions of the Safe Drinking Water Act which won't insure better water but which may have an adverse impact on the City of Los Angeles. I will suggest specific wording changes which I feel will rectify the situation.

First, as was pointed out in our letter to you dated April 1, 1977, we have made an independent survey of a representative sampling of large water utilities in California and throughout the Nation to determine the effect of the law on their operations. As a result we feel the problems I will describe are shared by many.

The majority of water used in Los Angeles comes from the eastern slopes of the Sierra Nevada. The watershed is used for recreation but is only lightly populated and is under strict control of the Regional Water Quality Control Board. For the past 62 years this watershed, and the large storage reservoirs along the Aqueduct, have worked together to produce an excellent quality water. No treatment was needed beyond simple disinfection.

Filtration of the Los Angeles Aqueduct supply will now be required because of more stringent limits on turbidity which have been imposed by the Federal Safe Drinking Water Act. The City intends to comply with the law but finds itself being penalized simply because we will be unable to complete the necessary facilities by the deadlines in the law.

It will take over 5 years to plan, design and construct filtration works for this supply which serves nearly 2½ million people. Depending on public reaction to our EIR, the process could take even longer. As a result of this delay, we will have to obtain an exemption from compliance with the law. In order to qualify for that exemption we must show that a continuation of our present operation does not constitute an unreasonable risk to health. We are confident we can make such a showing.

The problem is that, in spite of our showing that no adverse health hazard exists and with the anticipated acceptance of such a showing by the State of California Department of Health; and in spite of ongoing construction activities to bring the supply into full compliance, the law requires that we make repeated notice to our customers that the system is functioning under an exemption because of failure to comply with a standard.

We feel that, with the safeguards provided by the exemption process itself, and when there is not an unreasonable risk to health, public notification of an exemption is unnecessary and should be deleted from the law.

Please be assured I am not finding fault with the basic goal of the law, that of assuring better water for Americans, but rather stating that the start-up procedure has a few weaknesses.

I suggest that Section 1414(c)(2)(A) be deleted. This section requires reporting the existence of an exemption or variance. Notice of failure to comply with any construction schedule, or failure to monitor would be retained.

The second problem exists simply because of the size of construction project anticipated. The size of our project tends to make everything from valve procurement to EIR processing more difficult and time consuming. As a result we do not anticipate being able to complete the work by the January 1, 1981 deadline for exemptions imposed by Section 1416 of the act. Again, if we are in the middle of a 24 to 30 month construction project costing upwards of \$100 million, I feel our intentions are clearly honorable and we should not face loss of the exemption and possible fines for failure to comply with the letter of the law.

I suggest that the date in Section 1416(b)(2)(A)(i) of the act be the same as the date in Section 1416(b)(2)(B)(i) for regional public water systems. The new date would be January 1, 1983.

In closing, I would like to repeat that the facilities necessary to bring the Los Angeles Aqueduct system into compliance with the new Federal regulations would cost about \$100 million. It would seem reasonable to anticipate Federal grant assistance when large expenditures like this are required to meet new Federal standards. I am sure your subcommittee is well aware that the 1974 Safe Drinking Water Act provides no grant funds for required utility improvements.

Thank you again, Mr. Chairman, for this opportunity to address your committee.

THE EFFECT OF THE 1974 SAFE DRINKING WATER ACT
AND THE
INTERIM NATIONAL PRIMARY DRINKING WATER REGULATIONS
ON A NATIONWIDE SAMPLING OF WATER UTILITIES

Prepared by:

City of Los Angeles
Department of Water and Power
Water System - Sanitary Engineering Division

SED REPORT NO. 77-19

March 1977

This report presents the results of a survey that was conducted to determine the effect of the 1974 Safe Drinking Water Act (PL 93-523) and the Interim National Primary Drinking Water Regulations on a sampling of U.S. water utilities. Replies to a questionnaire were received from 31 of 38 cities which were asked to participate in the survey. Six cities indicated that major treatment improvements may be needed for the control of turbidity. The resultant treatment costs have been estimated by these cities and the total treatment cost has been compared to the Environmental Protection Agency's preliminary estimate of the required treatment cost for nationwide compliance.

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I. INTRODUCTION

During June, 1976, the Los Angeles Department of Water and Power (DWP) requested the participation of 37 other water utilities in a survey to determine the effect of the 1974 Safe Drinking Water Act and the Interim National Primary Drinking Water Regulations on a sampling of U.S. cities.

A. Federal Drinking Water Regulations

In comparison to the 1962 Public Health Service Drinking Water Standards, the Interim Regulations contain several new limitations on constituents found in drinking water supplies. One, in particular, is turbidity, which may have a greater effect on U.S. cities to comply with than had been previously envisioned.

Turbidity, a measure of fine, suspended particles of clay, silt, vegetable matter, and microorganisms in water, is now classified a primary regulation. Turbidity is considered a potential health hazard in drinking water because its presence in drinking water interferes with the disinfection process. The 1962 standards recommend that turbidity not exceed 5.0 units; however, the Interim Regulations have set mandatory limits. These are:

1. One turbidity unit, as determined by a monthly average, except that 5.0 or fewer turbidity units may be allowed if the water supplier can demonstrate to the State that the turbidity does not do any of the following:
 - a. Interfere with the disinfection process;
 - b. Prevent maintenance of an effective disinfectant agent throughout the distribution system; or,
 - c. Interfere with microbiological determinations.
2. Five turbidity units based on an average for two consecutive days.

B. Selection of Cities to Survey

The selection of the cities was based on the following criteria:

1. A majority of the selected cities are among the one hundred (100) largest U. S. cities operating publicly owned water systems.
2. A majority of the selected cities have water supplies dependent on surface sources rather than groundwater or purchased sources.
3. A majority of the selected cities are on EPA's list of eighty (80) cities which supply water containing chlorinated organics.
4. A plurality of the selected cities are from California.

Table 1 contains the list of cities requested to participate.

C. Development of Questionnaire

A questionnaire was developed to obtain the following information from the sampling of U. S. cities:

1. Additional treatment and/or monitoring which may be required to comply with the Safe Drinking Water Act and the accompanying Drinking Water Regulations.
2. Incremental cost and source of funding for the additional treatment and/or monitoring which may be required.
3. Projected date of compliance beyond the EPA time requirement (June 24, 1977).
4. State acceptance of primary enforcement responsibility of the Drinking Water Regulations.
5. State policies regarding conveyance of finished water in pressurized conduits.

TABLE 1

U.S. CITIES REQUESTED TO PARTICIPATE IN SURVEY	
1. Abuquerque, NM	20. Seattle, WA
2. Boston, MA	21. St. Petersburg, FL
3. Buffalo, NY	22. Syracuse, NY
4. Columbus, OH	23. Topeka, KS
5. Chicago, IL	24. Tucson, AZ
6. Denver, CO	25. Washington, D.C.
7. Detroit, MI	26. Coalinga, CA
8. Jacksonville, FL	27. Concord, CA
9. Houston, TX	28. Bos Pales, CA
10. Jersey City, NJ*	29. Fresno, CA (City)
11. Lincoln, NB	30. Fresno, CA (County)
12. Miami, FL	31. Long Beach, CA
13. Newark, NJ	32. Los Angeles, CA (MWD of Southern California)
14. New York, NY	33. Los Angeles, CA (DWP)
15. Philadelphia, PA	34. Oakland, CA
16. Pittsburgh, PA	35. Sacramento, CA
17. Phoenix, AZ	36. San Diego, CA**
18. Salt Lake City, UT	37. San Francisco, CA
19. San Antonio, TX	38. San Jose, CA
Crossed-out cities are those which did not reply to questionnaire.	
<u>82% response</u>	

* Reply obtained via telephone conversation.

** San Diego County Water Authority did not participate since they reported that their supply is purchased from and filtered by MWD of Southern California.

II. RESULTS

Following are the significant results obtained from the survey:

1. Thirty-one of the 38 cities that were requested to participate did respond to the questionnaire survey (82%). Of the 31 responding cities, 17 (55%) are in compliance with the Act and the Interim Regulations and 14 (45%) are presently not in compliance.
2. Six of the 14 noncomplying cities require major water system improvements to meet the new federal turbidity standard and may spend a total of \$257 million. Each of these six cities will need water rate increases, ranging from 10% to 100%, to assist in project funding. Individually, these six cities have populations greater than 100,000, and collectively represent a nationwide population of 7.3 million.
3. EPA has estimated that the nationwide capital cost to cities serving populations over 100,000 will be approximately \$135.6 million for treatment of turbidity (Table 2). The total capital cost of \$257 million reported by the six cities in this survey exceeds the EPA estimate by nearly 90%.
4. Five of the six cities requiring major water system improvements (Result 2) will petition for a temporary exemption from compliance with the Interim Regulations, which take effect on June 24, 1977. This exemption will provide time to complete the construction of new facilities.
5. Eight of the 14 noncomplying cities will require minor expenditures for additional monitoring or modification to treatment methods.
6. No cities reported allocation of either State or Federal funds to assist in financing projects that are required to comply with the Act.

7. Pennsylvania is the only state, of 13 states and the District of Columbia represented in the survey, that does not intend to submit an application to the Administrator of EPA for primary enforcement responsibility of the Act and the drinking water regulations.
8. Only three cities, representing the States of Florida, Maryland, and Texas, indicated no formal state directives or recommendations on transmission of finished water in unpressurized conduits.

TABLE 2*

EPA Estimates of Nationwide Capital Costs for Treatment Required to Comply with Interim National Primary Drinking Water Regulations (1975 Dollars)				
	Total** Number of Water Systems	Total Treatment Capital Cost (Million)	Capital Costs Related to Treatment for Turbidity	
			\$ for Direct Filtration (Million)	As a % of Total Treatment Capital Cost
A. For all com- munity systems	40,000	\$1,100	\$379.3	34%
B. For community systems serv- ing population over 100,000	243	\$218.2	\$135.6	62%

* Costs from EPA-sponsored report, Economic Evaluation of the Promulgated Interim Primary Drinking Water Regulations, October 1975. Costs based on treatment of average daily flow conditions.

** Based on EPA Inventory of Public Water Supplies (July, 1975).

III. NONCOMPLYING CITIES

Fourteen of the 31 responding cities (45%), including Los Angeles (DWP), reported that their present levels of water treatment or water quality monitoring were not sufficient to comply with the Interim Regulations and the requirements of the Safe Drinking Water Act. Table 3 identifies these noncomplying cities.

A. Minor System Improvements Needed for Compliance

Eight of the 14 noncomplying cities will need minor improvements to bring their water systems into compliance. Each of these 8 cities indicated its present monitoring program would need expansion to allow for additional sampling. The Metropolitan Water District (MWD) of Southern California, which provides water to over 27 municipal water agencies, reported the largest annual incremental cost for increased monitoring - \$100,000/year.

In addition to expanding its present monitoring program, the Water and Sewers Department of Phoenix, Arizona, will construct pipelines to blend water from noncomplying wells with other source water. The effectiveness of the new construction to achieve blending may have varying results at different locations and during different seasons of the year. The total cost for the pipeline construction has not been estimated. The true resultant extra costs of public notification and long-range effects of other required monitoring and capital improvements have also not yet been determined; however, the City of Phoenix does not anticipate water rate increases as a result of PL 93-523.

Operational changes will be required at several of Oakland, California's East Bay Municipal Utility District (EBMUD) direct filtration plants which produce finished water occasionally exceeding 1.0 TU. This finished water is served to a number of cities easterly of San Francisco Bay. Research is being conducted to determine if polymers can be used as a coagulant aid to reduce

TABLE 3 *

LIST OF CITIES NOT IN COMPLIANCE WITH THE 1974 SAFE DRINKING WATER ACT AND INTERIM NATIONAL PRIMARY DRINKING WATER REGULATIONS	
<u>Minor Improvements Needed</u>	<u>Major Improvements Needed</u>
1. Buffalo, NY	1. Jersey City, NJ
2. Lincoln, NB	2. Syracuse, NJ
3. Phoenix, AZ	3. Los Angeles, CA (DWP)
4. St. Petersburg, FL	4. San Francisco, CA
5. Coalinga, CA	5. Newark, NJ
6. San Jose, CA	6. Boston, MA
7. Los Angeles, CA (MWD)	
8. Oakland, CA	

* This table is limited to the survey sampling and does not include other U.S. cities which may not comply.

filtered turbidities below 1.0 TU. Presently alum is used for coagulation before filtration during high turbidity periods. If the use of polymers is implemented, the cost for additional equipment has been estimated to be \$650,000 and the annual cost for the polymer about \$20,000/year.

B. Major System Improvements Needed for Compliance

Six of the 14 noncomplying cities may be required to spend a total of \$257 million to finance major projects for treatment of turbidity (Table 4). If expenditures for improvements become necessary, as described below for each city, individual ratepayers will face significant increases in their current water bill.

1. Jersey City, New Jersey

New treatment facilities are now under construction which will filter the Jersey City water supply to remove iron, manganese and turbidity. Construction of these facilities was prompted by New Jersey State requirements on levels of iron and manganese concentrations. EPA plans to classify these two parameters as secondary standards under the new Federal Regulations. Filtration will also reduce turbidity levels to comply with the new Federal turbidity regulation.

The capital cost for the filtration facilities will be approximately \$39 million based on a treatment capacity of 100 MGD (million gallons/day). This cost has necessitated a rate increase of 100% for Jersey City customers.

The filtration plant is expected to be in service by June 1977; therefore, an exemption will not be required.

2. Syracuse, New York

Over 99% of the city's supply is conveyed 19 miles by gravity from the Skaneateles Lake to the city distribution system and to three

TABLE 4
CITIES REPORTING MAJOR PROJECTS
TO COMPLY WITH 1974 SAFE DRINKING WATER ACT AND
INTERIM NATIONAL PRIMARY DRINKING WATER REGULATIONS

	Source of Supply (% Surface)	Present Treat- ment	Parameter Not in Compliance	May Require Exemption from Compliance	Popula- tion Served (1,000)	Approximate Capital Cost of Project (Typically 1976 \$) \$ Million \$ Per Total Capita		Approximate Rate Increase for Capital Funding (%)
1. Jersey City, New Jersey	100		Turbidity	No	420	39	93	100
2. Syracuse, New York	100	Disin- fection	Turbidity	Yes	240	30	125	100
3. Los Angeles, California (DWP)	80	Disin- fection	Turbidity	Yes	2,900	100*	34	20
4. San Francisco, California	100	Disin- fection	Turbidity	Yes	800	25	31	
5. Newark, New Jersey	100	Disin- fection	Turbidity	Yes	650	23	35	50
6. Boston, Massachusetts	100	Disin- fection	Turbidity	Yes	2,300	40	17	10
Total					7,310	257	17-125 Range	10-100 Range

* Cost for a direct filtration treatment plant.

uncovered in-town reservoirs which float on the system. Disinfection with chlorine is practiced at the lake site and again at the outlets to the in-town reservoirs.

The turbidity of the lake supply will exceed 1.0 unit but is rarely more than 5.0 units. Historical data has been collected which may demonstrate that the turbidity of the lake does not interfere with the disinfection process. The Syracuse Division of Water intends to modify its operating procedure during periods of high turbidity by routing the water through two large in-town reservoirs for additional clarification.

If Syracuse is required by the state enforcement agency to construct filtration facilities, the capital cost is estimated to be \$30 million (1976 dollars) for 58 MGD of treatment capacity. A rate increase of approximately 100% would be needed to increase the annual revenue to pay for the debt service on the construction bonds and the facilities' operating and maintenance cost.

3. Los Angeles, California

The Los Angeles Department of Water and Power receives 80% of its supply from the 340 mile Los Angeles Owens River Aqueduct system. The turbidity of this supply is routinely over 2.0 turbidity units and at times of storm exceeds 5.0 turbidity units.

Natural settling and clarification occurs in five large reservoirs along the aqueduct system. The settling is improved with the addition of polymer in one of the aqueduct reservoirs upstream from the distribution system. This practice has been used in the past only when the turbidity reached 5.0 units. Disinfection with chlorination is also practiced along the aqueduct system before entering the distribution system and at the outlets of all in-town storage reservoirs.

DWP has determined that the existing method of turbidity control cannot reduce turbidity levels normally occurring in the City's Owens River supply in order to comply with the new mandatory limit of 1.0 turbidity unit. Furthermore, DWP has judged that the alternate turbidity limit of 5.0 units would not be acceptable for the supply since noninterference with the disinfection process could not be adequately demonstrated.

Recent pilot plant studies have indicated that a treatment plant employing direct filtration will effectively reduce turbidity levels to below 1.0 unit. The capital cost for such a facility has been estimated to be approximately \$100 million. Treatment plant construction and operation would necessitate a rate increase of approximately 20%.

4. San Francisco, California

Over 60% of the San Francisco Water Department's source of supply is obtained from the Hetch Hetchy Reservoir which impounds Tuolumne River water in the Sierra Nevada mountain range about 150 miles east of San Francisco. Disinfection with chlorination occurs at the Hetch Hetchy Reservoir and at the outlets of all in-town distribution reservoirs to maintain adequate chlorine residuals.

Since this surface supply is not filtered, the turbidity will fluctuate and at times exceed the new turbidity standard of 1.0 unit. When turbidity does flare up, the Hetch Hetchy supply will be blended with a filtered supply to produce a mix which will meet 1.0 turbidity unit.

If filtration of the Hetch Hetchy supply is required, the capital cost would be approximately \$25 million. Bonds would be sold to finance the capital construction cost.

5. Newark, New Jersey

The Division of Water Supply for the City of Newark presently treats the waters from the Pequannock watershed. These waters receive sufficient treatment to comply with all New Jersey State Standards except for the levels of iron and manganese. Turbidity levels will occasionally exceed the new federal turbidity standard limit of 1.0 unit.

A filtration plant will be constructed to lower turbidity and iron levels to within the respective federal and state mandatory limits. The filtration plant, now in final design, has been estimated to cost \$1.0 million (1976 dollars) annually over the next thirty (30) years for construction and operation. The capital cost for construction of facilities is estimated to be about \$23 million based on a 100 MGD treatment capacity. Destratification of the intake reservoir will be initiated to correct the manganese problem.

6. Boston, Massachusetts

The Boston Metropolitan District Commission (MDC), which serves Boston and over 34 surrounding cities, obtains emergency water from the Sudbury Reservoir only during high-demand summertime periods. This emergency supply receives reservoir treatment similar to other MDC source waters; specifically, natural settling provided by reservoir detention time and chlorination for disinfection prior to distribution. However, unlike the other MDC sources, the Sudbury Reservoir does not provide sufficient natural settling to reduce turbidities below 1.0 unit.

Consultant investigations have been undertaken to determine the additional treatment necessary to bring turbidity levels into compliance with the Interim Regulations. The capital cost for additional treatment has been estimated to be approximately \$40 million, which will result in a 10% water

rate increase. An exemption from compliance will be requested for use of the Sudbury Aqueduct supply.

IV. COMPLYING CITIES

Seventeen of the 31 responding cities (55%) reported that their present methods of treatment produced a water quality that is in compliance with the Act (Table 5). Most notable among these cities is Seattle, Washington, which has been allowed to comply with the Interim Regulations' alternate turbidity limit (5 TU).

The City of Seattle obtains water from the Tolt River and Cedar River watersheds. Strict watershed management practices are prescribed to ensure a high quality source water. The source waters are disinfected prior to direct discharge into the distribution system or storage in open in-town reservoirs. Secondary chlorination is practiced at the outlets of the open reservoirs. The turbidity of the Tolt supply exceeds 1.0 unit about 30% of the time and the Cedar supply occasionally exceeds this limit. Tests have been conducted to document the requirements set by EPA to allow compliance at a higher turbidity limit (5 TU) and the results have been presented to the State of Washington Health Department. Washington State health officials have recently indicated that the Seattle Water Department will not need to seek an exemption under the new Act and the Water Department anticipates being in full compliance by June of 1977.

If a filter plant was constructed on the Tolt supply, capital costs for direct filtration are estimated at \$9 million and for conventional treatment may range as high as \$18 million.

TABLE 5*

LIST OF CITIES IN COMPLIANCE WITH THE 1974 SAFE DRINKING WATER ACT AND INTERIM NATIONAL PRIMARY DRINKING WATER REGULATIONS	
1. Columbus, OH	9. San Antonio, TX
2. Chicago, IL	10. Seattle, WA
3. Denver, CO	11. Topeka, KS
4. Detroit, MI	12. Tucson, AZ
5. Miami, FL	13. Washington, D.C.
6. Philadelphia, PA	14. Concord, CA
7. Pittsburgh, PA	15. Fresno, CA
8. Salt Lake City, UT	16. Long Beach, CA
	17. Sacramento, CA

* This table is limited to the survey sampling and does not include other U.S. cities which may be in compliance.

Mr. ROGERS. Thank you very much. We appreciate your testimony and the suggestions you have for changes in the law.

Dr. Carter?

Mr. CARTER. Thank you, Mr. Chairman.

What bad results have you had from turbidity in your water?

Mr. LANE. We have not had any bad results, sir. Our turbidity at certain times of the year, during storms and things, comes up. We have never had any health-related problems from that. Over the year I think our turbidity average is a little over 3 units, but it would go up much higher than that during a storm. We have had complaints from the public in the San Fernando Valley from them but no health-related problems.

Mr. ROGERS. But to clear up the turbidity will cost you how much money now, although there are no adverse health effects?

Mr. LANE. We figure that the filtration plant required to treat both aqueducts from the Owens Valley would be about \$100 million. That is capital cost.

Mr. ROGERS. You have that money readily available, I guess.

Mr. LANE. No, sir. We are like the other speakers very interested in case the committee wants to come up with some kind of a grant program of assistance.

Mr. ROGERS. What about your own people? Do they feel motivated sufficiently to tax themselves to finance the filtration plant to remove the turbidity from their water?

Mr. LANE. I would hope that there are enough enlightened ones that would not mind spending the money for it. As you probably know, all of our money comes from water rates, selling water. We do have revenue bonds that we would have to issue. Our board sets rates, and their action must be approved by the city council, so we are talking probably about a 20 percent rate increase in the period that we would be constructing our facilities, just to cover the costs of the facilities.

Mr. ROGERS. And you think it is necessary to remove the turbidity?

Mr. LANE. Yes, I think it is inevitable. I think the city has been lucky to have such a good water supply, but as the pressure, recreation pressure, on the watershed increase, I think filtration makes sense. I don't think we can take any chances on the health side of it, even though we have had no problems.

Mr. ROGERS. What do you call simple disinfection?

Mr. LANE. Chlorination.

Mr. ROGERS. Have you found this in chlorination? Mr. Kimm made a statement about humic acid, the union of chlorine and humic acid going together making a carcinogen.

Did you hear that testimony?

Mr. LANE. I heard that testimony. I don't know that that is a problem with us.

Is it Mr. McBride?

Mr. McBRIDE. We have forested areas on our watershed and we do get some humic acids. With chlorination we get chloroform production of about 30 parts per billion. The standard would be about 100 parts per billion, and so we are well within the limits.

Mr. ROGERS. But it is a problem, isn't it, if we get too much union of humic acid and chlorine? Your simple disinfection just includes chlorination.

Mr. LANE. That is right.

Mr. ROGERS. Thank you very kindly.

Mr. ROGERS. May I ask you this: What is your projection on drinking water supply?

Mr. LANE. During this drought year, sir?

Mr. ROGERS. Yes.

Mr. LANE. We are very fortunate. The city has several alternative supplies. Being a member of the Metropolitan Water District they get water either from the Colorado River or the State supply. The real problem this year is the State supply, which has been cut off, and Metropolitan is taking all of its supply from the Colorado River. That will hold up well I would say until the mid-1980s, when the Central Arizona project goes in, and would take half of the Metropolitan Water District's current supply from the Colorado River. The problem is that the State aqueduct system has not been brought up to capacity where it could take care of the 2 drought years. We will be conserving at least to the extent of 10 percent. We will be cutting 10 percent, and that would get the city and Southern California through this year all right, and we would probably be all right next year.

Mr. ROGERS. Have you asked your citizens not to use water at certain times or in certain places?

Mr. LANE. We are right in the process of that. The mayor has a blue ribbon committee that will on May 1st come out with the ordinances, and they will include irrigation ordinances, waste ordinances. The people are cooperating. Some of the areas that we can measure easily are already cutting back 12 to 15 percent. Overall it looks like we are 5 to 7 percent even before the ordinances.

Mr. ROGERS. And you say, for instance, your restaurants do not put water on the table until asked for.

Mr. LANE. There is not an ordinance on that.

Mr. ROGERS. But they are doing it.

Mr. LANE. Yes.

Mr. McBRIDE. Mr. Chairman, I think it is important to realize that the people in Los Angeles typically only use about two thirds to a half of the water used by many other citizens in the State of California. We have been metered for over 50 years, and are very conscious of the fact that our water has to be brought in great distances, and the citizens of Los Angeles are serving people generally, so a 10 percent cut on top of the already minimal use I think is very good.

Mr. ROGERS. I think that is encouraging. Perhaps it would be encouraging to the President to know that when the facts are properly presented, the citizens will cooperate.

Mr. LANE. If they understand the problem and believe it, they will. They have shown that in the energy crisis.

Mr. ROGERS. Thank you so much. We are grateful for your being here.

Mr. LANE. Thank you very much.

Mr. ROGERS. The next witness is Chester Ring III, on behalf of the American Water Works Association. He is senior vice president-

operations of the Elizabethtown Water Company. I understand he is accompanied by Mr. Eric Johnson, executive director, headquarters office, Denver, Colorado.

We welcome you gentlemen.

STATEMENT OF CHESTER A. RING III, PRESIDENT, AMERICAN WATER WORKS ASSOCIATION, ACCOMPANIED BY ERIC JOHNSON, EXECUTIVE DIRECTOR

Mr. RING. Thank you.

Mr. ROGERS. I believe Pat Patterson has been associated with your company, has he not?

Mr. RING. Yes. He said to say hello.

Mr. ROGERS. Give him my best wishes.

Mr. RING. I certainly will. In the interests of time, and what you have asked of the other witnesses, may my statement be included in the record?

Mr. ROGERS. It will be included in the record in full [see p. 138.] without objection.

Mr. RING. I will try and summarize, hit the high points.

I am Chester A. Ring, senior vice president of operations for the Elizabethtown Water Company of Elizabeth, New Jersey. I am currently president of the American Water Works Association, a scientific and educational society with some 26,000 members.

Since the passage of the act in December of 1974 we have been extremely active in sponsoring workshops and advocating the Safe Drinking Water Act. Our officers as they travel around the Nation have spread the word, and we have worked very closely with EPA during this period, and have been carrying out some contracts for them, working on various educational programs.

Generally many utilities of our association are fully supportive of our stance.

Some of the high points that do concern us is the fact that some of the research funds for the public water supply are being comingled with those of other research areas in EPA. On the basis of past experience, we have reason to feel that we have not always made out that well in the area of water supply, and we would like to see them separate and more emphasis on water supply research.

We are happy that there will be more work by the National Academy of Sciences, because we do feel that the standards and regulations should be based on research rather than just arbitrary estimates. Also we urge that there be more emphasis on training at all levels, both at the college level and at the operator level.

We do know that working with the State agencies throughout our drinking water workshops that we have carried out, there is going to be a very substantial load on these agencies, and they are going to have to have additional grants or aid from the Federal Government.

We also agree with the fact that the State underground injection control programs should be extended. In the recent past there have not been any reported shortages of chemicals, but we do feel that as an emergency measure that provision should remain in case it has to be called upon in the future.

In the area of the economic impact assessment, we do wonder whether we do have to get into all the studies, such as the issues of inflation and the balance of payments and long-term economic growth. Perhaps something much simpler than that could be followed.

We are also aware that many of the smaller water utilities, and in some instances probably the larger utilities, may need some financial aid. We are in favor of Federal grants when they are absolutely necessary. However, we also have found that fiscal incentives, financial management, water systems that are supported by water rates are really in the public interest.

However, in lieu of grants, there is a possibility that it could be done through loans, but in either case, whether they be grants or loans, that they should be extended to both investor-owned utilities, and be given on the basis of need to the public served rather than ownership of that utility.

Also one of the major concerns is that of the adequacy concerning public notification. We fully support public notification as a means of arousing the public interest, who would then support the improvement of the water systems. However, we do fear that the rigid requirements of these sections, as EPA must interpret them, will be counterproductive. We agree that any failure of a public water system to comply with a maximum contaminant level should be reported, but feel that the objective of improved water service can better be served if such a report is made to the State regulatory agency, so that its trained health experts can make a judgment concerning the necessity to alert the public to a condition that is truly dangerous to health.

There have been many false alarms in the past, and the 40,000 very small systems could result where the people would actually disregard the notification. Of course this is going to be an even greater problem when you get down to the 200,000 noncommunity restaurants, truck stops in that size system. I think that pretty well sums up our high points.

[Mr. Ring's prepared statement follows:]

BEFORE THE SUB-COMMITTEE ON HEALTH AND THE ENVIRONMENT

STATEMENT OF CHESTER A. RING 3rd, PRESIDENT
ON BEHALF OF THE AMERICAN WATER WORKS ASSOCIATION
ON

H.R. 6159 - H.R. 6160

H.R. 2317 - H.R. 4944

SAFE DRINKING WATER ACT AMENDMENTS OF 1977

April 22, 1977

MR. CHAIRMAN:

I am Chester A. Ring, senior vice-president of operations for the Elizabethtown Water Co. of Elizabeth, N.J. I am currently President of the American Water Works Association, a scientific and educational society with some 26,000 members, including water utility managers, engineers, scientists, and operators, as well as organizations involved in the management, operation, and provision of facilities to community water systems. I have with me Eric Johnson, Executive Director of the Association, from Denver, Colorado.

We very much appreciate the opportunity to appear before your committee to comment on the safe drinking water legislation that you propose, as the objectives of the Safe Drinking Water Act are identical with the objectives of the Association--the provision of better water service to the public.

Ever since the passage of the Act, which we supported with some reservations that will be mentioned later, we have worked closely with the Environmental Protection Agency to help assure its successful implementation. Happily, the Association's Past-President and I have been able to contribute directly through service on the National Drinking Water Advisory Council, established by the legislation. But in addition to that activity, other members of the Association have participated actively in promoting the cooperation of the water utility field in meeting the requirements of the Act.

On the day that the bill was signed by the President, the Association sent out a letter to the governors of every state urging them to assume primacy. On that same day, we proposed to the Administrator of EPA a cooperative series of Safe Drinking Water Act Workshops aimed at orienting water utility personnel in the requirements that they would have to meet under the Act. By now more than 150 of these workshops have been conducted throughout the nation, with the cooperation of EPA and the state agencies involved, and, throughout, the approach has been that of cooperation to achieve the mutual objective of better water for people.

In our annual conferences, which attract some 7,000 registrants, and in our annual specialty conferences, attracting some 700 specialists in the field of laboratory control of water supply, the regulations of the Safe Drinking Water Act have been a prime subject of discussion ever since the Act was signed. And our

monthly JOURNAL, with a distribution of 35,000, as well as our monthly news bulletin and our Washington newsletter, has sought to keep the members of the water supply field aware of and supportive of the basic thrust of the Safe Drinking Water Act.

At the present time our Education Department is working on two contracts with EPA: one to develop seminars for public officials, water system managers, and small water system operators to acquaint them with their responsibilities under the Act; the other to develop a comprehensive training program to help personnel involved meet these responsibilities. Meanwhile, the Association's Research Foundation is conducting research to measure the effectiveness of granular activated carbon and polymeric resins in removing trihalogenated compounds from water, if, in fact, they are proved to be dangerous to public health.

Mr. Chairman, I have reviewed these activities to demonstrate the Association's support of the objectives of the Safe Drinking Water Act and its determination to assist in the Act's implementation. This support has been a key message of the officers of the Association over the past two years in their travels throughout the nation to address members in their local section meetings. It has also been a key subject of discussion with individual members in these travels.

Generally speaking, water utilities are fully supportive of the Association's stance. The larger utilities indicate that they foresee no great difficulties in meeting the regulations so far promulgated, although the turbidity requirements and the notification requirements may create problems if they are too literally enforced. Smaller utilities, however, which constitute the very

large majority of the field, are concerned with the added costs of and availability of facilities for monitoring and treatment, and of the trained personnel to provide that monitoring and treatment, if they are to meet the new regulations. Although committed to self-sufficient, rate-supported operations, many of these utilities fear that the rate increases necessary to meet the new requirements will be rejected by a public already faced with the inflationary rates of other utility services even if they are supported by the city fathers who must propose them. This would seem to counsel a phased implementation of the regulations in the small communities to permit the development of sound financing rather than permitting erosion of financial independence through a grant program.

Mr. Chairman, these are some of the comments that the officers of the Association have been able to observe in their extensive travels throughout the nation in visiting member groups. I would now like to comment on the specific bills being considered by your committee:

First, in H.R. 6159 and 6160, we are concerned with the fact that research funds for public water supply are being commingled with those of other research areas in EPA. On the basis of past experience, we have reason to fear that such commingling will mean that even the currently inadequate emphasis on drinking water research will diminish in favor of other EPA research programs.

We are concerned, too, over the necessity for the "studies" proposed at this stage of the implementation of the Act. It appears to us that many of the questions posed could be answered by people experienced in the field without formalized study. Others, however, will take considerable effort in both personnel and money and might very well be considered research, which presumably is not now to be covered in this legislation.

We certainly agree with the modification to Sec. 1412 (e) (2) which would require an update of the National Academy of Sciences' Study on Contaminants in Drinking Water. We feel that it is vitally important that standards and regulations be based on research rather than arbitrary estimates.

Under the "Training" section, we agree that more emphasis on training will be the key to successful implementation of the Act. At the present time, as we pointed out earlier, we are working with EPA to develop a number of training materials. To meet the needs of full implementation, EPA's budget in this area is undoubtedly going to need additional funding.

Our observation from working with state agencies in Safe Drinking Water Act workshops is that the key to state primacy will be adequate assistance in funding state programs. The tremendous additional load of enforcement and technical assistance placed on the states by the Act seem bound to develop political resistance in most of them. Yet it appears obvious that providing support to the existing state enforcement agencies will be much less

expensive and more effective than developing new enforcement operations at the federal level. It is our observation, too, that local water utilities will be more cooperative in working with state agencies than they would in accepting the regulation of a new federal bureaucracy.

The proposal to extend the deadline for state underground injection control programs, we believe, is a necessary recognition of the practicalities involved and the many problems which the regulations have created.

Although there have not been any recent reported shortages of chemicals, it is our feeling that extension of authority to assure availability of the chemicals needed for water supply is justified. We are happy, too, to see the proposals to require compliance by federal facilities to the requirements of the Act as this has been an issue of contention in communities where such facilities exist.

As to the "Economic Impact Assessment," although there is no question that there will be an economic impact of the regulations upon public water supply operations, we wonder if the additional rules and regulations prescribed for economic analysis will not compound that impact. A simple analysis of the impacts directly related to community water supply would, we feel, be adequate. Analysis of such larger issues as inflation, balance of payments, and long-term economic growth, we feel, will only delay implementation of the Act.

Speaking to the provisions of H.R. 2317, we refer to our earlier comment concerning the ability of water utilities to operate on a self-sufficient basis without grants. Aware, however, that the Act's requirements may have drastic impact on some utility operations, particularly in the smaller communities, the Association has recognized that some form of federal financial assistance may be required to gain timely compliance with the law. In such cases the Association would suggest that the assistance be made available in the form of loans rather than grants, and that such assistance be made available on the same basis to investor owned as well as municipally owned utilities, considering the needs of the public served rather than the ownership of the utility as the basis for assistance. And regardless of the form of assistance, we would urge that it not be limited to "clean and update water-lines," but be based upon strengthening those operations of highest priority in meeting the requirements of the Act.

As to H.R. 4944, we certainly feel that the requirement rather than the permission to support demonstration projects would be desirable as long as projects considered worthy of support are proposed.

As a final comment, Mr. Chairman, we would like to call to your attention the consensus of concern in the water utility industry over the language of Sec. 1414 (c)(1) and (2) of the Act concerning public notification. Although we fully support public notification as a means of arousing interest in and support of water system improvements, we fear that the rigid requirements

of these sections, as EPA must interpret them, will be counter-productive. We agree that "any failure" of a public water system to comply with a maximum contaminant level should be reported, but feel that the objective of improved water service can be better served if such a report is made to the state regulatory agency so that its trained health experts can make a judgment concerning the necessity to alert the public to a condition that is truly dangerous to health. Too many false alarms by inadequately trained personnel in the more than 40,000 very small community water systems, we fear, will result in disregard of notification. An even greater problem will be presented, of course, in the 200,000 noncommunity systems. Discriminate implementation of the public notification requirement by knowledgeable state employees, on the other hand, can be effective in warning and motivating the public when warning is appropriate.

Thank you, Mr. Chairman, for the opportunity to make these comments. We shall be happy to answer any questions that you may have.

Mr. ROGERS. Thank you very much, Mr. Ring. We appreciate it. Dr. Carter?

Mr. CARTER. Thank you, Mr. Chairman.

I believe you stated, Mr. Ring, that you thought that if grants were made they should be made also to private water companies; is that correct?

Mr. RING. Yes, that is correct.

Mr. CARTER. Outright grants?

Mr. RING. Whether they be grants or loans, I say they should be given on an equal basis to municipal or investor owned.

Mr. CARTER. That would be I believe a departure from the usual procedure. I can certainly see how loans could be made to an investor-owned company.

Do you have problems with turbidity of your water?

Mr. RING. Do I as our company you mean?

Mr. CARTER. Yes.

Mr. RING. Or as an industry?

No, we do not.

Mr. CARTER. Do you find it pretty widespread?

Mr. RING. In our own company we have a filter plant.

Mr. CARTER. Whom do you represent?

Mr. RING. I am here as president of the American Water Works Association, but when you asked the question about turbidity, I thought you were referring to our system. The majority of the large water systems which have filter plants do not have a problem with turbidity. Some of the water systems on the East and West Coasts, reservoir systems if you will, at times of storms, for example, that have been mentioned, could have short periods of high turbidity, something higher than what is now in the standard.

Mr. CARTER. I notice you mentioned trihalomethanes, a combination of chlorine and humic acid.

Have you had any evidence of that occurring in any of the water systems you represent?

Mr. RING. As far as the systems we represent, yes, but we have been getting most of our information from EPA in the various studies that they have been conducting.

Mr. CARTER. Do you know of any studies on the carcinogenicity of this combination of chlorine and humic acid?

Mr. RING. No. All the information that we have is advanced to us from EPA, and again we work closely with them, and I am sure that whatever they have, they have been circulating throughout the industry, and they actually use us as a medium of circulation.

Mr. CARTER. Thank you very kindly.

Mr. ROGERS. Did you have any comment, Mr. Johnson?

Mr. JOHNSON. I might point out that Mr. Ring is a member of the Drinking Water Advisory Council, and as such has access to all of this information that EPA is providing concerning the carcinogenicity of the trihalomethanes. In commenting on the idea of the self-sufficiency of water utilities, we recognize that the smaller utilities are the ones who are most likely to have problems, and among those smaller utilities, a great percentage consist of the privately or investor-owned utilities, and it is for that reason I think that the need will be felt equally much by investor-owned or privately-owned utilities. We have discovered through the EPA inventory of water supplies lately that there are actually more investor-owned utilities than there are municipally owned. This is a change in the combination of utility ownership that we had before.

Mr. RING. I might just add in this area that Dr. Carter had asked that it is a departure from the past, but the answer is yes. But whenever a grant would be given to an investor-owned utility, the utility commissions would not allow that utility to earn or benefit from that grant. The benefit would be to the customer who would not be receiving higher water rates because of that capital or operating expenditure.

Mr. ROGERS. Thank you for your presence today. It is most helpful.

Mr. RING. Thank you.

Mr. ROGERS. The next witnesses will form a panel, the Waste Water Equipment Manufacturing Association, Mr. William E. McQueeney, assistant vice president of Raymond, general manager of Certriline Department, Raymond International; and Mr. Sy Rotter, U.S. representative of Katadyn Products Limited.

We welcome each of you gentlemen. Your statement will be made a part of the record. If you will highlight them for us that will be helpful.

STATEMENTS OF WILLIAM E. McQUEENEY, ASSISTANT VICE PRESIDENT, RAYMOND INTERNATIONAL; AND SY ROTTER, U.S. REPRESENTATIVE, KATADYN PRODUCTS LIMITED

Mr. McQUEENEY. Thank you very much.

I am William McQueeney. I appreciate very much the invitation to testify. I hope to influence the subcommittee favorably upon H.R. 2317, Father Drinan's bill, to authorize grants to public water systems to clean and update water lines.

Raymond International is a large firm who for the last 40 years has had as one of its activities the cleaning and upgrading of water mains.

Mr. Chairman, if it is acceptable to you, we would like to highlight this discussion with samples and with the use of charts. My colleague, Mr. Hamilton, is prepared to assist me in that regard.

A very considerable amount of water pipe in this country is made of cast iron ductile iron or steel. Much of it has been installed and in service a very long time, and is without suitable internal protection. The result usually is degradation in the form of tuberculation and corrosion.

The sample my colleague will show you is of a 6-inch water main taken out of service for cleaning and upgrading in New Bedford, Massachusetts in the fall of 1975. Notice the severe tuberculation over the whole circumference, reducing the effective area considerably, but the most serious physical impact of tuberculation is the damage done to the carrying capacity of the main, and on the quality of water delivered to the consumer.

We also have a picture of a 16-inch main opened for cleaning and upgrading in Akron, Ohio in the fall of 1976. I guess the key point is that this problem is neither limited nor isolated. It exists all over this land, from Seattle to Jacksonville, from Boston to San Diego. In fact, ladies and gentlemen, if we access the distribution mains in front of the Capitol I am sure we would observe a very similar condition.

We have an example of a water main that has been cleaned and upgraded, and we bring it to you to show that we believe that at least as much emphasis ought to be put on the upgrading aspect as the cleaning.

A typical form in which upgrading takes place is the application in place, mind you, of a cement mortar lining. This lining can be placed while the pipe remains in the ground by an established and proven process.

Back to tuberculation for a moment.

Chart No. 1 displays the effect of tuberculation of the water main on its flow characteristics. Notice that the carrying capacity of the line drops rapidly as tuberculation accrues over time on the interior.

Another factor which we display in Chart No. 2 is the increased energy use and cost associated with pumping water through a

tuberculated main. We overlay this on the data from Chart 1 so that you might see the twin effect, the loss of carrying capacity and increased energy use and cost. I hasten to add that in these calculations we have used a constant price of energy. Should the unit price of energy increase over time, this increase in cost would be even more demonstrative.

Another injurious reaction on unprotected steel and cast iron water mains is electrolytic corrosion resulting from holes and pitting, bringing about a very considerable loss of water. As the water line is under pressure, when holes exist in the pipe, water is lost into the ground throughout the system. Cleaning and upgrading via cement mortar lining builds a pipe within a pipe, thus sealing the leaks and eliminating the water loss.

The most visible effects of tuberculated lines on consumers are low volume, low pressure and red water. Heaven save and pray for the poor water superintendent or fire department chief who, in the process of making his annual check of hydrants for adequate pressure and flow, brings about a water surge breaking up some percentage of the tubercles which dissolve in the water and reek havoc with the housewives' laundry, let alone internal plumbing and drinking water.

Cleaning and upgrading represent the most efficient cost benefit program for the restoration of tuberculated and corroded water mains. It is a form of value engineering far superior to either laying new pipe or just cleaning.

For example, as we show in Chart 3, the effect of a clean only program. In this case the cleaning did restore the lines original capacity, but in the process more of the pipe's circumference is exposed to the aggressive water, and as you can observe with our sample, retuberculation occurs far more quickly, and each subsequent cleaning without upgrading, yields a shorter time of regained capacity.

Chart 4 shows that cleaning and upgrading via cement mortar lining restores the pipe indefinitely to its maximum carrying capacity. The Department of Water and Power of the City of Los Angeles is sufficiently convinced of the merits of cleaning and lining that they fund the work from bond issues and recapitalize the water pipe so restored over 75 years.

The reconditioning of existing pipe conserves a resource and minimizes the tearing up of streets, trees, and flora and fauna, as the excavations are required at intervals of only 500 feet.

Cleaning and upgrading of water mains is a sufficiently mature process to be prescribed by a standard of the AWWA, that is used worldwide. Cleaning and upgrading of water mains has been used by hundreds of communities of varying size all over this country.

The communities that use the process do so on a repeat and program basis as funds allow. And yet there remain hundreds of communities who have severe problems of tuberculation and corrosion, but who lack the funds to begin a systematic program of correction.

Over 25 million feet of water main have been cleaned and cement mortar lined in this country over the last 40 years. Not one foot will ever require further treatment.

In summary, a favorable recommendation on H.R. 2317 I believe is very sound. The service of cleaning and upgrading is badly needed. An established and competent industry stands ready to perform the work. It is not an experimental program. Cost efficient results can be obtained competently and by established firms in the private domain. Thus the passage of the bill and subsequent appropriation will contribute to providing employment in the construction industry to a very considerable degree, as this is a service which of course makes it quite labor intensive.

Thank you very much, Mr. Chairman.

Mr. ROGERS. Thank you.

We will hear your statement next, Mr. Rotter, and then will question you.

Mr. Rotter, your statement will be made a part of the record [see p. 150.].

STATEMENT OF SY ROTTER

Mr. ROTTER. Thank you.

As such I will briefly paraphrase from it.

My name is Sy Rotter. I am the representative of Katadyn Products in the United States.

Mr. Rogers and Dr. Carter have expressed their concern during this hearing about the effects of chlorine on various elements commonly found in drinking water. I will address my comments to the need for further consideration of chlorine alternative drinking water systems.

I represent a Swiss company which has been manufacturing alternative drinking water treatment procedures for the past 40 years. These procedures are essentially ultraviolet, silver impregnated filter units and silver ionization. There are in addition, as we all know, a variety of other chlorine alternatives presently marketed which include ozone, bromine, reverse osmosis, iodine and distillation, all of which may have appropriate applications. The purpose of my comments is to emphasize the bill's opportunities for focusing attention on alternative treatment procedures.

In this regard, H.R. 6160 does include a proposal for a new Section 9 to Public Law 93-523 which would require the EPA Administrator to publish an "Economic Impact Statement," one aspect of which would refer to "an assessment of alternative methods of achieving the same protection, i.e., of clean drinking water, at lesser economic cost."

My prepared testimony does include a number of quotations which would support the appropriateness of alternative treatment procedures, but Mr. Victor Kimm of the EPA has already guardedly but realistically acknowledged the concern of the EPA for the chlorine related, potentially carcinogenic elements in the public drinking water system. For this discussion however I would cite an independent study conducted by Resources for the Future on Drinking Water and Cancer Mortality in Louisiana, which did establish the hypothesis that there is a link between carcinogens in drinking water and cancer mortality. This was not a study of animals in laboratories. This relates to human beings.

I believe we could establish that as the record stands today the agencies and the professional community responsible for the design and operation of drinking water systems are not as aware of effective chlorine alternatives as they could or indeed should be. To facilitate this objective, I would propose that this subcommittee encourage the agencies, the FDA and the EPA in particular to constitute a high level task force to specifically consider chlorine alternatives for the treatment of public water supplies.

I believe that representatives of the Farmers Home Administration and the Public Health Service's Communicable Disease Center should also participate as each exercise some control over system choice and funding.

Further, that this task force convene a series of regional workshops for the teaching staffs of university public health training programs so as to invigorate their curriculum with the knowledge of new alternative treatment systems.

Further, that a comparable series of workshops be designed for regional office personnel of the agencies as well as for State and local health and environmental agency personnel for the same purpose of exposing them to new procedures and experiences.

That within each State, similar workshops be convened for architectural and engineering firms, to share with them an awareness of the high priority the EPA and FDA have for identifying alternative treatment measures.

The task force should maintain ongoing liaison with the National Drinking Water Advisory Council, citizen action groups and other relevant organizations including those from other countries where progress in alternative treatment systems may be more advanced than in our own country.

Further, an annual report of this task force should be prepared for the EPA Administrator who in turn would share its highlights with this committee and other committees in Congress.

I would say in conclusion that history has proven that the value of any legislation is not so much in the printed word as it is in the intent of the implementing agency. There is today a growing community of supporters of chlorine alternatives. Their potential for assisting the agencies to learn of and extend information about such treatment procedures is waiting to be activated. Citizen groups, university teaching programs and equipment manufacturers could, if encouraged, assist in the establishment of a vital linkage between themselves, the communities at large and the Federal and State agencies in support of identifying and promulgating the appropriate use of chlorine alternatives.

There is no specific section in H.R. 6160 which addresses this specific point, but there is, in fact, a singular opportunity for the agencies concerned to create it. There can be little doubt that such an initiative encouraged by the Congress would be well received by the public.

Thank you.

[Mr. Rotter's prepared statement follows:]

STATEMENT OF SY ROTTER, U.S. REPRESENTATIVE, KATADYN PRODUCTS LTD.

Gentlemen:

My name is Sy Rotter. On behalf of Katadyn Products Ltd., a prominent Swiss manufacturer of water purification equipment, of which I serve as U.S. Representative, I express my appreciation for the opportunity of meeting with you today to speak to the "Safe Drinking Water Act Amendments of 1977."

Katadyn has successfully marketed its different types of quality water purification equipment throughout Europe and in many of the developing Countries of the world for the past 40 years. Its decision to enter the U.S. market is based upon its awareness of the increasing public concern in this Country for the identification of chlorine alternatives for treatment of drinking water. Katadyn's principal treatment procedures in this regard are Ultraviolet systems, silver impregnated filter units and silver ionization, all certified by various U.S. State and Federal Agencies and independent testing laboratories as effective water treatment devices. There are, in addition, other chlorine alternatives presently marketed by other manufacturers including procedures employing ozone, bromine, reverse osmosis, iodine and distillation all of which have appropriate applications.

I speak to you this morning in support of HR 6160 not so much for its bare factual and budgetary details which are certainly to be endorsed, but also for the potential which the Bill offers to emphasize "alternative water treatment systems." HR 6160 could, in fact, set the stage for the necessary administrative climate within the relevant Agencies for them to begin to direct serious and sustained thought to the imperitives of chlorine alternatives.

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May I briefly note at this point some background references to answer the question, why are we concerned with such alternatives and follow with some specific recommendations.

HR 6160 amendments include a proposal for a new Section 9 to PL 93-523 which would require the Administrator to publish an "Economic Impact Statement." This E.I.S. would obligate the Agency to issue among other points, "an assessment of alternative methods of achieving the same protection, i.e., of clean drinking water, at lesser economic cost."

Without extensive documentation of the reasons behind the increasing public concern with respect to chlorine treatment of drinking water but to establish a frame of reference for my comments, I would add some brief references to the record:

a quote from Dr. Robert Angelotti, Special Assistant to the Director for Program and Organization, U.S. Food and Drug Administration, "There is evidence now indicating that chlorination treatments (for the purposes of eliminating bacterial pathogens and viruses in water) may result in the formation of chlorinated end products which may be carcinogenic: (1)

And further in the same article, Mr. Victor J. Kimm, Deputy Assistant Administrator of the Environmental Protection Agency adds "We are concerned about these small quantities of organic contaminants because some of these materials, at higher levels, have been found to produce increased cancer in laboratory animals and to produce other adverse effects in man"

(1) The Professional Nutritionist, Winter 1976, page 2
"Who Safeguards Your Drinking Water"

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An independent study conducted by Resources for the Future on Drinking Water and Cancer Mortality in Louisiana, concludes with the following statement, "While statistical studies cannot by themselves establish casualty, this regression study supports the hypothesis that there is a link between carcinogens in drinking water and cancer mortality" (2)

A quote from Proposed Rules for E.P.A. Control Options for Organic Chemical Contaminants:, "The National Organics Reconnaissance Survey (NORS) in 1975 confirmed the widespread presence of several previously determined organics in drinking water and further served to attribute the presence of chloroform and related trihalomethanes to the chlorination disinfection process itself. These results were subsequently supported by a further survey of 83 utilities within EPA's Region V." Following other similar observations the Report continues, "Based on the information available at that time the Administrator of EPA stated that the prudent course of action was to take steps to reduce exposure to chloroform from drinking water wherever feasible by means that would not increase the risk of microbiological contamination." (3) Presumably, the Administrator was considering alternative measures as well as modifications in the widespread use of chlorination devices.

Finally, with respect to small rural communities and their unique situation, the "National Interim Primary Drinking Water Regulations" of the EPA states,

- (2) "Drinking Water & Cancer Mortality in Louisiana", Talbot Page,
(3) Robert H. Harris & Samuel S. Epstein, Science July 1976, page 57
The Federal Register, Vol 41, No. 136, July 14, 1976, page 28993

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"Since it is the intention of the Act to provide basically the same level of health protection to residents of small communities as to residents of large cities, and since a number of advanced water treatment techniques are made feasible only by economies of scale, the cost of compliance with the requirements of the Act may pose a serious problem for many small communities. EPA will (therefore) provide technical assistance on effective treatment techniques which can be used by small systems." (4) We must assume that at least in part this technical assistance will be focused on small, non-chlorine systems.

We now come to the Amendments under consideration and their specific relevance to the facilitation of alternative treatment procedures.

Section 2 authorizes \$15 million for each of FY's 78 and 79 for technical assistance and training of personnel relating to public water systems. Although there is no guidance as to the kind of technical assistance and training which will take place, the Congress could encourage the Agencies to include in this assistance, consideration for chlorine alternatives. There is also no indication of how the funding will benefit the significant number of people not receiving their water through public water systems but who must rely on individual wells or other small volume resources. They, too, should learn of appropriate small scale treatment procedures.

(4) The Federal Register, December 24, 1975, page 59566

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In its authorization of \$45 million for FY 79 to allow States to carry out public water supervision program, the Administrator could be encouraged to recommend to the States that they, too, initiate consideration of chlorine alternative procedures. This is particularly important for the State and local personnel involved in the design, operation and maintenance of existing systems. Also of critical importance in this regard is encouragement to the States to modify their drinking water codes so as to eliminate reference to chlorine residuals in public drinking water systems when alternative treatment procedures can be effectively substituted.

The third authorization line in Section 2 refers to \$1 million for FY 78 and 79 to survey "rural drinking water supplies." This unique concern, one which is shared with the Farmers Home Administration of the USDA at least with regard to funding of treatment programs should easily lend itself to include an examination of both currently utilized home and small cluster non-chlorine water treatment systems, and current alternatives being developed or which are available for application in rural areas.

Section 3 calls for a report and recommendations to the Congress which will include among other considerations, "alternative means of compliance with drinking water regulations." It is to be hoped that current efforts of the FDA and EPA to come to working agreements on definitions, terms and responsibilities will also include comparable agreement on what constitutes mutually acceptable chlorine alternative treatment procedures.

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The emphasis of my comments has been directed toward encouraging the Congress to underscore the need for a more diligent effort by the appropriate Agencies for encouraging consideration of alternative water treatment procedures. As the record stands today, it may be readily observed that the Agencies and the professional community responsible for the design and operation of drinking water systems, are not as aware of effective alternatives as they could or indeed should be. To facilitate this objective, I would propose that this Subcommittee encourage the indicated Agencies to consider the following courses of action:

- 1- that the FDA and EPA constitute a special combined Task Force to specifically consider chlorine alternative treatment procedures; Representatives of the FmHA and the Public Health Services Communicable Disease Center should also participate as each exercises some control over system choice and/or funding.
- 2- that this joint Task Force convene a series of regional workshops for the teaching staff of University Public Health training programs so as to invigorate their curriculum with the knowledge of new, alternative treatment systems;
- 3- that a comparable series of workshops be designed for Regional Office personnel of the indicated Agencies and as well for State and local Health and Environmental Service personnel for the same purpose of exposing them to new procedures and experiences;

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- 4- that within each State, the local EPA/FDA Offices convene similar workshops for Architectural and Engineering firms to share with them an awareness of the high priority both Agencies have for identifying alternative treatment measures and to provide them with new information regarding relevant field experiences;
- 5- that the Task Force maintain ongoing liaison with the National Drinking Water Advisory Council, Citizen Action Groups and with relevant organizations from other countries for the purpose of receiving and exchanging information on alternative treatment procedures. An annual report on the activities of the Task Force should be prepared for the Administrator who in turn could include its highlights in his annual report to the Congress;
- 6- that incentives be established by the two agencies to encourage manufacturers to design cost/effective, alternative treatment equipment particularly for smaller community needs, and to install and monitor them in cooperation with State and local Health Departments, the EPA and the FDA. Such incentives could be financial in the form of grants or low interest loans to facilitate design and experimental steps for such equipment which may not be as profitable for the manufacturer to invest in as larger units. Incentives may also be seen in close and active assistance to the manufacturers by the Agencies technical personnel;

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- 7- Finally, a special grant fund could be established for homeowners or tenants not currently receiving municipally treated water, who wish to improve the quality of their drinking water, but whose incomes are limited to social security or other Federally and locally assisted programs. In any event, their income would have to be below the accepted poverty line, to enable them to purchase home, and small cluster water purification systems. This could be set up on conjunction with the FmHA which currently administers funds for upgrading small community water systems.

Ultimately, as the record has proven, the value of any legislation is not as much in the printed word as it is in the intent of the implementing agency. There is, today, a growing community of supporters of chlorine alternatives. Their potential for assisting the Agencies to learn of and extend information about such treatment procedures is waiting to be activated. Citizen groups, University teaching programs and equipment manufacturers could, if encouraged, assist in the establishment of a vital linkage between themselves, the communities at large and the Federal and State Agencies in support of this objective.

There is no specific Section in HR 6160 which addresses this point, but there is, in fact, a singular opportunity for the Agencies concerned to create it. There can be little doubt that such an initiative would be well received by the public.

Thank you.

Mr. ROGERS. Thank you very much, Mr. Rotter, for your statement.

Dr. Carter?

Mr. CARTER. Thank you, Mr. Chairman.

I am very much interested in your statements, gentlemen. It seems that your process would eliminate what you call tuberculation, and what we call corrosion.

Mr. McQUEENEY. If it is an accumulation we call it tuberculation. If it is an erosion of the metal we call that corrosion.

Mr. CARTER. An independent study conducted by Resources for the Future and Cancer Mortality in Louisiana concludes with the following statement: "While the statistical studies cannot by themselves establish causality, this study supports the hypothesis that there is a link between carcinogens in drinking water and cancer mortality."

Would you say that is directly related to the trihalomethanes?

Mr. ROTTER. Dr. Carter, the indication from the study is that it is directly related. The study is available.

Mr. CARTER. Actually we have been using it for years. Of course in the Army it was about the only thing we had to purify the water.

Do you think we should get some animals, Mr. Chairman?

Mr. ROGERS. We might have Canada do it.

Mr. CARTER. Tell me how your method improves the water's safety. I have seen these systems in operation. Are you using this in particular?

Mr. ROTTER. We have three basic systems. One is a filtration system which employs silver which acts as an inhibitor of bacterial growth. A second is an ionization system which first kills pathogens and then serves to prevent the growth of bacteria in the water, and the third is an ultraviolet system.

I believe, Dr. Carter, that it is important for all of us to acknowledge that there is no one system that is necessarily appropriate for all purposes.

Mr. CARTER. Yes, sir.

Mr. ROTTER. The point that I have been trying to make is that there is room within the overall requirement for safe drinking water, for consideration of alternative systems. I further believe that it is incumbent upon the agencies that are required to look after this measure of our safety to be concerned with alternative drinking water treatment procedures and my plea to you and to your colleagues is that you make it emphatically clear to the agencies that they have this obligation.

Mr. CARTER. Thank you so much for this very fine testimony.

Mr. ROTTER. Thank you, Dr. Carter.

Mr. ROGERS. I agree with you and I would hope that the Agency would do that. If there is any additional authority needed for that, I would like for the agency to advise us of that. I think we would want to consider it.

Mr. CARTER. Yes, sir.

Mr. Chairman, I notice that he mentions that you use other members of the halogen family, with bromine and iodine; is that correct? These are really toxic.

Mr. ROTTER. I cannot speak in defense of bromine or any other system that I am not directly aware of. But I do emphasize that there is a range of alternative treatment procedures, and that it is the responsibility of the agencies to help us identify them.

Mr. CARTER. If we use bromine or iodine we might turn up with the same thing because they are members of the same family with chlorine.

Chlorine, bromine, iodine, and another has been added, acetene. That is a new member since I studied chemistry.

Mr. ROGERS. Has your ultraviolet system been approved.

Mr. ROTTER. We have just received an approval from the FDA for the use of our ultraviolet system, but, sir, the problem is not so much in receiving official agency approval. As I indicated earlier, it is the intent of the agency. What I am really asking for, not on behalf of my own particular product, but on behalf of the concept of alternative treatment systems, is that the responsible agencies assist us objectively and realistically in finding appropriate opportunities for nonchlorine systems. There are, as the record indicates, many smaller communities, where the installation of massive chlorination programs are just inappropriate for financial as well as safety reasons. There is no reason why the relevant agencies cannot direct themselves to identifying particularly for these smaller communities appropriate alternative treatment systems, and I do not say, sir, which one is appropriate. I just simply say that the agencies have that responsibility.

Mr. ROGERS. You could advise them that there are alternative systems that they should look at, and give them a list maybe.

Mr. ROTTER. Exactly.

Mr. CARTER. Mr. Chairman, if I may, I have seen ultraviolet used particularly in water going into swimming pools. Do you think that it is sufficient to purify water anywhere if you use it in sufficient strength?

Mr. ROTTER. Dr. Carter, I do not believe that ultraviolet treatment of water in swimming pools is appropriate. I do however believe that there are other alternative treatment procedures in place of chlorine for swimming pools. I do believe that ultraviolet has an appropriate place within the overall water treatment spectrum. I do not profess to have sufficient knowledge to indicate exactly where each alternative system should be employed, but I do offer my own interest and I am sure I speak for other companies manufacturing such equipment, to assist the agencies in identifying appropriate placement for these systems.

Mr. ROGERS. Let me ask this. Let me just say first that I think there is sufficient authority in the law for technical assistance to States and municipalities in the establishment and administration of public law assistance programs and I think we will make that clear in the language in the report coming up.

Let me just ask this, Mr. McQueeney. What is the average cost of this cleaning and rehabilitating?

Mr. MCQUEENEY. It varies with the diameter.

Mr. ROGERS. I realize that.

Mr. MCQUEENEY. I would say an average for a 6-inch through 12-inch line is probably \$8 a foot, and from 12 inch through 24 inches

probably \$10 a foot, and above that it begins to get a little more expensive because the material content, cement mortar, becomes higher.

Mr. ROGERS. Thank you both for your presence here today.

Mr. McQUEENEY. Thank you very much.

Mr. ROGERS. Our next witness is Charles C. Johnson, chairman of the National Drinking Water System Committee, Malcolm Pirnie, Incorporated.

Mr. Johnson, we welcome you back to the committee. You are an old friend of the committee and we are pleased to have you with us again.

Your statement will be made a part of the record in full [see p.-], and if you could highlight your presentation, it would be helpful to the committee.

STATEMENT OF CHARLES C. JOHNSON, JR., CHAIRMAN, NATIONAL DRINKING WATER ADVISORY COUNCIL

Mr. JOHNSON. Let me say it's a pleasure to be back with old friends, Mr. Carter and Mr. Rogers.

I know you as long time supporters of good clean drinking water and I am pleased to see that continued interest.

The act prescribed a role for a National Drinking Water Advisory Council. It's been my pleasure to be one of the original appointees to that Council and to serve as its Chairman for the last 2 years. I am the current Chairman for this year.

Rather than go into an overview of what the Council has been doing, I will make available to the committee our annual reports for the last 2 years, and you may use those as you see fit. [The NDWAC annual reports for 1975 and 1976 may be found in the subcommittee files.] I think you will find that the Council has been an effective one. The Council has been objective as it approaches its responsibilities.

I believe that the Council has been a proponent of good, scientific basis for approaching the implementation of the Drinking Water Act, and certainly to establishment of standards under the act.

I would like to speak in two different roles, one as Chairman of the Council in terms of the legislation that is being considered, the bills that are being considered here, and second, to give some personal view I have not necessarily cleared with the Council with respect to the overall program.

I can fairly say the Council did discuss and Mr. Swartz was there at the time we had the discussion, the proposed amendments to the Drinking Water Act. It was the view of the Council that because of the lack of experience under the act, because of the need to implement it without further governmental action of changes, that only technical amendments should be considered at this time.

I believe that the current bill, H.R. 6159, essentially covers technical amendments. Three of these are literally supported by the Council and our testimony will so indicate.

These have to do with the extension of the ability of the States to assume primacy, the extension of the ability to award grants and an increased emphasis on the need for training. All of these we feel are

essential if the program is to go on uninterrupted in a manner that will allow it to continue what we believe has been a very good beginning.

As we look at section 9, the economic assessment, while we agree with the need to make sure that we get all of the dollar return for all of the investment that we put into the systems, whether it is the public or private money, we believe that the act as it is now constituted prescribes for EPA the role to determine economic feasibility. We think that if you put section 9 in as it is now worded that this will cause further delay, it will use valuable resources of men, money, and material, and probably have a slowdown effect in terms of implementing the act.

I think the committee might want to reconsider its proposal to require and certainly in the length and breadth, the economic assessment that is proposed under section 9.

I have said that the Council supports in preference to H.R. 6160, H.R. 6159 and our testimony will so indicate.

I would like to speak for just a second or a few seconds about some other issues. In the event that the States do not assume primacy—and some of them are not likely to, certainly not within the prescribed limits of the law—the EPA will have the responsibility to undertake the enforcement provision of the act.

I am not aware at the moment that any provision has been made to provide to the EPA the resources that will be required to do this. I call that to the attention of the committee. Certainly if they do it within their current resources that are already spread very, very thin in the opinion of the Council, this only dilutes further the expert staff that is now working to implement the act.

I believe that they have to have some relief in this regard.

Another issue has to do with the water reuse. The Council during this year is going to be very concerned about the manner in which we interrelate the activities of let's call the dirty water or water pollution and clean water under the Drinking Water Act. While we like to talk about water reuse, I think those of us that have been in the program for any length of time recognize that we have been reusing water for as long as we have been using water. It's just a question of a degree of reuse.

We are concerned that some of the pressures that are imprinted upon other programs of EPA are going to further endanger, in terms of quality, the kind of water that we get because of reuse practices. I would be concerned about the manner in which we issue permits for water pollution control point sources or even for the use of land treatment that doesn't require a permit at all.

The quality of our underground water resources, all of these have to be related to what we are trying to achieve under the Drinking Water Act, and I hope the Council will spend some time and some of its experience and expertise to deal with this problem of water reuse.

Finally, I hope that the Council will be able to deal a little more directly with the whole question of standard setting. I believe that we are in a no man's land at the moment. I think that it is important that we at least explain to the public the rationale, the logic, the manner in which we set about to establish standards. I

think that the Council can be of some assistance to the EPA as they tackle this job. This is going to be particularly important as we look at the National Academy of Science's report and we are forced to set primary standards, not interim primary standards, and we need to know the basis against which we make these decisions.

I hope we can be of help. I would like to say the Council, I believe, has been active, I believe we have been supportive of EPA, but I believe we have done this with the kind of independence that the committee envisioned when they established it.

I believe we will continue to be an independent group of thinkers, and at the same time I think we can help move forward the whole drinking water program.

It's been a pleasure to work with the committee and EPA and certainly a pleasure to work with the Council.

[Mr. Johnson's prepared statement follows:]

STATEMENT OF CHARLES C. JOHNSON, JR., CHAIRMAN, NATIONAL
DRINKING WATER ADVISORY COUNCIL

I am Charles C. Johnson, Jr., Vice President with Malcolm Pirnie, Incorporated, a consulting engineering firm; formerly Assistant Surgeon General with the Public Health Service; and currently serving as the Chairman of the National Drinking Water Advisory Council. My remarks will be in two parts. The first remarks will be those representing the views of the Council which will be followed by some remarks reflecting my personal views concerning the safe drinking water program.

The National Drinking Water Advisory Council was created by Congress in December 1974 with the passage of the Safe Drinking Water Act, Public Law 93-523.

The Council's functions are to advise, consult with, and make recommendations on a continuing basis to the Administrator of EPA on matters relating to the activities, functions and policies of the Agency under the Safe Drinking Water Act. In addition, the Council is to provide practical and independent advice to EPA on matters and policies relating to drinking water quality and hygiene, and is to maintain an awareness of developing issues and problems in the drinking water area. The Council is to review and advise the Administrator on regulations and guidelines that are required by the Safe Drinking Water Act; make recommendations concerning necessary special studies and research; recommend policies with respect to promulgation of drinking water standards; and assist in identifying emerging environmental or health problems related to potentially hazardous constituents in drinking water.

I am proud to state that in my opinion the National Drinking Water Advisory Council has served to the full spirit as well as the extent of the Law. I wish to submit for the record the Council's Annual Reports for 1975 and 1976. These reports will reflect the breath and scope of the Council's activities, the public participation and involvement in the implementation of the Act, and how the Council encouraged coordination with Federal, State and local agencies.

Regarding the modifications to the Safe Drinking Water Act, the Council following its December 1976 meeting, recommended to the Administrator of EPA that only technical amendments should be considered at this time in order to assure continued program conformity. The Council offers the following recommendations for consideration as possible changes to the Act:

1. Section 1413, State Primary Enforcement Responsibility

This section should be modified to grant States time extensions in order to assume primacy. A legislative remedy might be to give the Administrator the authority to review a State program at the end of one year, evaluate the degree of progress and commitment to the program, and to grant an additional year's extension.

2. Section 1443, Grants to State Programs

It is proposed that additional grants may be made to States for an additional year when (1) the State has filed an official intent to seek primacy; and (2) where satisfactory progress has been made by the State to meet the requirements for assumption or maintenance of primary enforcement responsibility.

In addition, instead of having a fixed level of State grant appropriations, these levels should be determined on best estimates by EPA's studies of the States' requirements in meeting standards in accordance with the phased implementation program guidance adopted by EPA.

3. Section 1442, Training

This section should be rewritten in stronger legislative language in order to require operator training, State and local training, and professional training.

Based upon these recommendations and my own review of the two bills being considered, the Council would be in favor of H.R. 6159 over H.R. 6160.

In regard to H.R. 6159, we would like to bring to your attention the new section 9, dealing with economic impact assessments. We believe that the current provisions of the act, section 1412 (A) and (B) call for determination of feasibility (taking cost into account) before regulations are promulgated. These sections of the current law appear to suffice and should not be modified if, at this time, only technical requirements to the act are to be considered. We are of the opinion that the proposed new section would pose additional manpower and resource burdens on EPA without facilitating improved implementation of the legislation.

There are several other issues I wish to bring to the Committee's attention at this time. The first issue deals with the real possibility that EPA will be required to assume primary enforcement responsibilities in several States or Territories that will not qualify or choose not to assume primacy.

It must be recognized that when these circumstances occur, the resources which otherwise would have accrued to the States should in some manner be made available to the Office of Water Supply in EPA.

We are not aware that any such provisions have been made or are being considered that would enable the EPA to assume these additional responsibilities in an acceptable manner. Perhaps the Committee would want to consider a technical amendment to Section 1443 that permits EPA to use grant funds allotted to State programs for this purpose pending the assumption of primacy in those States.

Although not an issue being addressed by this Committee, I, on behalf of the Council, want to bring to your attention the need for a strong water supply research program. The revisions to the National Primary Drinking Water Standards will be based upon our scientific knowledge of various constituents in drinking water. Our knowledge must be enhanced by an immediate and comprehensive research program. To accomplish this objective, more resources, both manpower and dollars, for water supply research, are required.

Concerning another critical issue, more and more the Council is realizing the importance and actuality of wastewater reuse for a variety of potable and non-potable purposes. The Council proposes to investigate to some extent the practices that now exist and the problems they pose to insure the integrity of our water supplies.

We should recognize the months ahead are important and significant ones for the Agency as it sets about to deal with the NAS report and to establish the National Primary Drinking Water Standards. The ability of the Agency to carry out its legislative mandate will be influenced by its capability to establish and articulate the rationale by which it promulgates its standards. I hope that the Council will be able to contribute its collective experience and wisdom in furthering this important objective on the part of EPA.

In conclusion, I would like to express my opinion and I am sure that the entire Council would agree that EPA's Office of Water Supply has done an outstanding job in implementing the Law with limited manpower and resources. They have listened to the Council, involved the States in the development of the regulations, and have attempted to implement the Safe Drinking Water Act so that there is maximum flexibility without sacrificing the intent of Congress. Thus, in my view the letter and the spirit of the landmark Safe Drinking Water Act of 1974 has been launched. Momentum is increasing. And with the amendments now being advocated, I believe the public health will be well served as each member of the team, the EPA, the States, the water industry and the citizens pull together pursuing safe drinking water for all Americans.

Mr. ROGERS. Thank you. We appreciate the job you have done, Mr. Johnson.

Has the Council addressed the problem of injection?

Mr. JOHNSON. Yes, we have. Part of the reason that the underground injection regulations perhaps have not been promulgated to date has been the kind of interest that has been demonstrated on the part of the Council. We have brought in people that are supportive and are opposed to the regulations as they have been proposed.

We have made direct recommendations to EPA. They are in the process now of considering these along with many other recommendations, and I believe as a result of this that we will have perhaps a program that will be a little more acceptable to everybody. I might say that this is the kind of program that is not going to be totally acceptable to everybody and there are compromises that have to be reached.

I hope we can do this and still protect the public health.

Mr. ROGERS. Thank you. Dr. Carter?

Mr. CARTER. I want to compliment the distinguished gentleman for his testimony here today. He has been a friend of this committee for a long time, and we thank you, sir.

Mr. ROGERS. Thank you for your presence. We appreciate it.

Mrs. Jacqueline Warren, Environmental Defense Fund.

Welcome to the committee. Your statement will be made a part of the record in full, without objection, and you may proceed as you desire.

If you would highlight for us it would be helpful.

STATEMENT OF JACQUELINE M. WARREN, COUNSEL, ENVIRONMENTAL DEFENSE FUND

Ms. Warren. Thank you, Mr. Chairman.

As the staff attorney who has worked on drinking water problems, I am pleased to present the views of the Environmental Defense Fund on the Safe Drinking Water Act and the Environmental Protection Agency's implementation of it. The EDF is a private, nonprofit, national organization consisting of approximately 45,000 scientists, lawyers, economists and others interested in finding scientifically sound solutions to the Nation's environmental problems.

EDF has been actively involved in monitoring EPA's implementation of the Safe Drinking Water Act, and has participated in administrative proceedings concerning the National Interim Primary Drinking Water Regulations and the Underground Injection Regulations. EDF has also brought suit to challenge the adequacy of the Interim Primary Drinking Water Regulations which are scheduled to go into effect this June.

EDF generally supports the provisions of H.R. 6159 insofar as they authorize additional funding for studies, training of State personnel, grants for State programs, and other similar matters. The one section of the bill which does cause some concern, however, is section 9, which requires the preparation of an economic impact assessment prior to the proposal of any new or revised rules issued

pursuant to the act. It is my understanding that EPA already conducts an extensive economic analysis of proposed regulations prior to their publication in the Federal Register.

In reviewing this specific analyses required under section 9, they indicate EPA would have to perform the function of several Federal agencies, such as the Council of Economic Advisors, with respect to the inflationary and recessionary impacts, long term effects and effects on productivity; the role of the Federal Trade Commission in assessing effects to competition, for example; the Federal Energy Administration on energy use and availability, and the Treasury Department as far as the balance of payments is concerned, et cetera.

I have some difficulty understanding what effect changing the point of chlorination, for example, of drinking water would have on the balance of payments or capital markets or labor productivity. Since section 9 doesn't distinguish between substantive and procedural rules and makes it a nondiscretionary duty on EPA to engage in this analysis, the possibility exists for EPA to do this study when they are publishing the rules of practice for a hearing before the Agency.

Section 3 of H.R. 6159 already requires EPA to report to Congress on the costs of compliance on alternative methods, on methods of payment and compliance costs by public water systems and sources of revenue presently available.

EPA also already engages in an economic analysis, an extensive economic analysis, as a matter of fact, on all proposed regulation prior to publication.

There also is in existence an executive order requiring an inflationary impact statement which contains many of the same requirements. In addition, the Office of Management and Budget is in the process of preparing a new economic impact assessment requirement to be performed by all Federal agencies on all rules and regulations, to be reviewed by an interagency committee. It would appear, therefore, that a separate economic impact assessment requirement in the Safe Drinking Water Act is redundant.

EDF's principal concern with this requirement is how it will be used. Will the specific statement of such a requirement written into the act operate to dilute the preventive purpose of the statute? Will it be interpreted as an expression of congressional intent that economic considerations be given greater weight than the health considerations which the Act was passed to address? While we agree that economic factors should be considered before rules are promulgated, the principal purpose of the Safe Drinking Water Act is to protect the public health against any contaminant which may pose a risk to human health. By separating out economic impact for special consideration, this provision is implicitly increasing the burden which EPA must show in order to justify regulating a contaminant of drinking water which may pose a potential risk to health, but which has not been conclusively shown to cause harm to humans. Since EPA already conducts such an assessment, and OMB is in the process of imposing a similar requirement, we would oppose the inclusion of this language in the Safe Drinking Water Act.

The major disagreement we have had with EPA's implementation of the statute has been their failure to promulgate an Interim Primary Drinking Water Regulation covering organic chemicals. Despite all of the controversy about carcinogenic chemicals in drinking water and the presence of chloroform and other carcinogenic chemicals in water supplies throughout the country, EPA has taken the position both in the regulations and in court that they were not required to regulate organics in the Interim Regulations.

As this subcommittee is well aware, the report accompanying the Safe Drinking Water Act stated that the Interim Regulations were to include at least those contaminants which were included in the 1962 Public Health Service Guidelines.¹ Those guidelines included a parameter covering organic contamination. Consistent with this, EPA proposed that a standard be set for organics to be measured by CCE. When questions were raised about whether CCE actually indicated a risk to health, EPA dropped the requirement and published the Interim Regulations without any coverage of organic contaminants in drinking water. Because there is no Interim Regulation for organics, when the standards become effective in June, water suppliers will not be required to monitor their water to determine whether there is a high level of organics. The public will therefore have no more protection under the Interim Regulations as far as organic chemicals in drinking water are concerned, than they had before the Safe Drinking Water Act was passed.

Over the past 2 years, every EPA survey has indicated the presence in drinking water supplies of chloroform, tetrachlorethylene, trichlorethylene, benzene, vinyl chloride, and carbon tetrachloride, among others. All of the chemicals just named are carcinogenic and must be considered to pose a risk of cancer to humans. Nevertheless, EPA has taken the position that the many epidemiological studies indicating an association between consumption of drinking water contaminated with such chemicals and cancer mortality rates do not establish causation.

As I read the statute and the committee report, the requirement of causation was specifically not included. As Chairman Rogers stated at that time, "We cannot afford to wait 20 years for health effects research to be completed to begin controlling contaminants for which there is some basis to believe endangers human health. If there are uncertainties, they must be resolved on the side of protection of health."²

Mr. Kimm this morning acknowledged that nine epidemiological studies have consistently shown the same association between consumption of surface drinking water and cancer mortality using one organic measurement test or another. The Agency already was aware of several such studies when the Interim Regulations were published. On the general principle that the level of organic con-

¹ (H. Rept. No. 93-1185, 92nd Cong. 2d Sess. 11(1974))

² (120 Cong. Rec. H. 10793-4 daily ed. Nov. 19, 1974)

tamination of water indicates to some extent the level of risk, there is no reason why EPA should not propose as soon as possible some measurement of organics. The trihalomethane standard addresses only one aspect of this problem. Chlorine is not the only problem.

If this subcommittee and if the Congress as a whole intended EPA to begin to address chemical contamination, one of the most serious problems involving drinking water today, it is clear that EPA did not get the message. I would, therefore, urge the subcommittee at this time to restate that intention. If, on the other hand, the subcommittee did not clearly intend EPA to regulate organics in the Interim Regulations, then I would urge that the act be amended to impose such a requirement upon the Agency at this time.

Our second major concern with the Interim Primary Drinking Water Regulations involves the adequacy of the monitoring regulations for heavy metals, especially cadmium and lead. The adverse health effects of these two metals are well documented. Their occurrence in water is primarily a problem of corrosion in the distribution system rather than at the treatment plant. Corrosive water has also been linked to cardiovascular disease in several studies.

EPA's monitoring regulations for heavy metals require sampling which is not sufficiently comprehensive to detect a problem of lead or cadmium in drinking water as a result of corrosion. While the regulations require annual sampling, they do not require that an adequate cross-section of samples throughout a community be taken in order to detect the problem if one exists. An illustration of the problem is apparent from EPA's own monitoring surveys. When EPA conducted the 80-city survey in 1975, they found levels of cadmium and lead in Seattle and Boston which were below the 1962 Public Health Service Guidelines. A further in depth study in both cities, however, disclosed that 25 percent of the households in Boston and Seattle, for example, had excessive lead levels. Indeed, the levels were high enough to affect body burdens. Excessive levels of cadmium were also detected in Seattle. One-shot sampling, such as the 80-city survey, had completely missed the problem.

Because corrosive water is a problem in the distribution system, an adequate monitoring program must require that a sufficient number of household taps be sampled, so that variability in the age and type of plumbing and in the amount of time water is sitting in the pipes, can be detected. Enough samples must be required to be taken by the water utilities so that even on a random basis there will be a statistical probability that problems caused by corrosivity in the distribution system will be revealed. Such tests are inexpensive, costing from \$10-\$20 a sample.

We are not advocating more frequent monitoring. EPA's response to our statements on this issue have been in effect unresponsive. They state that they do not have the authority under the regulations to require the kind of monitoring we have been advocating.

We would, if the committee agrees with our position on this, ask that they make that clear to EPA.

EPA's response to our statements on this issue have been unresponsive, reflecting a misunderstanding of the problem. EDF advocacy of more comprehensive monitoring for heavy metals, even on a

less frequent schedule, has been interpreted by EPA as requiring more frequent monitoring, which the Agency believes is precluded by the statute. EPA's approach to this problem is directly contrary to the statutory requirement that the Interim Drinking Water Regulations protect health to the maximum feasible extent.

The third major problem that EDF encountered with the Interim Primary Drinking Water Regulations concerns the Agency's failure to set standards for sodium and sulfates. EPA concedes they are harmful to health, but failed to establish Interim Regulations for them. Instead, the Agency only recommended that the States monitor their drinking water and advise the public if high levels of sodium or sulfates are present. The committee report which accompanied the act clearly indicates that public notification is a primary purpose of the act. Recommendations are unenforceable. Without an Interim Primary Drinking Water Regulation covering these two contaminants, monitoring is not required. No monitoring means no public notification and no protection of health.

Sodium intake is of critical importance to a large percentage of the American population who suffer from hypertension and other heart problems. The Drinking Water Advisory Council therefore recommended to EPA that the public be notified of excessive sodium levels in drinking water. The Department of Health, Education and Welfare, with whom EPA is required to consult by statute, also recommended that a sodium level be established. EPA concedes that 40 percent of the country's drinking water supplies have high levels of sodium and would need to keep the public informed to modify their diets or find alternate water sources. Nevertheless, EPA's approach to sodium and sulfates in drinking water leaves the public deprived of essential information necessary for the protection of health.

The Agency has maintained that a level of sodium and sulfate cannot be set because of the expense of treatment. In response, EDF suggested that numerical standards be established, but that water utilities be considered to be in compliance with the standards if, after monitoring, they merely notify the public when sodium or sulfate levels are exceeded.

By so doing, persons at risk from exposure to sodium, for example, would be apprised of the need to alter their diet to reduce sodium consumption from other food or to change their water supply. EPA's reply was that section 1412(a)(2) of the statute, which specifies that the Interim Regulations must protect health to the extent feasible using technology, treatment techniques and other means generally available, did not include merely monitoring and public notification. EPA's narrow reading of its authority under the act frustrates the statutory purpose to protect the public health to the maximum feasible extent, and is contrary to the maxim that health-related legislation is liberally construed to achieve its purpose. We would, therefore, ask this subcommittee either to make clear that EPA has authority to require monitoring and public notification or to amend the statute to provide such authority.

A final point with regard to EPA's implementation of the Safe Drinking Water Act concerns the National Drinking Water Advisory Council. In the first 2 years of its existence, the Advisory Council

membership included State and local water officials whose antagonism to the passage of this act was well known in 1974 and before. In addition, no member of the Council had any expertise in the area of chemical carcinogenesis, although the Council's deliberations involved the issue of whether and how EPA should regulate chemical carcinogens in drinking water. In EDF's opinion, the Drinking Water Advisory Council is dominated by a States' rights ideology regarding the need to keep the Federal Government out of local drinking water matters.

We do not believe that the Council has made a significant contribution towards implementation of the health-protective purpose of the Act. We would therefore urge, in keeping with President Carter's recent request that the Federal agencies reassess the necessity and value of existing advisory committees, that this subcommittee give serious consideration to abolishing the Safe Drinking Water Advisory Council.

We appreciate this opportunity to present our views today and hope they will be of assistance to the subcommittee.

Mr. ROGERS. Thank you very much, Ms. Warren, for your suggestions. I think the committee shares with you the concern that appointment of people to the Council should be based on their competency in the subject matters to be covered by that Council.

I think the Chairman has done a good job, Mr. Johnson. I think there were some concerns about some of the appointments to the Council, and we would ask staff to express to the agency our concern.

Ms. WARREN. Thank you. One of the most serious problems we have encountered is a general attitude on the part of EPA that the various studies, the animal studies, for example, on chloroform or epidemiological studies don't prove that the chemicals cause cancer in humans. But if a piece of legislation is to be preventive, the point is not to wait until you know that people are definitely dying as a result of consuming that water. We have met consistent resistance on the part of EPA to show any willingness to take action in the absence of such evidence.

The FDA last year banned the use of chloroform in drugs and cosmetics on the basis of animal studies conducted by NCI, but EPA has yet to act on that, although today they say they are going to have something out by June. Last summer they said they would have something out by December.

Mr. ROGERS. Thank you. I want to compliment you on an excellent statement and presentation.

I would like to ask you if you were the Administrator of EPA what level of vinyl chloride would you permit drinking water?

Ms. WARREN. It's difficult for me to answer that, because that is one of the things the NAS has been asked to do. But one thing I would do is follow the procedure that was recommended as long ago as 1962 in the Public Health Service guidelines.

Mr. CARTER. Do you know the history of vinyl chloride?

Ms. WARREN. Yes, I do. I would say I would like to recommend zero. But I don't know if it is possible.

Mr. CARTER. That's what I wanted to hear you say. You want to recommend zero.

Ms. WARREN. As an ideal goal, I certainly would.

Mr. CARTER. All right. What about carbon tetrachloride?

Ms. WARREN. As well, as an ideal, again I would have zero for that also.

Mr. CARTER. All right. Chloroform?

Ms. WARREN. Same thing. For any carcinogen I would say zero.

Mr. CARTER. Well, there we come up with another problem. I ran across it the first time today, trihalomethane. What level would you recommend?

Ms. WARREN. I think trihalomethane is a family of chemicals which includes chloroform and several other related compounds under test now at the National Cancer Institute. If they were carcinogenic I would say again, the ideal level would be zero. I recognize you may not be able to achieve it. But at the moment there is no treatment whatsoever, and there is no requirement there even be monitoring. EPA is doing some random monitoring but no routine monitoring is required of water supplies.

Mr. CARTER. Actually, it's not chlorine itself, if you have been here you probably heard the testimony. Humic acid and chlorine together combine to form this. We have been using chlorine for years as a way of purifying our water. I think we must study this situation and find out if there is a carcinogenic reaction. Then I guess we will have to ban chlorine.

Thank you, Mr. Chairman.

Mr. ROGERS. Thank you so much for your testimony. We are grateful.

Ms. WARREN. You're welcome.

Mr. ROGERS. The next panel will be a panel of the petroleum industry.

We have our distinguished Members of the Congress here, and the Chairman of the Appropriations Committee and this committee's good friend, Congressman George Mahon, and, of course, our distinguished colleague of the Ways and Means Committee, the Honorable Omar Burleson, so we are particularly pleased to welcome the panel along with our colleagues.

As I understand it, they would like to introduce the panel.

STATEMENT OF HON. OMAR BURLESON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BURLESON. Thank you, Mr. Chairman, for this opportunity. My colleague and neighbor, Dean Mahon, and I have a great common interest out in West Texas in secondary recovery oil wells.

First, I would like to compliment you, Mr. Chairman and Dr. Carter, ranking minority member of this subcommittee. Both of you have had the lead in the safe drinking water area, and you have done a wonderful job in this and many of the other areas of the environment that is beneficial to the Nation and its people.

The problem will be, of course, discussed fully and in more technical ways by my constituents, whom I will introduce, in the matter of regulations required in the operation of oil wells by secondary recovery methods by water flooding and tertiary with which you are familiar.

They have some real problems in meeting the EPA regulations, and that is the main point which will be addressed by the witnesses.

Mr. Mahon and I are particularly pleased to present to the committee my constituents. Mr. James E. Russell to my right, is a man of high regard and high integrity in our area. His ability and his qualifications in this field is nationally recognized, indicated by the oil and gas organization for whom he will speak here today.

He has 30 years experience as a petroleum engineer and consultant, and a producer himself, and Mr. Glen Mitchell sitting over at the table, is the executive vice president of the West Central Texas Oil and Gas Association, which is headquartered in my town of Abilene, Texas.

Now, Mr. Chairman, again I appreciate very much the opportunity, and I yield to Mr. Mahon if he has any remarks.

STATEMENT OF HON. GEORGE H. MAHON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. MAHON. Mr. Burleson, I just want to say to the committee I share the sentiments which you have expressed, and concerns which you have expressed, and I am interested in hearing the testimony which is about to be presented.

Mr. BURLESON. Mr. Chairman, with that I take pleasure in introducing to you Mr. James E. Russell.

Mr. ROGERS. Thank you, Mr. Russell, we welcome you to the committee. Your statement will be made a part of the record in full, without objection, and you may proceed as you desire.

STATEMENTS OF JAMES E. RUSSELL, ON BEHALF OF INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA; J. M. OTTS, JR., PRODUCTION DEPARTMENT, AMERICAN PETROLEUM INSTITUTE; AND TOM CALHOUN, CALHOUN ENGINEERING, INC., ACCOMPANIED BY R. M. SCOTT, ON BEHALF OF WESTERN OIL AND GAS ASSOCIATION; S. J. ABBOTT, JR., AMERICAN PETROLEUM INSTITUTE; AND W. S. SMITH, AMERICAN PETROLEUM INSTITUTE

Mr. Russell. Thank you, Mr. Chairman. It's my pleasure to be here.

As mentioned by Mr. Burleson, I am a consulting petroleum engineer in Abilene, Texas. However, I am here today representing the IPAA, the Independent Petroleum Association of America. I have served on an Ad Hoc Committee with the API, which is also represented here today with respect to the underground injection control regulations.

I also represent other independent associations throughout the Nation, the Pennsylvania Oil, Gas and Minerals Association; the Ohio Oil and Gas Association; the California Independent Producers Association; the Independent Petroleum Association of Mountain States; the International Association of Drilling Contractors, the Kansas Independent Oil and Gas Association; the Louisiana Association of Independent Producers and Royalty Owners; the Oklahoma Independent Petroleum Association; the Texas Independent Produc-

ers and Royalty Owners Association; the Independent Oil Producers Tri-State, Inc., which includes Indiana, Ohio and Kentucky; the West Central Texas Oil and Gas Association; the Eastern Oklahoma Oil Producers and Royalty Owners Association; the Michigan Oil and Gas Association, and the Liaison Committee of Cooperating Oil and Gas Associations, which includes a number of independent associations throughout the country.

As you can see from this list, independent producers across the country are vitally concerned about the EPA's proposed UIC regulations. These groups have a combined membership of approximately 10,000 independent oil and gas producers.

We sincerely appreciate this opportunity to testify before this committee on the Safe Drinking Water Act, and we are particularly pleased the SDWA is being reviewed by the committee and will likely be amended.

The Congress is to be commended for its foresight in enacting the SDWA; safe, uncontaminated drinking water must be available for all citizens.

As you are aware, the Environmental Protection Agency is in the process of developing regulations to implement the SDWA. Oil and gas producers are extremely concerned about some of these proposed regulations, in particular those pertaining to part C of the SDWA which appeared in the Federal Register of August 31, 1976, and concern "State Underground Injection Control Programs."

Subpart D of the proposed regulations, entitled "Requirements Applicable to Injection Wells Related to Oil and Gas Production," if implemented in current form, will have disastrous consequences, consequences which were not intended by the Congress when it enacted the SDWA and are not necessary to protect groundwater aquifers from possible contamination from oil field injection operations.

The EPA proposed regulation would establish detailed, specific, nationally-applicable requirements for the completion, operation and monitoring of oil field injection wells. They would require the compilation of mammoth volumes of data, data which in many cases is unavailable or inadequate to draw firm conclusions as to the presence, or absence, of contamination. They would require the operator to prove for each injection operation that there is no contamination, an impossibility in most circumstances. The regulations would require field monitoring and data reporting that are impractical from operating and engineering perspectives and unnecessary from an environmental standpoint. The EPA has taken this approach in spite of State programs which over the years have proved to be effective at preventing ground water contamination in the oil fields.

Mr. Chairman, these regulations will be unduly and unnecessarily burdensome for independent oil and gas producers and State regulatory agencies, will result in the loss of significant volumes of crude oil and natural gas production at a time when our Nation can least afford it. They will needlessly cause the expenditure of millions of dollars which could be spent in the development of new energy supplies and which will be especially hard to come by for small independent producers.

As I said before, these severe consequences will result without any appreciable improvement in the protection of ground water aquifers. This would be a prime example of the kind of unnecessary, counterproductive, and costly regulation that has become abhorred by all sectors of our society.

Section 1421 [b][2] of the SDWA reads:

"Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede—

(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production, or

(B) any underground injection for the secondary or tertiary recovery of oil or natural gas, unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection."

This provision was placed in the SDWA so that EPA's implementing regulations would not "interfere with or impede" oil and gas producing operations unless "essential" for the protection of underground drinking water sources.

The EPA's current approach is not "essential" for the protection of ground water; and I believe my industry has provided sufficient information to the EPA to show that oil and gas production will be "interfered with or impeded." Production will be affected because existing injection operations which cannot comply with EPA's minimum requirements will be required, according to the regulations, to "discontinue operation" and new secondary and tertiary recovery projects will either not be able to begin operation or will be delayed significantly. If the water produced in conjunction with the oil and gas cannot be reinjected and disposed of or if the injection well is shut in, then oil and gas production will have to cease also.

EPA's broad based approach will not work for two reasons:

(1) Ground water sources vary widely between States and regions within States in occurrence, existence, distribution, potential, and quality.

(2) Oilfield operations, the kind of injection, and the injection well completion techniques vary also and have evolved to meet widely different operating and economic conditions and State requirements.

For example, the injection well completion techniques practiced in the very old fields of Pennsylvania, New York, and Ohio in which very small tubing is used as both the casing string and injection string differ from those necessary in California to produce heavy gravity crude by cyclic steam injection, or from those used in the stripper fields of Oklahoma and Kansas, or from those in the more prolific fields of Texas, or from the more modern techniques used offshore. Only the States can develop detailed program requirements that conform to their individual ground water and oilfield operating situations.

Mr. Chairman, my industry, concerned Senators and Congressmen, and State regulators have attempted to convince the EPA of the serious problems with its current approach and to work with them to develop workable regulations that would accommodate the

worthwhile purposes and requirements of the SDWA and maintain our ability to produce crude oil and natural gas. The EPA has received hundreds of comments on the proposed regulations and prior drafts of the proposed regulations. Only cosmetic improvements have been made in succeeding drafts and in many instances more onerous provisions have been added at the same time. Based on this history and our current understanding of the situation we have no reason to believe this basic pattern will change.

The next set of regulations, whether proposed or final, will likely be similar to the last one. As I have said, the current approach will not work and will produce disastrous results for the Nation. A completely different approach is warranted.

The different approach should recognize and approve the programs in those States where there is a proven history of successful protection of underground drinking water sources. It should not require producers to prove the impossible, that there is and can be no chance of contamination. If a State's program is inadequate, then improvement should be required; and if a producer is contaminating fresh aquifers, he should be required to stop injection, take remedial action, and make whatever reparations are appropriate.

Mr. Chairman, we concur with the other petroleum industry witnesses as to the problems with EPA's proposed regulations, their effect on production, and their cost. We participated in the API study which has been made available to the committee. Attached to this statement are the following additional documents which amplify the problems from the perspective of independent oil producers in different sections of the country and detail some of the efforts of our industry and others to work with the EPA in the development of acceptable regulations.

I won't read those, but I would like to have them made a part of the record.

Mr. ROGERS. Yes, this will be made a part of the record following your oral statement [see p.180.].

Mr. Russell. In closing, let me emphasize that independent oil and gas producers have both a personal and an economic interest in the protection of underground aquifers from contamination from oil-field brine injection. For the most part, independents live in the same areas as their production and many derive their own drinking water from aquifers that could be contaminated if they operate imprudently. The health of their families, friends, and community depends on successful protection of these aquifers.

From an economic standpoint, it costs a great deal of money to drill or convert, equip, and pump water into injection wells. It does a producer no good and results in no increase in oil production if that injected water ends up in the wrong formation. It is, therefore, to the producer's economic advantage to take whatever steps are necessary to ensure that the water goes to the proper formation. To do otherwise is to increase costs and reduce margins and a great deal of effort is made to ensure that this does not occur.

I thank the committee for permitting me to testify. I am hopeful something can be done so that the EPA's regulations will not produce the consequences we foresee.

Thank you, Mr. Chairman.

[Testimony resumes on p.258.]
[The attachments to Mr. Russell's statement follow:]

SUPPORTIVE TESTIMONY ON BEHALF OF THE INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA. TESTIMONY BEFORE THE HOUSE INTERSTATE AND FOREIGN COMMERCE SUBCOMMITTEE ON HEALTH AND ENVIRONMENT, APRIL 22, 1977, IN REGARDS TO THE SAFE DRINKING WATER ACT AMENDMENTS OF 1977 (H.R. 6159-60).

Attachments

1. Letter from twelve Senators to EPA Administrator Russell E. Train, November 25, 1975.
2. Letter from Senators to Administrator Train, April 14, 1976.
3. Comments to EPA from IPAA on proposed Underground Injection Control Regulations (UIC), January 14, 1977.
4. Comments to EPA from Liaison Committee of Cooperating Oil and Gas Associations, October 6, 1976.
5. Comments to EPA from Kansas Independent Oil and Gas Association, January 12, 1977.
6. Comments to EPA from West Central Texas Oil and Gas Association, October 13, 1976.
7. Comments to EPA from Pennsylvania Oil and Gas Association, December 10, 1976.
8. Comments to EPA from Oklahoma Independent Petroleum Association, October 8, 1976.
9. Comments to EPA from the Independent Petroleum Association of Mountain States, October 6, 1976.

United States Senate

WASHINGTON, D.C. 20510

November 25, 1975

ATTACHMENT ONE

Mr. Russell Train, Administrator
Environmental Protection Agency
401 M Street, S. W.
Washington, D. C. 20460

Dear Mr. Train:

Regulations now being formulated by the Environmental Protection Agency covering operation of injection wells under the authority of Public Law 93-523, Safe Drinking Water Act, appear to go far beyond the intent of Congress in enacting the law. While they may be well-intentioned, the regulations as proposed would be extremely costly to the nation and harmful to its energy program because of their effect on oil and gas production operations.

The law says that the Administrator may not prescribe requirements which interfere with or impede oil or gas production operations unless they are essential to assure that underground sources of drinking water will not be endangered. In the proposed regulations this limitation is ignored and instead undifferentiated requirements would be imposed without regard for their effect on producing operations and without an assessment of their essentiality.

Also ignored in the proposed regulations is the existence of effective state regulation of subsurface injection operations. Literally thousands of injection operations have been conducted in many states over many years with few problems. Such performance suggests that another layer of regulation is unnecessary and, indeed, would be wasteful. We believe this view is supported by the legislative history of the Act, and, at least in the case of two producing states, by correspondence from you.

We would appreciate receiving EPA's response and its justification for promulgating the regulations in current form without meeting the requirement of essentiality. In our opinion, EPA's

Mr. Russell Train, Administrator
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proposed regulations on underground injection for oil and gas operations are not in accord with either the Safe Drinking Water Act or Congressional intent.

Attached is a more detailed discussion supporting this position.

Very truly yours,

<u>W. Irving F. Brant</u>	<u>Pete W. Quinn</u>
<u>Joseph in Martin</u>	<u>Cliff P. Star</u>
<u>John W. Allen</u>	<u>James B. Pearson</u>
<u>Ben D. Lee</u>	<u>Russell Long</u>
<u>Ernest H. Hall</u>	<u>Henry B. Miner</u>
<u>Floyd Benton</u>	<u>John Tower</u>

COMMENTS CONCERNING UNDERGROUND INJECTION REGULATIONS

PUBLIC LAW 93-523 SAFE DRINKING WATER ACT

TITLE XIV - SAFETY OF PUBLIC WATER SYSTEMS

TO ACCOMPANY LETTER TO RUSSELL E. TRAIN DATED NOV. 25, 1975

Part C of the Safe Drinking Water Act is entitled "Protection of Sources of Underground Drinking Water," and Section 1421(a) (1) of the Act states in part that, "The Administrator shall publish proposed regulations for State underground injection control programs within 180 days after the date of enactment of this Title. Within 180 days after publication of such proposed regulations, he shall promulgate such regulations with such modifications as he deems appropriate . . ." Section 1421(b) (1) states, "Regulations under subsection (a) for State underground injection programs shall contain minimum requirements for effective programs to prevent underground injection which endangers drinking water sources within the meaning of subsection (d) (2)"

However, this authority is greatly restricted later in Section 1421 by Paragraph (b) (2) which reads as follows:

" (2) Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede--

- (A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production, or
- (B) any underground injection for the secondary or tertiary recovery of oil or natural gas,

unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection." (Emphasis added.)

As is readily apparent, Paragraph (b) (2), places considerable restraint upon the Administrator's authority by the inclusion of the underlined sections in the preceding 1421(b) (2) extract. With this requirement in the Safe Drinking Water Act, it would appear logical that the EPA Administrator would have determined the states or localities where it is "essential" to place more stringent regulations in effect for underground injections associated with oil and gas production so as to protect drinking water sources. The Administrator should endeavor to determine which underground water resources, if

Page 2

any, are in fact endangered by these injection operations. Instead, the Administrator has chosen the classic EPA approach of broadcasting a blanket of regulations without benefit of knowing the essentiality of such regulations or their impact.

On the other hand, examination of existing State regulations shows that the significant oil producing states have had subsurface disposal laws and regulations for many years, since soon after World War II:

- (a) Regulatory agencies in these states have had experience in preventing pollutions from salt water injection in tens of thousands of salt water disposal and additional recovery wells.
- (b) State oil and gas conservation agencies have the technical expertise to judge the adequacy of a proposed injection well plan and the geology and hydrology available to assure the protection of formations bearing water fit for domestic, stock, irrigation, or other general uses.
- (c) These state agencies have field organizations constantly inspecting all aspects of oil and gas field operations, including protection of subsurface water from the injection operations, drilling and producing operations, and the plugging and abandoning of wells.
- (d) State oil and gas conservation authorities have the ultimate enforcement weapon for the use against an oil producer and believed not generally available to the EPA or any Federal agency; namely, the authority to order pipeline severance for refusal to obey a conservation order.
- (e) State injection well regulations as well as other subsurface water protection regulations have been made more restrictive in recent years with considerable more emphasis on enforcement.

With adequate, existing regulations in most or all of the important oil producing states, it is doubtful that there will be many places which experience would show that additional regulations are "essential." Documented evidence for Texas, one of the major producing states, exists and aptly demonstrates the effectiveness of this state's regulations over many years in the conducting of huge number of injection operations (over 40,000 injection wells) with relatively few observed problems. Further examination of data shows that a large number of the injection problems did not involve underground water resources but were surface breakouts with no water involvement or surface water contamination. Relatively few active cases of problems related to injection wells exist

Page 3

in this state as compared to the tremendously large number of injection operations. This record indicates that this state's regulations, rules and procedures have been effective in protecting freshwater resources from underground injection and emphatically emphasizes the lack of necessity to add another extensive layer of regulations above existing State regulations, rules and procedures.

Section 1422 of the Act provides that the State is to have the primary enforcement responsibility. Any State with an existing injection regulation program which has proven effective from experience should be deemed acceptable by the Administrator and forthwith approved without further requirement of the State. Any added EPA requirements would cause unneeded expenditures of human and material resources, can only result in needlessly interfering and impeding oil and gas operations, and thus clearly are not essential. The proposed EPA regulations fail completely to comply with this sensible approach, thus thwarting the very intent of Congress in adding Section 1421(b)(2) to the Act. Congress intentionally added this constraint section upon EPA's authority with the knowledge this type of underground injection was regulated by appropriate State agencies. Why should complex Federal regulations be superimposed on adequate State regulations is a question that should be answered and one that the citizens of these states would want answered.

We strongly believe it was the intent of Congress that viable State underground injection control programs be allowed to continue to function without this unnecessary, unwanted help from EPA. This belief is supported by legislative history.

Attached as Exhibit A is a portion of House of Representatives Report No. 93-1185, Page 31. Note the second sentence of the next-to-last paragraph, "Rather, the Committee sought to assume that constraints on energy production activities would be kept as limited in scope as possible while still assuring the safety of present and potential sources of drinking water." (Emphasis added.) Although the last paragraph seems to contradict this concept insofar as administrative burdens are concerned, House and Senate debate on the Act clearly show the intent was carefully aimed at preventing cumbersome and complicated overkill of regulation on injection related to oil production. This must certainly be true in view of the Congressmen Pickle-Rogers exchange shown in Exhibit B. Note first that the initial part of the exchange established states as having primary responsibility for implementation of the law. Then, of particular importance is Mr. Pickle's comment:

Page 4

"If this Administrator takes upon himself the responsibility that has been exercised in other legislation passed, then we can expect a great deal of burden to be put on the States. If the State is doing the job, then I would say they ought not be subject to the same kinds of regulations."

and Mr. Rogers's confirmation of this position with:

"May I say, I think the gentleman is basically right in his concept. For instance, Mr. Train has already written us about Texas saying he feels the program is sufficient to qualify under the provisions of the proposal."

Later, in this same vein, Mr. Pickle states, with inferred agreement by Mr. Rogers:

"When we have a State that has already provided safeguards, and a system that is working, we should be hesitant to change that system unless it is for compelling reasons of protecting the health of a community by safeguarding their drinking water. Therefore, I want us to be sure that before that Administrator issues these regulations he consider carefully the impact it will have on State regulations, and whether these regulations have in fact been working well."

This exchange in the House was supported by Senator Hart in his discussion of the Senate bill. See Exhibit C.

Because the Committee Report is in conflict with the House and Senate debate it must be ignored based on the "last utterance of the sovereign theory" of legislative interpretation. The Committee Report was published on 7-10-74 for consideration by Congress in analyzing the bill, and the House and Senate debates on the Act were during November, 1974. The fact that supporters of the bill, like Congressman Pickle and Chairman of the Subcommittee on the House Interstate and Foreign Commerce Committee, Congressman Rogers, plus the Senate sponsor of the bill, Senator Hart, made statements interpreting the bill which refuted the hard line of the Congressional Committee Report indicates that the positions and policies in conflict with their statements made during the debates were abandoned.

From this legislative background, it would seem reasonable to assume that Congress intended some tangible basis be shown by the EPA for the regulations it does promulgate. It would

Page 5

also seem reasonable to assume that Congress would expect the EPA to provide in its regulations a relatively simple procedure for approval of a State application entailing procedures which have long worked well in meeting and objectives of the Act. Certainly, Congress did not intend that costly, time consuming duplicative efforts be undertaken or that unneeded data be obtained at considerable cost and time.

The Congressmen Pickle-Rogers exchange and the letter of Mr. Russell E. Train put this subject of underground injection concerning oil and gas operations into reasonable perspective. Thus, if a State has a good program, it should be approved. This stated objective appears to have been lost somewhere between November 19, 1974, and the recently circulated proposed Federal regulations. We are confident that many states in addition to Texas and Kansas cited by Mr. Train have long had plans which also meet the objectives of the Act.

As an alternative to the staggering demands of the "minimum requirements" now drafted by EPA, we submit the intent of Congress's partial exclusion for oil field injection in Section 1421(b)(2) is for EPA to institute a screening procedure for State regulations somewhat as shown below:

1. Examine the content of oil field injection regulations to assure that:
 - (a) Injection may not be legally commenced prior to acceptance of a State permit,
 - (b) Violation of injection rules or conditions of permit are punishable under the State law, and
 - (c) Conditions or permit are intended to afford protection of drinking water resources.
2. Examine the history of oil field injection in the State and establish the relative scope of water contamination with respect to the magnitude of injection programs in progress.
3. If it is found that a State has no permit program or it is established from injection experience that substantial improvements are needed, then EPA should require a minimum program as follows:

Page 6

- (a) Allow continued injection into existing wells unless they are known to be causing contamination of drinking water resources, .
- (b) Establish a permit system for new and existing wells which would require only essential data for the injection well and direct offsets, and
- (c) Monthly records of pressures and volumes.

EXHIBIT A

31

nated. Second, all efforts must be made to reduce the harmfulness of the injected fluid and to maximize protection of the public health during the pendency of the temporary permit. Third, such a temporary permit may only be authorized if the State has held a formal adjudication, has made the requisite determinations on the record of the hearing, and has submitted an application signed by the Governor for authority to issue such a temporary permit.

"Underground injection"

Finally, section 1421 contains two important definitions. The definition of "underground injection" is intended to be broad enough to cover any contaminant which may be put below ground level and which flows or moves, whether the contaminant is in semi-solid, liquid, sludge, or any other form or state.

This definition is not limited to the injection of wastes or to injection for disposal purposes; it is intended also to cover, among other contaminants, the injection of brines and the injection of contaminants for extraction or other purposes. While the Committee does not intend this definition to apply to septic tanks or other individual residential waste disposal systems, it does intend that the definition apply to a multiple dwelling, community, or regional system of injection of waste.

The application of Part C to the activities of oil and natural gas producing industries was a subject of substantial discussion before the Committee. The Committee rejected an amendment comparable to the exclusionary language of section 562(6) of the Federal Water Pollution Control Act. Instead, the Committee adopted an amendment expressing its intent not to authorize needless interference with oil or gas production. This amendment prohibits regulations for State underground injection control programs from prescribing requirements which would interfere with production of oil or natural gas or disposal of byproducts associated with such production, except that such requirements are authorized to be prescribed if essential to assure that underground sources of drinking water will not be endangered by such activity.

The Committee's intent in adopting this amendment was not to require EPA to bear an impossible burden of proof as a condition of promulgation of any such regulation. Rather, the Committee sought to assure that constraints on energy production activities would be kept as limited in scope as possible while still assuring the safety of present and potential sources of drinking water. Similar provisions were adopted with respect to EPA regulations which are to be promulgated when a State fails to adopt an approvable underground injection control program.

In deciding what is an "essential" requirement, the Committee intends that the types of measures referred to in the Administrator's Decision Statement Number 5 and those referred to in this report be considered to be "essential" unless the contrary could be demonstrated with respect to a specific well or injection. Moreover, in using the words "interfere with or impede" the Committee did not intend to include every regulatory requirement which would necessitate the expenditure of time, money, or effort. Rather, the Committee intended to refer to those requirements which could stop or substantially delay production of oil or natural gas.

EXHIBIT B

Legislative History Supplement

During the Congressional debate on the SDWA Congressman Pickle, a supporter of the SDWA, had the following exchange with Congressman Rodgers of Florida, Chairman of the Subcommittee on Interstate and Foreign Commerce, concerning underground injection regulations related to oil or natural gas operations. [120 Cong. Rec. H 10800 daily ed. Nov. 19, 1974]

November 19, 1974

Mr. PICKLE. Mr. Chairman, I thank you for the opportunity to be heard. I would want to ask the chairman of the subcommittee some questions, particularly with reference to the ground water injection.

The chairman would look on page 87 of C, which says, "Protection of Ground Sources of Drinking Water, National Sanitation Foundation, Washington, D.C." In that report, particularly section 1431, are the proposed regulations for State underground injection control programs in 120 days after enactment of this

would like to ask the chairman of the subcommittee whether it was the intent of the Congress that the Administrator propose such regulations that require every person, whether he is drilling for an oil well or a water well, obtain certification from the EPA. Is he not guilty of pollution as well as obtaining certification from the State, and the chairman comment about that he thinks was the intent in this section—that is, to give the Administrator unlimited powers?

Mr. ROGERS. No. First of all, it gives primary responsibility to the State. First, it speaks only to the adequacy of State permits, not individual wells. Also, as a gentleman knows, the provisions of the bill are not concerned so much with drilling as with the injection of waste to the ground.

Mr. PICKLE. The gentleman would require, of course, in the instance of drilling for oil and/or gas, that it is a necessity to put that line back into the ground as a health protection situation. Now, we have the question to begin with: Therefore we drill one of these wells, is it the responsibility of the States or is the EPA going to pass judgment on that?

Mr. ROGERS. It would be the responsibility of the State, assuming its program is approved.

Mr. PICKLE. If it is the responsibility of the States, it goes forward in the section on page 87 to say that there would be some temporary permits which could be granted under certain instances. That is limited. I am assuming that in general the primary responsibility still is left with the States in all other areas.

Mr. ROGERS. The gentleman is correct.

Mr. PICKLE. Section 1432 on page 89 provides that the Administrator shall list in the Federal Register each State for which in his judgment a State underground injection control program may be necessary to assure that underground injection will not endanger drinking water sources.

Is it the intent of the Congress, by this legislation, to limit the Administrator, by establishing certain criteria that need to exist before he exercises that judgment?

Mr. ROGERS. May I say that the bill places the authority to list States in the judgment of the Administrator. Of course, we expect his judgments to be reasonable and we will monitor them.

Mr. PICKLE. If this Administrator takes upon himself the responsibility that has been exercised in other legislation passed, then we can expect a great deal of burden to be put on the States. If the State is doing the job, then I would say they ought not be subject to the same kinds of regulations.

Mr. ROGERS. May I say, I think the gentleman is basically right in his concept. For instance, Mr. Train has already written us about Texas saying he feels the program is sufficient to qualify under the provisions of the proposal.

Mr. PICKLE. I would ask the gentleman to insert in the Committee of the Whole that letter from Mr. Train so it could be made a matter of record.

Mr. ROGERS. Yes, I will request that it be inserted at this point when we go back in the House.

The letter follows:

U.S. Environmental Protection Agency,
Washington, D.C. May 22, 1974.
Hon. Paul G. Rogers,
Chairman, Subcommittee on Public Health and Environment, House of Representatives, Washington, D.C.
Dear Mr. Chairman: Thank you for your May 2 letter concerning the underground water injection control provisions of H.R. 13002, the "Safe Drinking Water Act."

While I am sure that you are aware of my comments on this legislation relating to underground injection in my November 28, 1973, letter to Mr. Stagers, Chairman, Committee on Interstate and Foreign Commerce, I appreciate the opportunity to comment in response to your specific request regarding State underground injection control programs.

Texas and Kansas both have the statutory and regulatory authority necessary to meet the requirements of Sections 1421 and 1422 of H.R. 13002, with the exception of Section 1421(b)(5) relating to underground injections by Federal agencies. Permit applications, with supporting engineering and geological evaluation, are required prior to construction and operation of subsurface injection wells. Operating permits may be revoked and civil penalties may be assessed for non-compliance. The public record shows that, within available resources, Texas satisfies the EPA recommended policy on subsurface emplacement of fluids by well injection published in the Federal Register on April 2, 1974. Kansas applies this policy as required under the EPA National Pollutant Discharge Elimination System.

In light of these facts, and when measured by the present requirements of the sections cited from H.R. 13002, I would be inclined to view favorably an application for approval of these programs.

My staff and I will be pleased to provide any additional assistance you may require.

Sincerely yours,

RUSSELL E. TRAIN.

Mr. PICKLE. I understand. The gentleman knows that in the past sometimes Federal agencies got carried away when we start with guidelines.

If, before anyone can dig a hole in the ground, they have to comply with all these regulations, permits, et cetera, we are going to have our citizens further disgusted with their Government. When we have a State that has already provided safeguards, and a system that is working, we should be hesitant to change that system unless it is for compelling reasons of protecting the health of a community by safeguarding their drinking water. Therefore, I want us to be sure that before that Administrator issues these regulations he consider carefully the impact it will have on State regulations, and whether these regulations have in fact been working well.

Mr. ROGERS. Yes.

Mr. PICKLE. I would point out to the gentleman that for every barrel of oil that comes out of the ground, sometimes it takes almost the same amount of water to be pumped back into it to produce that oil, because oil is caught in pores of the rocks under the ground. Unless we can put this water down there, then we could have another health hazard if we use open pit systems.

(Mr. PICKLE asked and was given permission to revise and extend his remarks.)

Mr. STAGGERS. Mr. Chairman, I might take one moment to compliment all of those we have heard from on this bill. In its earlier versions I had some fears about the bill, but I am so convinced that the committee bill is one of the most necessary bills in America today. For those who have been interested in safe water through the years, I want to compliment them for the work they have done. I think the bill is in the interests of all Americans and I think we would be derelict in our duty if we did not pass this bill.

I have no further requests for time.

Mrs. HECKLER of Massachusetts. Mr. Chairman, we have all read with concern the recent reports linking cancer to contaminated drinking water. Less publicized are the estimates that contaminated water caused 130 waterborne disease outbreaks from 1961 to 1970, resulting in more than 46,000 illnesses and 20 deaths.

A major problem has been that although there are Federal water purity guidelines, last revised in 1962, there is no overall Federal enforcement power or even a national drinking water policy. The legislation now before us H.R.

EXHIBIT C

On 11/26/74 Senator Hart of Michigan introduced the House version of the SDWA with amendments to the Senate. Section 1421 of the Senate bill was identical to the House version. During the Senate debate Senator Hart made the following statements in regard to the underground injection control aspects of the bill. [120 Cong. Rec. S 20241 daily ed. Nov. 26, 1974]

PROTECTION OF UNDERGROUND SOURCES OF
DRINKING WATER

The Senate bill contains merely a study of the problem of underground drinking water contamination without regulatory authority. This is not to say that the record of the Committee on Commerce in considering this legislation did not make a showing of a need for regulation. The reason the Committee on Commerce and the Senate did not include a regulatory provision in its bill was because of a desire to test the effectiveness of existing law in coping with the problem. Since that time, it has become apparent that existing law is not sufficient in this area and this has been thoroughly documented in the documents of the House of Representatives accompanying this legislation. In fact, an opinion of the acting Deputy General Counsel, which, No. 500, issued December 13, 1973, states that the regulation of deep well injection under the Federal Water Pollution Control Act is not authorized if not in conjunction with a discharge into navigable waters. Obviously, most if not all of the discharges into underground water sources may not reach navigable waters and the burden of proving so would be extremely difficult.

The provision gives primary enforcement authority for the regulation of underground injection to the States in accordance with EPA guidance regulations. In order that the production of oil and gas would not be unduly hampered, the injection of brine incidental with the production of oil and gas and the injection of materials to accomplish secondary and tertiary recovery of oil or natural gas could not be regulated unless such requirements are essential to assure that underground sources of drinking water will not be endangered.

lining comments of Senator Hart [120 Cong. Rec. S 20242 daily ed. 26, 1974].

PROTECTION OF UNDERGROUND SOURCES OF
DRINKING WATER (SECTION 1421-1424)

These sections of the proposed amendment establish the procedure whereby underground sources of drinking water will be protected through State enforcement efforts with Federal backup enforcement if the States don't act in a timely fashion.

EPA is to publish regulations for State underground programs within 180 days after enactment of this title. The regulations are to prohibit underground injection if such injection may result in the presence in underground water of any contaminant which may result in any drinking water system not complying with any national primary drinking water regulation. A number of other requirements are made as well.

A State would be primarily responsible for enforcement of the regulations if it submits an application to the Administrator and shows that it will implement programs meeting the requirements and will keep records and make such reports with respect to its activities as may be required by regulation.

Underground injection control will not apply to injection of brine or other fluids which are produced incidental to the production of oil or natural gas or any other underground injection for secondary or tertiary recovery of oil or gas unless such requirements are essential to assuring that underground sources of drinking water will not be endangered. Federal enforcement would be authorized under the same type of conditions described in section 1414 above.

Finally, these provisions provide for the designation of areas in which no new underground injection may be operated during the period between the date of designation and ending on the date when the State undertakes an underground injection program. In any such area, no new underground injection may take place unless a permit is granted by the Administrator. The Administrator is authorized to designate such areas if the area has one aquifer which is the sole source of drinking water for the area and which if contaminated would present a significant public health hazard.

WILFRED M. JACKSON, MAINE, CHAIRMAN
 FRANK CHURCH, IDAHO
 LEE MITCHELL, MONT.
 J. D. HARTLEY JOHNSON, LA.
 JAMES H. HUGHES, R. DAK.
 FLOYD K. HARTFILL, COLO.
 JOHN GLENN, OHIO
 RICHARD STONE, FLA.
 DALE BUMPERS, ARK.
 GARCHVILLE GARRISON, SPECIAL COUNSEL AND STAFF DIRECTOR
 WILLIAM J. VAN HESS, CHIEF COUNSEL

PAUL J. TANNON, ARIZ.
 CLIFFORD P. HANSEN, WYO.
 MARK S. HATFIELD, OREG.
 JAMES A. MCCORMACK, IDAHO
 DEWEY F. BARTLETT, ORELA.

United States Senate

COMMITTEE ON
 INTERIOR AND INSULAR AFFAIRS
 WASHINGTON, D.C. 20510

April 14, 1976

ATTACHMENT TWO

Mr. Russell Train, Administrator
 Environmental Protection Agency
 401 M Street, S.W.
 Washington, D.C. 20460

Dear Mr. Train:

Your letter of January 8 on the Safe Drinking Water Act is appreciated, but it gives us cause for considerable concern. This concern has not been significantly diminished since reviewing your latest draft of State Underground Injection Control Program Proposed Regulations dated March 19, 1976.

In our previous letter we warned that the EPA's proposed underground injection control regulations as they relate to oil and gas production operations, although well-intentioned, appear to go beyond the intent of Congress in enacting the Safe Drinking Water Act. We urged the EPA to closely examine the proposed regulations in light of their potential effect on oil and gas production operations and stated that the EPA has not complied with the law in making the finding that the proposed regulations are essential to protect drinking water sources.

Your letter of response cited an excerpt from the House Report to demonstrate that only those regulations which would "stop or substantially delay production of oil or natural gas" must bear the test of essentiality. Apparently EPA is completely overlooking an earlier statement of the Committee in the same Report stating that, "The Committee adopted an amendment expressing its intent not to authorize needless interference with oil and gas production." We believe the proposed regulations if enforced, will result in the unnecessary expenditures of time and effort by the States and industry without adding significantly to water protection in this country. Additionally we believe that literal enforcement of these regulations over the next 5 years could result in the shutting in of major oil fields or major volumes of oil production again without adding significantly to water protection.

Further, we take little comfort from your letter that hearings will be held and opportunity given to offer written comments once the final version of proposed regulations is published. We understand that both the states and industry have commented at length on previous drafts and you admit to this in your letter.

Mr. Russell Train
Page 2

We further understand that the EPA has largely ignored the major concerns expressed by the states and industry and has incorporated only minor changes in subsequent drafts. We are therefore concerned that EPA's final proposed regulations when published in the Federal Register will be essentially similar to previous versions. And we believe a significantly different approach is warranted.

We think you should reconsider the promulgation of any underground injection control regulations relating to oil and gas production and injection operations until the EPA has determined that these regulations are essential as is required by the Law:

In conclusion, we hereby state, contrary to the conclusion in your response letter, it was Congress's intent when the Safe Drinking Water Act was enacted that the implementing regulations not needlessly interfere with or impede oil and natural gas production activities by imposing unnecessary additional requirements to state underground injection control programs which adequately protect drinking water supplies.

Our position is further elaborated in the attached.

Yours very truly,

P.S. An early response will be appreciated - B

Dewey F. Bartlett

Pete V. Dominici

Clair W. USS

Joseph M. Montoya

Bernice Ling

John Tower

Robert H. Smith

Henry Beeman

James B. Pearson

Stacy Benson

D. De

Sam Miller

COMMENTS CONCERNING EPA PROPOSED
UNDERGROUND INJECTION CONTROL REGULATIONS
TO ACCOMPANY LETTER TO RUSSELL E. TRAIN

APRIL 14, 1976

In its letter of January 8, 1976, the EPA claims to have consulted with nearly everyone imaginable on the underground injection control problem and acknowledges "interfere with or impede" in the law means "...those requirements which could stop or substantially delay production of oil or natural gas." Yet, the proposed regulations, if enforced, could systematically, during the next five years, shut in many of the major oil fields in the nation. To evaluate why this would occur, the EPA should carefully examine the draft proposals of March 19, 1976. In Sections 146.41(a) and 146.42 the language seems to require the Director to examine hundreds of pieces of data before a permit to continue operating an existing injection well can be considered. And for many fields, and areas within fields, the data will not be adequate "...to insure that all wells are 'properly' completed and/or plugged that in the judgment of the Director present a potential threat to underground drinking water sources; (sic)" as required in Section 146.42(f) notwithstanding the fact that many years of injection may have passed without contamination of underground water.

The EPA should understand that a substantial part of the oil produced today comes from fields which are 30 to 40 years old. Many of the practices used when these fields were developed are not subject of record and/or may not conform to today's standards. There would be relatively few instances where the Director would be able to fully conclude from data required to be accumulated by the regulations that there are no inadequately cased or cemented wells within a one-half mile radius. Further, if physical well completion inadequacies are thought to exist in any of these wells, they may not be correctable by practical remedial procedures. Thus, to comply with Section 146.41(a)(4), such underground injections "shall be ordered by the Director to discontinue operation...". When the Director discontinues operation of the injection well, he also shuts down the oil field, for oil is not produced without water, and produced water from most onshore fields is returned underground through injection wells. Such an inflexible rule strictly enforced with EPA's normal zeal for carrying out the letter of a regulation would unduly interfere with or impede underground injection.

In passing the Safe Drinking Water Act, Congress did not intend to unnecessarily or unwittingly close down our oil fields or portions thereof. In spite of possible apparent inadequacies in some of our older fields a long history of successful underground injection under close scrutiny of State agencies in the vast majority of fields precludes the kind of comprehensive, no exception, paperwork loaded regulations EPA is now considering. Only in those few instances where ground water contamination may happen to exist should measures such as EPA proposes be called "essential", and there are better ways to handle these few situations than the ways suggested so far by EPA. These few instances can best be left to the appropriate State agency to handle on a case by case method.

Also considering Sections 146.42, 146.47, 146.48, 146.49 and 146.50, we believe that few, if any, new secondary or tertiary recovery operations can be initiated without months or years of delay, if at all, under strict construction of the proposed regulations. Surely, there is inconsistency in the Administration trying on the one hand to increase domestic oil production while on the other adopting programs which would drastically curtail additional recovery efforts.

Now, even if the severe restrictions described above are moderated so as to give the Director reasonable discretionary freedom, the sheer volume of data required under the March 19, 1976, proposed regulation will still "interfere with and impede" injection operations through the unnecessary tabulation, filing, and review of data well known to industry and the States and on file therewith. The job of collecting and examining data on literally hundreds of wells in many instances will substantially detract from the really important job of producing oil and protecting water as is now being done. When the proposed constrictive and duplicative regulations are viewed in light of existing State programs which have evolved from years of experience, EPA's approach constitutes a vast overkill which has gone far beyond the bounds imposed by Congress in writing the Safe Drinking Water Act.

We question if the EPA has ever seriously examined the underground injection laws and regulations of the principal oil and gas producing states to determine whether they are adequate for the purposes of the Safe Drinking Water Act. If the EPA has found any of these laws and regulations inadequate we don't know about it. But, even if the EPA has found inadequacies, simpler and more practical ways exist to bring these programs into compliance than the extremely complicated and unnecessary EPA proposal.

Further, we take small comfort from the EPA's recent letter that hearings will be held and opportunity given to offer written comments once the proposed regulations are published. After all, we understand that both industry and the producing states have already directed extensive comments to the November 6, 1975 draft. And what was the result? The March 19, 1976 draft contains all the same objectionable features and has added several more burdensome and unnecessary sections. See Sections 146.43 through 146.46. We suspect that the proposed, published regulations will be substantially similar to the March 19, 1976 draft. If our conjecture proves correct, what is there to suggest that any appreciable changes in approach would result from testimony offered at the hearings or in comments? And, as we have previously suggested, a significantly different approach is warranted.

In the January 8 letter the EPA quoted from the House Report to substantiate its interpretation of the meaning of Sections 1421 and 1422 of the Safe Drinking Water Act and the Congressional debates on this legislation. The letter also questioned our interpretation of Congressional debates on this legislation and responded that:

"We do not believe that a court would read the floor debate as negating or even contradicting the House Report, particularly since no minority views were filed with the Report and neither Congressman Rogers nor Congressman Pickle disavowed the House Report during debate."

We strongly disagree. We feel it is imperative to analyze the floor debates of November 19, 1974, in order to understand why Congress supported this legislation as drafted.

You will note H.R. Report No. 93-1185 was issued on July 10, 1974, five months prior to final enactment, while the November 19, 1974, House floor debate occurred only a brief month prior to final enactment. Because of the proximity of the floor debates to final passage, it is our position that these debates most accurately indicate the Congressional intent behind the Safe Drinking Water Act, especially those comments related to Federal agencies getting carried away with writing guidelines.

The EPA response underestimates the significance of the exchange between Congressman Pickle and Congressman Rogers and the impact of Mr. Train's May 23, 1974, letter to Congressman Rogers which was inserted in the Congressional Record on November 19, 1974, as part of the legislative history of this bill.

Examined carefully, the floor debates indicate a modification of the committee report position in regard to the necessity for prodigious additional federal regulations of underground injection operations of energy production facilities where state programs do or can provide adequate statutory and regulatory authority to protect ground water supplies.

We believe that it is patently clear from the exchange between Congressman Pickle and Congressman Rogers during the floor debate that Representative Pickle was seriously concerned that just such an unneeded administrative monstrosity as EPA is now proposing should be avoided with vigor. There is no doubt that Congressman Pickle expressly requested information concerning what limits would be imposed on the EPA Administrator in promulgating underground injection regulations which could affect domestic energy production operations. It is also evident that Congressman Rogers and other Congressional supporters of this legislation relied on your May 23, 1974, letter to Congressman Rogers and used it to placate the justifiable concern of legislators like Congressman Pickle who feared the promulgation of excessive EPA regulations which would unnecessarily interfere with or impede domestic energy production operations. What these Congressional supporters of the Safe Drinking Water Act relied on was the implication in the May 23, 1974, letter that state underground injection control programs like those of Texas and Kansas had the statutory and regulatory authority necessary to meet the requirements of Sections 1421 and 1422 of the then pending bill, H.R. 13002, which became the Safe Drinking Water Act -- a situation which has not proven to be a fact.

We think the EPA must reconsider the promulgation of any underground injection control regulations which would be essentially similar to the March 19 draft. It is essential that any regulations give greater recognition to the wide differences in occurrence, distribution, existence, quality, and potential of underground water between the states. Further, the EPA should pragmatically assess the effect the proposed regulations would have on oil field injection operations. Clearly, the regulations proposed in the November 6 and March 19 drafts would have a very substantial negative impact on oil field injection and hence oil field producing operations.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA



1101 SIXTEENTH ST., N.W.
WASHINGTON, D. C. 20036
(202) 466-8240

OFFICE OF THE PRESIDENT
P. O. Box 787
ALBANY, TEXAS 76430
(817) 762-3366

January 14, 1977

A. V. JONES, JR.
PRESIDENT

ATTACHMENT THREE

Office of Water Supply (WH-550)
Environmental Protection Agency
Washington, D. C. 20460

ATTN: Comment Clerk Environmental
Impact Statement - UIC

Gentlemen:

Representing some 4,000 independent oil and gas producers and operators, the Independent Petroleum Association of America is grateful for the opportunity to comment on the EPA's proposed rules and regulations for underground injection controls as solicited in the Federal Register, Tuesday, August 31, 1976.

After careful analysis and lengthy discussion with IPAA's producer members, we have concluded that these proposed rules and regulations under discussion, interfere with or impede oil and gas production, by House definition clearly violating the Intent of Congress and exceeding legal authority.

Our position can be very briefly stated and then amplified with our attention confined to Subpart D in the main. If the proposed rules and regulations are adopted without significant change in several areas the following will result:

1. Millions of barrels of potential production will be lost at an economic cost of billions of dollars to the national economy and domestic supply reduced by those barrels;
2. Reduced domestic supply will have to be replaced at a cost of billions of dollars by imported crude;
3. The United States' security will be further endangered by increasing reliance on more insecure crude oil imports;
4. The United States' foreign policy will be forcibly altered to a

a position of further conciliation toward oil exporting nations;

5. Many hundreds of independent producers of oil and natural gas will be forced to either shut down certain operations or perhaps sell properties which they cannot, because of lack of available capital, remedy. Those sales, if a buyer can be found, will be of a "forced" sale from an economic standpoint.

6. Those operators who are able to comply, confined to larger firms and heavily capitalized individuals, will be forced to spend millions of dollars for remedial engineering projects, gathering required data, expanding funds for reporting, and other incurred expenses, further diluting capital necessary for the industry's primary goal and responsibility, finding new supplies of oil and natural gas;

7. An onerous regulatory burden will be placed on the State Governments. Historically, Federal grants rarely equal total funding required for implementation; and

8. All of the above will ultimately cause the cost of energy to escalate, impacting on the consumer and thus contributing further to inflation and adverse balance of payments. This will occur without any significant improvement in drinking water quality.

In the Interim Final Rule Making under the provisions of the Federal Water Pollution Control Act - (FWPCA - PL. 92-500) Federal Register, Vol. 41, No. 199, Wednesday, October 13, 1976) EPA itself noted:

"Economic analysis indicated unacceptable economic impacts would result from the application of the technologies which have now been evaluated for the stripper subcategory. Moreover this subcategory constitutes only .1 - .3% of the industry based on production and thus pollutant loads are very small in relation to those contributed by the other subcategories in this category. Accordingly, limitations for the stripper subcategory are being reserved pending study of other, less capital-intensive control technologies."

The National Stripper Well Association reports 72 percent or 367,872 of the nation's crude oil producing wells as of 1975 were strippers. It would seem from the above that EPA recognizes that a portion of the nation's oil wells would be

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unacceptably economically impacted by implementation of the provisions of the FWPCA. It follows then, that the EPA should recognize that these proposed rules and regulations under the Safe Drinking Water Act (SDWA) PL. 93-253 will have a far greater economic impact because the proposed qualifying rules are much more stringent, onerous, burdensome and costly than most of those of FWPCA.

In view of EPA's above cited interpretation of FWPCA, we further find it difficult to understand the statement, in the UIC proposal, to wit:

"It is our judgement that these proposed regulations will not have a significant impact on inflation as specified in the Agency's Guidelines....Hence these regulations are not considered major regulatory actions so that they do not require perpetration of an Inflation Impact Statement as set forth in Executive Order 11821." (Emphasis added.)

We have serious misgivings in regard to that judgment because the proposed rules and regulations will have inflationary impact with economic disaster on the oil industry, cause lost production, necessitate increased imports, and finally, hit the consumer in his pocketbook. From this standpoint we feel strongly that EPA has largely ignored Executive Order 11821 as modified by OMB Circular A-107 and the Draft EIS is at best superficial as related to Subpart D.

In devising the proposed rules and regulations for UIC implementation, we feel that EPA has indeed thrown out the baby with the bath water. The proposed rules are drawn as if the United States was geologically universal and that oil and gas exploration and production began at the same time in every producing area.

Wells drilled in earlier years number in the hundreds of thousands, many of them still producing (639,020 on January 1, 1976). Since Titusville through January 1, 1976 2,305,129 known wells have been drilled in the United States. yet, as recorded in the SDWA Hearings Report, Serial No. 93-11, pp. 202-3 EPA Deputy Administrator Robert W. Fri was only able to list approximately 40 known incidents of ground water pollution from subsurface injection. These incidents

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were not dated, were located in 22 states, and only 21 were attributable to oil and gas production operations. The lost production caused by these regulations would necessitate additional tankers to bring in foreign oil, it would be appropriate for EPA to compare the spill incidence and consequence of domestic production vs. tankered oil. The EPA in fact may be encouraging more pollution not less.

"As an example, Mr Fri's listings indicated pollution of shallow aquifers from brine injection operations in Okmulgee, Muskogee, Tulsa, Nowata and Rogers counties, Oklahoma. The latter two counties are part of one of the oldest Oklahoma fields. Both production and injection wells are of an inch and a half diameter. Casing has been removed, if it was ever present. In Pennsylvania and New York, it is common to have 40 or 50 intake wells on a 100 acre lease with one pressure plant mechanically serving several hundred acres. In this area, wells were originally dug 6 1/2 inch casing set, two-inch tubing run and then casing pulled, a common practice. Also, in Pennsylvania, we have been informed the industry has made numerous attempts to cement pipe to the surface and found in a large percentage of the cases such a technique to be mechanically impossible. (The injectible fluid in Pennsylvania in most cases is ground water for the water flood projects.) Few if any pollution cases have been noted. In West Virginia, one independent oil producer reports he has 567 wells with no tubing long string annulus so therefore it would be impossible to monitor annulus pressure. Here, too, tubing is cemented in the hole and all casing removed."

To re-enter, set new casing, cement to the surface, and meet other proposed requirements such as pressure measurement simply will not be done because it is not possible nor cost economic. Operators in these circumstances, in Oklahoma and Pennsylvania and practically every other state, will be forced to abandon that production. (See Attachment I).

Again, any abandoned producible production is a blow to this nation's security as that plugged production will have to be replaced with a barrel of imported crude. House Report 93-1185, from which we quote, says:

"The Committee adopted an amendment expressing its intent not to authorize needless interference with oil and gas production (rather than Exclusion language of (FWPCA). This amendment prohibits regulations for State underground injection control programs from prescribing requirements which would interfere with production of oil or natural gas or disposal of biproducts associated with such production, except that such requirements are authorized to be prescribed if essential to assure that underground sources of drinking water will not be endangered by such activity."

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"The Committee's intent in adopting this amendment was not to require EPA to bear an impossible burden of proof as a condition of promulgation of any such regulation. Rather, the Committee sought to assure that constraints on energy production activities would be kept as limited in scope as possible while still assuring the safety of present and potential sources of drinking water...."

"Further:"....The Committee intends that...."essential" (to mean) unless the contrary could be demonstrated with respect to a specific well or injection. Moreover, in using the words "interfere with or impede", the Committee did not intend to include every regulatory requirement which would necessitate the expenditure of time, money, or effort. Rather, the Committee intended to refer to those requirements which would stop or substantially delay production of oil or natural gas." (Emphasis added.) (p. 31)

Essentiality and lost production are the key thoughts in the above expressions. Even with the Committee condoning expenditures of time, money and effort, we believe that their prohibitive capital outlays were unforeseen. Further, members of the independent segment of the oil and gas producers state the proposed rules and regulations not only would stop or substantially delay some domestic production, but would result in the ultimate loss of millions of barrels of domestic reserves. The proposed rules would require incalculable capital expenditures and force some independent producers from the industry. We are unable to find in any of the related documents an Intent of Congress to bankrupt any members of the domestic industry, nor has it been the tenor of Congress to lessen competition, particularly in the oil industry.

The IPAA conducted a selected sample survey of 237 member operators. Twenty-seven, for a response of 11%, estimated that if the injection pressure requirement is retained, ultimate loss of oil recovery will exceed 202 million barrels and that capital investment for additional injection or disposal wells to maintain

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capacity would exceed \$75 million dollars. Each firm confines its judgment to or operated production.

These 27 firms, of the nation's thousands, report that to comply with other proposals, production loss will be in excess of 30,000 BOPD with loss of ultimate oil recovery totaling 35 million barrels. Other results are compiled on Attachment II.

We re-emphasize that this response is from only 27 independent producer-operators and that the projections can be magnified many times.

To reiterate, the intent of the law from the House Report (The Senate was silent on this point) was written so that controls could not "interfere with or impede"¹ production, further meaning "stop or substantially delay"² production. It seems to us that 200 million barrels of oil lost to ultimate recovery, from a sampling, is a lot of "interfering with or impeding."

As a sidelight, questions have arisen as to matters pertaining to the Constitution, but there is no doubt those questions will have to be resolved at a later time and place and not in these solicited comments.

Your attention is further directed to a colloquy reported in the November 19, 1974 Congressional Record, pp. H10800-1:

MR. PICKLE:....I would like to ask the chairman of the subcommittee whether it was the intent of the Congress that the Administrator propose such regulations that will require every person, whether he is drilling for an oil well or a water well, to obtain certification from the EPA that he is not guilty of pollution as well as obtaining certification from the State. Would the chairman comment about what he thinks was the intent in this particular section---(1421 previously referred to)---that is, to give the Administrator unlimited powers?

MR ROGERS: No. First of all, it gives primary responsibility to the State.

1. House Report 93-1185, p. 31

2. PL. 93-523 Part C, Sec. 1421 (b) (2)

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Part S speaks only to the adequacy of State programs, not individual wells. Also, as the gentleman knows, the provisions of the bill are not concerned so much with drilling as with the injection of waste into the ground. (Emphasis added.)

(Mr. Pickle further addressses this question in pointing out that production of brine or water is an almost absolute certainty with the production of oil and/or natural gas. It is our contention that EPA again has overstepped the legal authority and Intent of Congress in this respect.)

MR. PICKLE....If this Administrator takes upon himself the responsibility that has been exercised in other legislation passed, then we can expect a great deal of burden to be put on the States. If the State is doing the job, then I would say they ought not be subject to the same kinds of regulations.

MR. ROGERS: May I say, I think the gentleman is basically right in his concept. For instance, Mr. Train has already written us about Texas saying he feels the program is sufficient to qualify under provisions of the proposal."

(On request of Mr. Pickle, Mr. Rogers inserted in the Record a letter of May 23, 1974 from Administrator Train. We quote in part:...."Texas and Kansas both have the statutory and regulatory authority necessary to meet the requirements of Sections 1421 and 1422 of HR 13002, with the exception of Section 1421 (b) (5) relating to underground injections by Federal agencies....")

MR. PICKLE....When we have a State that has already provided safeguards, and a system is working, we should be hesitant to change that system unless it is for compelling reasons of protecting the health of a community by safeguarding their drinking water. Therefore, I want us to be sure that before the Administrator issues these regulations he consider carefully the impact it will have on State regulations, and whether these regulations have in fact been working well.

MR. ROGERS: Yes.

MR. PICKLE: I would point out to the gentleman that for every barrel of oil

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that comes out of the ground, sometimes it takes almost the same amount of water to be pumped back into it to produce that oil, because oil is caught in pores of the rocks under the ground. Unless we can put this water down there, then we could have another health hazard if we use open pit systems. (End Colloquy.)

Returning to Oklahoma, primarily because that State was one of the first to assume a regulatory position on the oil and gas industry---and pollution---and records are perhaps better than many other States, we are informed of the Following:

Oklahoma has some 81,364 producing wells as of January 1, 1976. There are also some 10,000 injection wells in Oklahoma, where a total of 302,473 wells have been drilled, or one drilled every 145.53 acres on the average.

The Oklahoma Corporation Commission, the industry's state regulatory body, maintains that to review each existing well within the given time frame, it will take one employee working a normal eight-hour, five-day, week and reviewing one well an hour for the entire five-year period for the permit process alone.

This would allow the employee two weeks vacation each of the five years, however.

The OCC also informs us that 10,000 reports each week, retained as required, would require a storage capacity of some magnitude. After shortly more than three years into the program, using a one page report form, Oklahoma's stack of weekly reports would exceed the height of the Washington Monument.

In sum, the proposed rules and regulations are impossible for the industry to comply or live with unless some very basic and absolutely necessary changes are made. We most strongly urge the following changes in the proposed rules and regulations:

1. First and foremost, the basic concept of state primacy must be maintained. In the preamble, EPA adheres to the principle that State primacy is essential. Pennsylvania, Oklahoma, Texas, Colorado, and New Mexico all have different aquifers, different geological formations and different aged oil fields

The oil and gas producers have always been accountable ultimately to the

landowner. If, in addition, for years, a state has been carefully protecting drinking water of its consumer citizens those wells should not be made to be in compliance with generalized and unworkable nationwide standards. A "grandfather" clause should be permitted so as to allow wells with no history of contamination to continue to operate. Although the Administrator may allow, upon a Governor's request, operation by rule for existing wells for a period of up to five years, that rule operation will only delay eventual shut-in of production.

2. The permit data requirements for new and existing injection wells should be changed so as to mean, in essence, "as far as such data is public record and readily available." Citing Oklahoma again, where records are better than average, it is perfectly obvious that detailed data on 302,000 wells drilled is not available or manageable administratively. Millions of man hours will be exhausted searching for something that is not extant.

3. A less stringent approach to surface injection-fracture ratio must be adopted. As shown by the attached survey, many injection projects and remedial operations require that higher than fracture pressure must be utilized and to do otherwise will result in lost production and lost recovery of millions of barrels of proved reserves.

4. Re-permitting should be on a well life rather than a five-year renewal basis, unless there is an incident of proven underground contamination, a positive proof of "essential" need. This is a perfect example of made-work regulatory requirement which will prove onerous and burdensome in both administration and from the standpoint of the operator.

5. The weekly data report should be changed to a more administratively practical basis, quarterly, or ideally at a State's prerogative.

6. In view of EPA's position in regard to FWPCA interim reservation for stripper subcategories, it is our judgment that injection rules and regulations,

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applicable to proposed rules of SWDA, upon close analysis, will also reveal "unacceptable economic impacts". Therefore serious consideration should be given to exception of stripper well injection projects. Again, we emphasize that the state regulatory bodies are more appropriate to determine hardships within their own producing areas and to implement their regulations accordingly.

It is our judgment that unless these recommendations are made, the impact of the EPA's proposals will have a disastrous effect on the nation's supply, the nation's industry and the nation's security.

We most urgently request that EPA give the most serious consideration of the above enumerated recommendations.

Sincerely,

A. V. Jones, Jr.
President, IPAA

Attachments

Subpart D - Requirements Applicable to Injection
Wells Related to Oil and Gas Production

ATTACHMENT II

Selected Survey of IPAA producers-operators
27 respondents of 237 queries

1. "146.42(b) The Director shall review data on existing underground injection and on proposed new underground injections to assure that ...
(5) Surface injection pressure is limited to preclude the possibility of fracturing the confining strata."

If injection pressure is limited to less than fracture pressure, estimate:

- (a) Required gross capital investment for additional injection or disposal wells to maintain injection or disposal capacity \$ 21,705,000
(b) Loss of ultimate oil recovery 202,293,500 (Bbls).
(c) Reduction in current daily gross operated production rate 5,569 (BOPD)

No. of current injection and disposal wells affected 1,468 (partial report).

2. Sections 146.41, 146.42 and 146.47 require the Director to review data on all wells that penetrate the proposed injection zone within one-half mile of existing or new injection or disposal wells. These sections will require the applicant to submit, among other, the following information with the application for a UIC permit ---

"146.47-(a) (ii) A map showing name and location of all producing wells, injection wells, abandoned wells, dry holes, and water wells of record within a one-half mile radius of the proposed injection well; and

(iii) A tabulation of all wells requested under (ii) penetrating the proposed injection zone, showing: operator; lease; well number; surface casing size and weight, depth, and cementing data; intermediate casing size and weight, depth and cementing data; long string size and weight, depth and cementing data; and plugging data."

Estimate the cost per injection or disposal well to determine and prepare the requested information to accompany the application for permit,

- \$ 52,410 per injection or disposal well, and
\$ 1,995,760 total for all injection or disposal wells operated.

In the event all requested information is not available, injection or disposal wells may be shut in. In this event, estimate:

- (a) Costs for alternative solutions, such as
(1) Deepen all injection wells (disposal operation only) to zone below deepest well (within one-half mile of injection well) for which requested data is not available \$ 8,872,500
(2) drill new injection well(s) (disposal operations only) more than one-half mile away from nearest well for which requested data are not available \$ 18,456,000
(3) drill monitoring wells immediately adjacent to all wells for which requested data are not available to test all fresh water sands \$ 6,791,400
(4) reenter old wells for which all data are not available and properly condition or plug and abandon \$ 22,051,000
(5) other alternative (please specify "quit" "abandon the
lease, "none possible."
(b) Reduction in daily production rate 31,860 (Bbls), or
(c) Loss of ultimate oil recovery 37,920,000 (Bbls).
3. Section 146.49 requires weekly monitoring of all injection wells for the recording of surface rejection pressure, tubing-long string annulus pressure, volume of injected fluid and daily average of injected fluid volume.

Estimate the incremental cost to provide this data on a weekly basis over that to provide the same data on a monthly basis,

- \$ 4,534 per injection or disposal well, and
\$ 104,994 total, all injection and disposal well operated.

RETURN TO: IPAA
1101 Sixteenth Street, N. W.
Washington, D. C. 20036
ATTN: Charley Cooper

Submitting Company

PHONE:
913/677-8662 Abilene
316/365-2413 Iowa

ASSOCIATE:
RUSSELL OPERATING CO.
Abilene, Texas
Iola, Kansas

RUSSELL ENGINEERING
PETROLEUM CONSULTANTS
P. O. Box 2618
2801 North Third Street
ABILENE, TEXAS 79604

January 13, 1977

Mr. Victor Kim
Deputy Administrator
Environmental Protection Agency
W H 550
401 M Street, S. W.
Washington, D. C. 20460

Dear Mr. Kim:

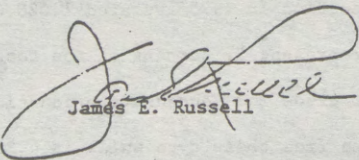
In accordance to your request at our meeting in Denver on December 17, 1976, I have reduced to writing our discussion concerning the "Slim Hole Completed Well" and its relationship to the proposed UIC regulations. This discussion is enclosed for your information.

You will note I have not submitted any language to cover this situation but believe it can be handled by clearer definition to include the slim hole problem or by giving the Director the flexibility to exempt such completions from the rules if there is no endangerment to underground fresh water sources.

Your concern about this matter is deeply appreciated. I also appreciate the opportunity that our group had to meet with you in Denver and discuss openly our problems. If I can be of any service in the furtherance of this cause please let me know.

Very truly yours,

RUSSELL ENGINEERING


James E. Russell

JER:CW
Enclosure

ATTACHMENT ITHE UIC REGULATIONS
AND THE
SLIM HOLE COMPLETED WELLS

My name is James E. Russell of Abilene, Texas. I am a Consulting Petroleum Engineer and Independent Oil and Gas Operator. I am a member of the Ad-Hoc Committee of the API in its study of the proposed UIC regulations as well as being a spokesman for IPAA, TIPRO, KIOGA, WectOGA, LIAISON COMMITTEE, and several other associations on this subject matter. There are over 10,000 independent operators in the United States most of whom are represented through one or more of the Independent Oil and Gas Associations.

We, as a group, are concerned over the impact of strict application of the proposed UIC rules, if implemented, with respect to future operations and production from stripper wells, marginal secondary recovery projects, and slim hole completed wells. According to the National Stripper Well Survey for 1975 prepared by the National Stripper Well Association there were 367,872 stripper wells in the United States producing an average of 2.93 barrels of oil per day per well. Total stripper well production in 1975 averaged 1,080,000 barrels of oil per day. These wells represent 72 percent of the total oil wells and 13.7 percent of total crude and condensate production in the United States. Estimated reserves from these type wells is 4.85 billion barrels of which 3.00 billion are primary and 1.85 billion are secondary. Most of this type production is owned by the independent segment of the industry.

Although no exact figures are available, the writer estimates that at least 50 percent of the 367,872 wells in this category are producing from secondary recovery operations or 183,936. Generally speaking, in secondary operations, one (1) injection well is required for each producing well which would result in 183,936 wells not included in any well count. Many of these wells have been drilled and completed in projects of relatively shallow depths - 2000 feet or less - in the older producing areas of the United States such as Texas, Kansas, Oklahoma, West Virginia, Pennsylvania, Kentucky, Illinois, Indiana, Ohio, and others. In these shallow areas, I have been familiar with the completion of wells with $1\frac{1}{4}$ ", 2-3/8", and 2-7/8" casing for both injection and production wells. These wells have been completed by setting surface casing and cementing the production casing with 5 - 10 sacks of cement or circulating cement to the surface. Fluid is injected into most injection wells without any small diameter tubing or packer in the well. Many of the producing wells flow their production or are pumped by running 1" hollow rods on an insert barrel. Many thousands of wells are in this category throughout the United States.

The proposed rules are not clear in the definitions to cover injection directly into the casing (slim hole completed wells) as discussed above. In those cases where surface casing has been set and the production string has been cemented at the bottom of the well, the annulus possibly can be monitored for leaks although it may be full of drilling mud. However, where cement has been circulated to the surface, no annulus exists to be monitored. If a smaller diameter tubing string were

required to be set on a packer in such wells in order to monitor the annulus, the cost of such re-completion would be excessive and prohibitive to many secondary projects, particularly in the latter stages of production, and undoubtedly cause early abandonment and loss of ultimate reserves. A secondary issued, but extremely important, is that installation of small diameter tubing inside the 1½" or 2-3/8" casing would restrict the injection rates that could render such projects uneconomic. The drilling of additional wells to obtain increased or proper injection rates for reasonable flood-out time would probably cause many projects to be prematurely abandoned and others not to be started at all.

Any deterrent to continued operations of present secondary recovery projects under the proposed rules or deferment of initiation of new projects could seriously impede production and ultimate reserves. The rules should be explicit with respect to monitoring the slim hole type well completion or give the Director the flexibility to permit continued operations and allow future completions of this type well in order to recover the millions of barrels of marginal and/or stripper oil that is available to the Nation.

Many case histories are available to the writer to support the contentions set out above. However, such documentation is readily available from most State Agencies concerned with the production of oil and gas and the protection of underground water sources. In areas in which this writer is particularly knowledgeable, such as Texas, Oklahoma, and Kansas, the State regulatory agencies have always inspected, controlled, and corrected on a timely basis any problems that would cause endangerment to underground water sources.

LIAISON COMMITTEE OF
COOPERATING OIL AND GAS ASSOCIATIONS

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Houston, Texas

EASTERN: James K. Vincent
Owensboro, Kentucky

ATTACHMENT FOUR

COMMENTS ON
PROPOSED RULES
FOR
UNDERGROUND INJECTION CONTROL PROGRAM

ENVIRONMENTAL PROTECTION AGENCY

STATEMENT OF MR. R. H. PREWITT, JR.

Chairman of

Liaison Committee of Cooperating Oil and Gas Associations

October 6, 1976

Members of the panel:

My name is R. H. Prewitt, Jr. I am an independent oil and gas producer here in Denver. I appear today as chairman of the Liaison Committee of Cooperating Oil and Gas Associations, which is an organization composed of twenty-two separate petroleum associations from across the country, representing several thousand members.

My comments will be brief.

First, I would like to make one or two general comments about the rules under Section "D" of the proposed regulations --- those involving petroleum producers. Then, a few specific suggestions relative to those rules.

Your agency has the responsibility for setting forth regulations governing the State Underground Injection Control Program as mandated by Congress in the Safe Drinking Water Act.

But as I read the proposed rules, I began to see a very direct parallel between these regulations, resulting from that law, and recent Department of Interior regulations governing oil and gas operations on federal lands resulting from the Environmental Policy Act --- regulations which we call "Death of a Thousand Cuts" because they have, through mounting paperwork and procedures, seriously delayed and

-2-

disrupted operations on federal oil and gas leases, added substantially to costs, both to the private sector and to government, and, by impeding producers' ability to function, hampered development of vital oil and gas resources.

This was not the intent of lawmakers in drafting the Environmental Policy Act. This also is not the intent of Congress in the Safe Drinking Water Act, which clearly indicates, in Section 1421 (b) (2), the intent to avoid unduly interfering with or impeding oil and gas production.

We are all aware of the need to protect the nation's environment and its underground fresh water supplies. But we object to regulations that we believe represent overkill --- that go further than necessary, adding to the burden of the oil and gas producer and ultimately to consumer costs.

A few specific comments relative to the proposed regulations:

We oppose the proposed requirements that injection well permits be processed for existing injection well operations which are known, under current state regulatory requirements, to pose no problems for potable underground water. We urge that such injection wells be authorized permanent permits, subject to revocation should the monitoring process prescribed in the regulations reveal subsequent endangerment to potable water supplies.

Current injection well operations which pose or threaten to pose a problem could be isolated and subjected to the permit requirements that are prescribed.

Further, we see little reason for requiring permits to be renewed on a five-year basis. If the monitoring system is adequate, and we believe it is more than adequate, why subject both regulators and industry to the burden of repetitive permit renewal on well operations whose number will grow as the vital process of secondary and tertiary recovery expands in the years ahead.

As for monitoring requirements, we strongly urge that weekly reporting be adjusted to a monthly reporting basis. Weekly review of operations would mean a severe and costly administrative problem for the producer. For producers who do not now schedule weekly visitations for nonregulatory purposes, it could mean hiring additional personnel. Monthly checks are more than adequate to insure protection of underground water supplies.

Finally, and most important in terms of maximizing oil recovery, we strongly urge the proposed requirement that "surface injection pressure is limited to preclude the possibility of fracturing the confining strata," be sufficiently liberalized to preserve secondary recovery projects which require pressure variance.

-4-

We believe it should be left to the judgment of the state agency to determine when and under what conditions it is in the best interests of preserving both water and petroleum supplies to allow for higher injection well pressure. It would be ridiculous, for example, to irrevocably lose millions of barrels of oil in order to avoid the possible contamination of a relatively small and unused water supply source.

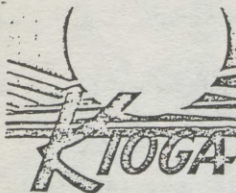
And, relative to the state agency, we strongly urge that the EPA recommend that this program be carried out by state regulatory bodies which now handle oil and gas operations and which are currently administering state regulations dealing with underground water source protection.

While this brief testimony has touched on a few of the problems raised by the proposed regulations, we further endorse other suggestions which will be submitted to you by the Texas Railroad Commission, Interstate Oil Compact Commission and others.

We believe we seek only reasonable adjustments and we ask that you consider these in your effort to design fair regulations for preserving this nation's water and petroleum resources.

Thank you.

ATTACHMENT FIVE



KANSAS INDEPENDENT OIL & GAS ASSOCIATION

940 FOURTH FINANCIAL CENTER • WICHITA, KANSAS 67202 • (316) 263-7297

January 12, 1977

J. W. SHELTON, JR.

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DONALD P. SCHNACKE
EXECUTIVE VICE-PRESIDENT

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EXECUTIVE COMMITTEE

Comment Clerk

Underground Injection Control Grant Program
Office of Water Supply (WH-550)
Environmental Protection Agency
Washington, D. C. 20460

Gentlemen:

Our Association indicated at the EPA public hearing held in Dallas, Texas, October 13, 1976, that we desired to file written comments pertaining to the proposed State underground injection control program.

Enclosed, in triplicate, are additional written comments dated January 12, 1977.

Thank you for this opportunity to provide input into this program.

Sincerely,

Donald P. Schnacke

DPS/cs

Encl. (3)

WRITTEN COMMENTS
ON
SAFE DRINKING WATER ACT (ACT 93-523)

BY

KANSAS INDEPENDENT OIL AND GAS ASSOCIATION

JANUARY 12, 1977

PREFACE

The Kansas Independent Oil and Gas Association through Mr. Donald P. Schnacke, their executive vice-president, offered verbal technical comments pertaining to proposed State underground injection control program before the EPA Region VI Meeting in Dallas, Texas on October 13, 1976 (copy attached). At that meeting Mr. Schnacke indicated written comments pertaining to these proposed regulations would be submitted to the designated office of the EPA in Washington, D.C. by January 14, 1977.

We appreciate the opportunity to submit the following commentary pertaining to the proposed State underground injection control program authorized by the Congress as contained in the newly enacted Safe Drinking Water Act, P.L. 93-523 and published in the Federal Register, Tuesday, August 31, 1976.

The Kansas Independent Oil and Gas Association (KIOGA) was founded in 1937. One of the principal purposes for its formation was to promote the general welfare of the oil and gas industry in Kansas. Through the years the Association while representing the majority of oil and gas producers in the State of Kansas has become a leading voice in the formulation of policy and regulations pertaining to the oil and gas industry nationwide.

For the most part the oil and gas industry in Kansas is comprised of small stripper oil producers and it is the effect these proposed regulations have on these operators that we direct our attention.

The intent of the proposed regulation is to establish minimum requirements for effective State programs to protect existing and potential underground sources of drinking water from endangerment from underground injection of fluids. The States are to exercise primary enforcement responsibility for the protection of underground sources of drinking water. The regulations are designed to be administratively compatible with and non-duplicative of existing State programs. (Emphasis added).

The State of Kansas has enjoyed a long-standing successful program which controls underground injection resulting in effectively protecting fresh and usable drinking water sources. More than 40 years experience in this work has proven Kansas to be one of the "pioneer" states in the promulgation of rules and regulations which protect its underground drinking water sources. The Kansas Corporation Commission with its Administrator of the Oil and Gas Conservation Division has proven very proficient in controlling the underground injection of fluids and the protection of fresh water aquifers in Kansas.

It is not our contention that our Kansas rules should be adopted as a national standard for every state. Our regulations differ from those of Oklahoma, Texas, California, Louisiana and other states having similar regulations. Why? Because the practices necessary to protect the underground fresh water sources are different in each state, even different in various parts of the same state. It is not practical to attempt a national-wide uniform protection plan such as proposed here by EPA. There is little or no evidence that the state programs are inadequate in the protection of the fresh water aquifers. If it is determined that a state has neither a responsible permit program nor an adequate set of rules to provide for the protection of the underground fresh water sources, then EPA could suggest certain guidelines or set minimum requirements which would be a pattern for the state to follow. In any case the state should assume the responsibility of initiating its own protection plan or refine an existing program.

As of November 30, 1976 a total of 4195 active saltwater disposal wells and an estimated 6500 active water injection wells were operating in the State of Kansas. During the year 1975 the oil and gas operators in Kansas applied for 209 repressuring and saltwater disposal permits. During the 11 months of 1976 to November 30, 1976 a total of 250 such applications were submitted to the Administrator. The requirements on these applications were similar but not as stringent or as far-reaching as the requirements spelled out in the program proposed by EPA under Subpart D. The State laws of Kansas as administered by the Kansas State Corporation Commission, State Board of Health and other State agencies have proven very adequate in protecting fresh and usable water aquifers in each and every one of the above permits issued to the applicants.

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IMPACT OF PROPOSED REGULATIONS
ON KANSAS OIL & GAS PRODUCERS

A. GENERAL

Under the heading "Legal Framework of the Regulations" in Section 1421 (b)(2) of the Act a statement is made that the proposed rules are not to interfere with or impede underground injection in connection with oil and gas production or the secondary or tertiary recovery of oil and gas. The House report accompanying the Act defines the term "interfere with or impede" to mean "stop or substantially delay."

Your attention is also called to a statement made under the heading "Comments" on page 36736 of the Federal Register, Tuesday, August 31, 1976. In that statement you indicated that these proposed regulations are not a "major regulatory action" and will not have a significant impact on inflation as specified in the EPA guidelines. It is understood your guidelines are to contain criteria on "cost impacts, effects on productivity, competition, supplies of important materials, employment and energy." Your contention that an Inflation Impact Statement is not required in this case cannot be further from the truth. The excessive requirements contained in this sweeping federal proposal will significantly increase the costs incurred by the petroleum industry by hundreds of thousands of dollars each year in the State of Kansas alone while providing little, if any, additional protection of fresh and usable water aquifers over and above those steps now being taken successfully by the present well-established State program.

The UIC regulations now proposed contain requirements which are wholly inappropriate to the Kansas oil and gas operation. If implemented they will definitely "stop or substantially delay" injection operations in oil and gas production activities. Furthermore, implementation of these excessive requirements will cause unnecessary economic hardship on Kansas oil and gas operators. In either case the apparent results will be premature abandonment of oil and gas producing properties or cessation of further development of productive properties creating material and economic waste of this precious natural source of energy.

B. SPECIFIC

Item 1. Definitions.

- (a) Section 146.2 (g) "Underground drinking water source" means (1.) an aquifer which currently

supplies a public water system, or (2) an aquifer which contains water having less than 10,000 mg/liter total dissolved solids.

Recommendation: We propose to modify this to afford a more practical definition of underground drinking water, and offer the following for consideration:

"Underground drinking water source" will consist of (1) an aquifer containing "fresh" water having not more than five hundred (500) parts per million or milligrams per liter (mg/l) chlorides and suitable for human consumption, or (2) an aquifer containing "usable" water having more than five hundred (500) parts per million (mg/l) and not more than five thousand (5000) parts per million (mg/l) chlorides.

Comment: The basic contaminant in drinking water aquifers in most areas, especially Kansas, is the chloride component. Although milligrams per liter in the case of water is equivalent to parts per million, common usage is the term parts per million and will continue to be so for sometime. We suggest placing (mg/l) in parentheses as shown.

- (b) Section 146.2 (h) - "Contaminant" means any physical, chemical, biological or radiological substance or matter in water.

Recommendation: We offer the following, "Contaminant" means any physical, chemical biological or radiological substance or matter in sufficient quantities to render water unsuitable for drinking.

Comment: All fresh water contains these elements to some degree but not in sufficient quantities to preclude usage of the water as a drinking water source. However, when such quantities become sufficient to render the water unsuitable for drinking purposes, then it is contaminated.

- (c) Section 146.2 (r) "Well injection" means subsurface emplacement through a bored, drilled or driven well, or through a dug well where

the depth is greater than the largest surface dimension, whenever a principal function of a well is the subsurface emplacement of fluids.

Recommendation: Add the following to the above: Incidental emplacement of fluids during drilling or workover operations such as acid or fracturing materials are to be exempt from this definition.

Comment: Such incidental injection is short termed and emplacement is for the purpose of increasing the productivity of a producer or the injectivity of an injection well.

Item 2. Section 146.3 Duration of permits.

Section 146.4 Renewal of UIC permits.

Section 146.5 Public notice of renewal of UIC permits.

Recommendation: We propose all three sections be deleted from the rules.

Comment: The rigid requirements for inspection and surveillance procedures by the State to insure compliance by the permittees with all the terms and conditions spelled out in the original permit issued by the State, make time limit on duration or requirements for renewal of a permit seem superfluous.

Item 3. Subpart C

Requirements applicable to waste disposal well and engineering wells.

This category is comprised of:

- (a) Municipal and industrial waste disposal wells.
- (b) Subsidence control wells.
- (c) Barrier wells.

- (d) Recharge wells.
- (e) Mining wells.
- (f) Storage wells.
- (g) Geothermal wells.

Recommendation: We propose all of the above class wells except (a) Municipal and industrial water disposal wells be transferred or reclassified under subpart E of the proposed rules. This could be in "addition" to the Drainage wells already in that category.

Comment: The type wells we recommend to be reclassified are generally referred to as engineering wells. In Kansas we have only the gas storage wells. These are usually operated by public utilities. The operators are very careful not to have leakage of this gas to any zone other than the storage formation. There is little or no chance of contamination due to the type of injection. The other "engineering wells" are somewhat special in their purpose and burdening these operations with unnecessary and cumbersome requirements only add to the operating costs. We believe that subpart C should only apply to municipal and industrial waste disposal wells.

No mention was made in the proposed regulation for control of steam in the Steam Flood Injection projects in Kansas. Assuming steam is a "fluid" within the definition of the term, we propose it also be classed under subpart E. Steam flood injection wells are normally completed with extra strong casing to withstand the thermal stresses resulting from the steam injection operations. If steam were to leak from the casing any detrimental effects on an underground drinking water source would be negligible.

- Item 4. Section 146.42 (a) (1) All underground drinking water sources of 3,000 mg/liter total dissolved solids or less are protected by surface casing cemented to the surface.

Recommendation: We propose striking this and recommend the following be substituted in place thereof: "Surface pipe or casing shall

be set to a depth not less than 25 feet below the bottom of an aquifer containing fresh and/or usable water. The Director may approve an alternate method of protection, for a specific well or injection, providing such alternative plan will adequately protect the underground drinking water sources. In all instances, the methods approved by the Director shall match the joint recommendations of the State Board of Health, State Geological Survey, State Water Resources Board and any other State agencies responsible for the protection of fresh and usable water aquifers."

Comment: In parts of Kansas formations containing fresh and usable water are found at depths far below the regularly required setting depths for surface casing. These deep zones are not practical sources of usable water because of inaccessibility. If a blanket requirement to set surface pipe through all zones containing fresh and usable waters and cementing same to surface is adopted as proposed, it would be necessary for the operators in Kansas to spend hundreds of thousands of dollars unnecessarily each year to satisfy this excessive rule. An extra 500 feet of 8 5/8" casing would be approximately ~~\$4,000 at today's used pipe price. After~~ adding \$1,000 for the additional cement required an estimated total of \$5,000 per well is the result. Out of the 4,000 or more wells drilled per year in Kansas, at least 750 would require this additional expense. We contend this estimated \$3,750,000 is unnecessary and creates economic waste and may cause oil and gas operators to defer or abandon additional development of oil and gas properties. To be specific, this requirement, as proposed, will "stop or substantially delay" injection and disposal operations in oil and gas production activities.

- Item 5. Section 146.42 (a) (2) Injection is maintained through tubing with a suitable packer set immediately above the injection zone.

Recommendation: We propose adding the following to the above. "The Director may waive the requirement for the installation of tubing and packer if the injection is at low pressures, or

the long string is sufficiently protected to prevent endangerment to underground drinking water sources resulting from that specific injection.

Comment: There are many saltwater disposal wells in Kansas which take produced water under gravity. There are also a few water injection wells (referred to as dump wells) which take water at zero wellhead pressures. The need for tubing and packer installations in these cases may be required only if the casing is old, or may have a leak or may otherwise endanger underground drinking water sources. This is a technical judgment which should be made by the Director after evaluating all of the evidence. If this rule remains as proposed, an estimated \$12,500 per input well would be spent by the operators in Central and Western Kansas. Conservatively speaking, if 100 active inputs would require such installation, an estimated \$1,250,000 would be spent by the operators.

A far more serious problem exists in Eastern Kansas. There are probably 2,000 to 3,000 injection wells which are classified as tubingless completions. This is a very conservative figure. A tubingless completion consists of setting and cementing 2-inch or 2 1/2-inch tubing in a drilled hole just above the injection zone. Depths of these wells vary from about 500 feet to 1500 feet. Using an average of 1000 feet and the cost of 1-inch tubing with a packer estimated at \$1,250 each installation, we arrive at a total of from \$2,500,000 to \$3,750,000 to be spent by Eastern Kansas operators to meet this requirement.

All of the above is a financial burden on the oil and gas operators and will cause them to reconsider their injection and/or disposal programs. This requirement as proposed will "stop or substantially delay" injection and disposal operations in oil and gas production activities.

- Item 6. Section 146.42 (c) The Director may approve an alternate method of protection for a specific well or injection in lieu of those required in paragraphs (a), (2) and (3) provided:

Recommendation: We propose the subsection (c) be reworded as follows: "(c) The Director may approve an alternate method of protection for a specific well or injection in lieu of those required in paragraph (a) (3) provided:

Comment: This has already been covered by Items (4) and (5) above.

- Item 7. Sections 146.43 through 146.46. These sections refer to public notices, Notice to other government agencies, Public hearings and Public notice of public hearings.

Recommendation: We propose a reconstruction of all four (4) Sections in an effort to streamline the procedures involved. As proposed the general structure and time involved for notices and hearings are too burdensome on the oil and gas operator. The Director should exert all possible effort to make the necessary determinations which will avoid the need for public hearings or at least keep them at a minimum.

Comment: Many operators who find it necessary to pursue this circuitous path to gain permission to inject water must delay the ~~production of oil and/or gas awaiting approval~~ only after lengthy hearings and notice times. This is a prime example of substantially delaying the injection process and impeding oil and gas production. Another point to note is the fact that a public hearing will require the oil and gas operator to retain geological, engineering, and legal assistance to effectively present his case. Most of the Kansas operators do not have geological, engineering or legal departments in their organizational structure. These services must be obtained on the outside; thus causing excessive and in many cases unnecessary expense on their part to protect their interests. To be specific, a fair estimate of the costs for constructing geological maps, developing the required engineering data and retaining the legal counsel necessary to present a meaningful case at a public hearing would be \$3,000. If one-half of the 270 injection applications filed in Kansas in 1976 would go to hearing, an estimated \$4,000,000 would be spent by the applicants each year. This is flagrant economic waste in its primary definition.

- Item 8. Data requirements under Sections 146.22 (f), 146.42 (a) (6) and 146.47 (a) (2) (iii). These sections require the operator to submit data to the Director for review on all wells of record which penetrate the proposed injection zone within a one-half mile radius (two mile radius under Section 146.22 f) of the proposed injections and application requirement.

Recommendation: We propose the language be changed to "All available well completion and plugging data will be submitted to the Director for review, etc. ."

Comments: Much of the information required in these Sections is not available. To demand submission of such data is unreasonable.

- Item 9. Section 146.47 (a) (5) Underground Sources of Drinking Water which may be affected by the Injection. Geological name and depth (below land surface) of aquifers above and below the injection zone containing water of 3,000 mg/l.TDS or less and aquifers containing water of 10,000 mg/l.TDS or less.

Recommendation: Delete this required data altogether. The State Board of Health and/or State Water Resources Board and possibly ~~even the State Geological Survey has all~~ these data. The Director would have ready access to this information, and submission by an operator is unnecessary. If the requirement is left in the proposed regulation the aquifers described should be fresh water and usable water aquifers according to our previous definition.

- Item 10. Section's 146.33 (a) and 146.49 (a) Weekly Monitoring.

Recommendation: The requirements for weekly reports on the monitoring of injections imposed by these Sections, as now drafted, should be changed to provide for only monthly reporting. Insert "monthly" for "weekly". It is also recommended to change Section 146.49 (a) (2) to read "Monthly readings of the tubing - long string annulus pressure where such readings are obtainable".

Comments: Any reporting more frequently than once a month becomes expensive and burdensome

on the operator. Distances involved and weather conditions often make it impossible for weekly readings.

As explained in Item 5 above, many wells in Kansas do not have tubing and packer installations. Such a condition precludes the recording of annulus pressures as required here.

- Item 11. Section 146.49 (c) The latter portion of this paragraph requires that records of monitoring activities be retained by the permittee for five years after abandonment of the injector.

Recommendation: We propose this latter portion of this paragraph be deleted. The paragraph should conclude with the words "----by the UIC permit or regulations."

Comment: It seems useless for an operator to maintain these records in a "dead" file for five years after the activity ceases to exist. The records are on file in the Director's office anyway, so it is a duplication. In addition to this, we come upon the possibility that the injector is sold and the new owner will be required to apply for a new permit. Please refer to our next item.

- Item 12. Sale of property including injection well or wells where such underground injection is controlled by a valid permit issued by the Director.

Recommendation: We propose that the approval for injection granted by the Director through the issuance of a UIC permit shall not be assigned or transferred without the written consent of said Director. Such consent shall be the same as a newly issued UIC permit to the new owner and operator.

Comments: Nowhere in its proposed regulation has this item been addressed. We believe some proposal should be included to cover this contingency.

c. CONCLUSION

We understand the intent of the proposed rules is to prevent underground contamination of drinking water as provided in

PL 93-523, The Safe Drinking Water Act. This is certainly a worthy program and for that reason it is difficult to generally oppose the plan. Nevertheless, we hope a more moderate posture can be developed that would not adversely affect the future of the many small oil and gas producers in the State of Kansas.

The Kansas Independent Oil and Gas Association stands ready to assist EPA in the development of regulations which achieve the purposes of the Safe Drinking Water Act. We hope these comments will provide some input to that end. KIOGA will be available to discuss the items identified in this presentation in detail, and to work with EPA to find the best solution available for them.

STATEMENT OF DONALD P. SCHNACKE, EXECUTIVE VICE-PRESIDENT
 KANSAS INDEPENDENT OIL AND GAS ASSOCIATION
 October 13, 1976 - Dallas, Texas

Re: Proposed State Underground Injection
 Control Programs - Published in the
 Federal Register, Tues., Aug. 31, 1976

The Kansas Independent Oil & Gas Association was founded in 1937 primarily to improve the market for Kansas crude oil and natural gas, and to promote the welfare of the oil and gas industry in the State of Kansas. We represent the voice of the majority of the oil and gas producers in Kansas.

Our purpose for making these comments is to call attention to the plight of the small stripper oil producers in Kansas, and to make certain technical comments pertaining to the proposed rules.

We understand the intent of the proposed rules is to prevent underground contamination of drinking water as provided in PL 93-523, The Safe Drinking Water Act. For that reason it is difficult to generally oppose the plan, but we would hope that a moderate posture can be developed that would not adversely affect the future of the small oil and gas producers of Kansas.

You acknowledge that the State of Kansas is one of the states that has been cooperating in the development of these proposed rules. We ~~understand Kansas is not represented at this meeting, but is planning~~ to attend an EPA sponsored meeting in St. Louis, Missouri on Oct. 19th, and then intending to make written comments before November 15, 1976.

We think it is commendable that you are cooperating with the states and that they will be involved. The EPA spill prevention program is an example of not involving the various states, and we believe that was an unfortunate oversight.

We note under the heading "Legal Framework of the Regulations", in Section 1421 (b) (2) of the Act that your proposed rules are not to interfere with or impede oil and gas underground injection, and that further it is meant to mean "stop or substantially delay" such activity.

We believe the proposed regulations will "stop or substantially delay" injection activity in Kansas, because of the detailed requirements, unnecessary public hearings, and economic expense to implement these regulations.

Kansas has 1895 producers operating 41,945 oil wells with 75.5% of its total production classed as stripper. The average stripper production is 3 BOPD and the overall average production per well throughout Kansas is only 4 BOPD. Out of the 1895 Kansas oil producers, 152 of these produce one barrel of oil or less, with many down to 0.2 barrels or 8.4 gallons per day!

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In recognition of the distinct possibility of developing oil from existing known reserves, the Kansas Legislature passed and Governor Bennett signed a bill this year to give an income tax break for producers investing in tertiary recovery, heavy oil and tar sand production. This is another recognition of the difficulty Kansas producers are having in producing oil under normal conditions, without additional federal regulations.

For that reason, we believe the proposed regulations will "stop or substantially delay" oil production in Kansas, and bring on premature abandonment and plugging, because of increased federal regulation, expense, and unnecessary public hearings generally creating an atmosphere of increased economic burden not justifying the future development of minimum production in Kansas.

Under the heading of "comments" on page 36736, we note the EPA does not consider this to be a "major regulatory action" and will not have a significant impact on inflation as specified in the EPA guidelines. We understand your guidelines are suppose to contain criteria on "cost impacts, effects on productivity, competition, supplies of important materials, employment and energy". We believe EPA has not seriously considered the impact on the small oil and gas producers of Kansas and the inflationary impact on the American economy as a result of implementing these proposed regulations.

There are many minor comments we could make regarding the details of the proposed regulations. The following are offered relating to major specific sections of the proposed regulations that we believe directly effect Kansas oil and gas producers.

Section 146.3 Duration of Permits - We think limiting UIC permits to five years is unreasonable and arbitrary and not substantiated with any justifiable reasons. It seems that the reporting and inspection procedures provide adequate safeguards to allow the UIC permit to run until the production is abandoned and plugged. This is referred to again in Section 146.41.

Section 146.42 Requirements for Existing and New Underground Injections - Sub-section (c) (4) is the requirement of "informal public hearings". This procedure is mentioned again in Section 146.45 and can bring on undue hardship on a producer to provide technical and legal assistance for public hearings, when such determinations could be made by the Director's staff. We suggest, after proper notice has been given, and in the absence of a request by any party involved including the Director, the requirement for informal public hearings not be required and kept at a minimum.

Section 146.47 (a) (iii) Tabulation of Data, etc. - Under the requirements for an application for UIC permit for a new underground injection we believe much of this information is already available in the files of the Director, and puts an undue burden on the applicant to provide same.

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Section 146.47 (a) (5) Affected Underground Sources - this information is generally available in the files of the Director and puts an undue burden on the applicant to provide same.

Section 146.47 (a) (6) - Electric Log - We believe an electric log or equal information would be adequate information for new and existing wells.

Section 146.49 (a) - Monitoring and Record Keeping - The requirement of weekly readings of pressures and volumes is unnecessary and contrary to normal practice. We believe this record keeping requirement should be changed to a monthly basis.

Donald P. Schnacke

ATTACHMENT SIX

W.C.TOGA

WEST CENTRAL TEXAS
OIL & GAS ASSOCIATION

(915) 677-2469 • P. O. BOX 2332 • 410 PETROLEUM BLDG. • ABILENE, TEXAS 79604

TESTIMONY OF

JAMES E. RUSSELL

FOR

WEST CENTRAL TEXAS OIL &
GAS ASSOCIATION

AND

TEXAS INDEPENDENT PRODUCERS
AND ROYALTY OWNERS ASSOCIATION

AND

NORTH TEXAS OIL &
GAS ASSOCIATION

AND

PANHANDLE PRODUCERS AND
ROYALTY OWNERS ASSOCIATION

BEFORE

ENVIRONMENTAL PROTECTION ADMINISTRATION

DALLAS, TEXAS

OCTOBER 13, 1976

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Members of the Panel:

My name is James E. Russell of Abilene, Texas. I am a Consulting Petroleum Engineer as well as an Oil & Gas Operator with over 30 years experience in both secondary and tertiary type recovery programs for increasing reserves in this Nation. I appear here today on behalf of the West Central Texas Oil & Gas Association, the Texas Independent Producers and Royalty Owners Association, the North Texas Oil & Gas Association and the Panhandle Producers and Royalty Owners Association which have a combined membership of approximately 4,200 independent oil and gas operators.

In all the years of my experience in this great industry I have always found it incumbent upon the operator to use whatever means were at his disposal to insure that he maximize, through efficient operation, the recovery of oil and gas from any recovery program. During the past 40 years when waterflooding and other methods have become dominate, the injection of fluids into the reservoir and the removal of fluid from the reservoir have been the controlling factors. Engineering principles and procedures have been developed progressively through this period that have enhanced our knowledge and ability to recover more oil from known reservoirs. At the same time, Regulatory Agencies in most of the major oil producing states have recognized the need for and the enforcement of certain rules and regulations to control in a general way all the facets commensurate with the production of oil and gas.

This problem of confining injection fluids to the producing horizon and protection of fresh water strata has long been recognized by operators and State Regulatory Agencies and is not a new concept as might be indicated by the so-called "Safe Drinking Water Act" passed by the U. S. Congress. In Texas for example, the Railroad Commission has

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for many years had adequate rules for the protection of fresh water strata and producing horizons in permitting of new oil and gas wells, new fluid injection wells, new disposal wells, and the conversion of wells to injection and/or disposal purposes. In addition to this, before an injection program can be initiated, a hearing must be held before the Railroad Commission outlining all the factors to be employed in the program including the methods to be used in well completions, injected fluid to be used, well spacing, depth-pressure relationship, etc. All these factors are reviewed and a determination made as to the adequacy of the constraints to protect all subsurface zones prior to the issuing of such permit. It is my contention that state rules and regulations in Texas (and for that matter in other states including Oklahoma and Kansas), are currently more than adequate to control any and all the problems that exist, or may exist in the future, with respect to the protection of fresh water without the proposed intervention of the Federal Government into State affairs.

I wish to further point out that under the Safe Drinking Water Act, Section 1421(b)2, it is stated that the proposed regulations shall not impede nor interfere with the production of oil and natural gas or secondary or tertiary recovery of oil or natural gas. It is my opinion that all of the drafts of the proposed regulations do impede the production of oil and natural gas because they do impose excessive restrictions particularly on older oil, gas, and injection/disposal wells that could not comply with the new regulations - yet most have no history of damaging underground fresh water sources. The half-mile investigation rule could be prohibitively expensive as well as being considered an invasion of the privacy of another operator's property. This becomes even more

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onerous when you consider that with many injection wells in a water-flood inspection of all wells around an injection well could cause duplicity of inspection by each operator involved. Also the monitoring of all injection wells on a weekly basis is time consuming, costly, and unwarranted from an engineering viewpoint.

In the State of Texas the State Legislature, some three sessions ago, appropriated funds to handle problem areas where leaking wells have been discovered due to injection from secondary recovery operations. Under this law it is mandatory that upon the finding of a problem well it is the duty of the operator to plug the well. However, if the original operator no longer exists then it is the legal responsibility of any partners, if there be such, to plug the well. If none of the former operators, or the partners, are available, it becomes the obligation of the land owner to plug the well. Usually, in such cases the Railroad Commission of the State of Texas will cooperate in the plugging of those troublesome wells. This is the law in the State of Texas. It is being done and I submit to this panel that through these efforts we have very few problem wells or problem areas in the State of Texas.

Under the proposed regulation there is a requirement that all permitted wells would have to be re-permitted or reviewed every five years. If our present system of monitoring wells is adequate then this is an unnecessary additional financial burden both on the operator and the consuming public throughout the various states where more than 70,000 wells would be re-permitted every five years. This number of course will grow year after year as additional secondary and/or tertiary recovery systems are initiated.

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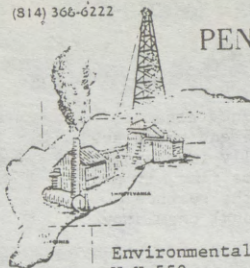
With respect to the fracturing and overburden restrictions imposed by the proposed rules I must admit that to some extent they are meritorious. However, with the billions of dollars being expended by both Industry and the Federal Government on high pressure frac treatments, underground nuclear explosions, and other research to recover more oil and gas I find it ludicrous to legislate this from Washington. It is an Engineering and Geological problem and should be determined on a local basis as the circumstances dictate.

One salient point that I would make to this panel is that most independent operators do not have the clerical, legal, nor petroleum engineering staff qualified to investigate or to prepare the necessary forms to comply with the regulations as are here proposed. This could be called the Engineering and Legal Retirement Act of the Century.

Finally, it is my belief that these proposed regulations will impede the production of oil and natural gas and place undue hardship on the industry, therefore, it is my request on behalf of thousands of people for whom I speak that the implementation of these regulations be delayed until further conference to review and simplify in line with good and practical field practices so that we may continue to operate injection, disposal and waterflood systems throughout this Nation to maximize reserves.

Gentlemen, I thank you very much for offering me the opportunity to appear here today and if I can be of any assistance in the preparation or reformation of these regulations, please feel free to call on me at any time.

(814) 366-6222



PENNSYLVANIA OIL AND GAS ASSOCIATION

DRAWER D • 26 WEST WARREN ROAD • CUSTER CITY, PENNSYLVANIA 16725

December 10, 1976

ATTACHMENT SEVEN

Environmental Protection Agency
 W H 550
 401 M Street, S.W.
 Washington, D.C. 20460

ATTN: Mr. Victor Kim
 Deputy Administrator

Dear Mr. Kim,

We very much appreciate the opportunity to add to our previously submitted comments and submit the following additional information for your consideration:

- #1 The proposed rule "pays lip service" to variations for different states, but in fact the proposed rules in the draft form make few if any allowances for the special differences found in various states, and especially those differences found in the oil and gas operations. For example, the rules presume that ejection of any type will automatically create a hazard. In the case of the water flood regions of Pennsylvania the injected fluid is local ground water as a result it does not automatically follow that a hazard is created.
- #2 It appears from the wording of the rules that an operator is presumed guilty until proven innocent. For example, current operators are issued permits only on a temporary basis and new operators cannot receive a permit without elaborate proof that there will be no possible damage. Here again, in water flood regions of Pennsylvania and New York there are literally thousands of water intake wells without any documented cases where public water supplies have been destroyed.

Environmental Protection Agency
Mr. Victor Kim
Page two

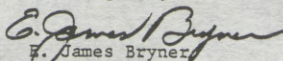
In a similar fashion there have been numerous attempts made by operators to cement pipe to the surface and there are documented data showing that this is mechanically impossible in a large percentage of the cases. At the same time, it has never been demonstrated that the cementing of the surface string pipe in any way changes the normal regional chemistry or flow of ground water.

In Pennsylvania and New York it is common to have 40 or 50 intake wells on a 100 acre lease. Several hundred acres are frequently pressured from a single pressure plant. The weekly testing of individual wells drilled on this density presents a major problem for an operator. In the normal course of events the operator must maintain the integrity of that pressure system on a day-to-day basis if he is to have a functional water flood. The testing of individual wells weekly would seem to be completely unnecessary.

If the system of permits are adopted as they are now proposed it would appear that the water flood industry in Pennsylvania, as we now know it, will be severely curtailed due to the cost of obtaining a permit renewal. In addition, the time element for permits of new floods will jeopardize or perhaps prevent any further developments due to the fact that in Pennsylvania water flood recovery requires a much longer time and few operators would be willing to risk the large sums necessary when a permit may expire before adequate recovery. In the case of the injection of toxic materials such as chemical plant wastes or sewage plant effluents, time limits on permits may be desirable. In the case of Pennsylvania water floods, where potable water is injected, time limits on permits are wholly unreasonable.

From the foregoing comments it would seem that the EPA would be well advised to permit the states wide latitude in controlling the oil and gas operations in each of those states.

Best regards,


E. James Bryner
President

EJB:kc

**OKLAHOMA INDEPENDENT PETROLEUM
ASSOCIATION**

212 FRANKLIN BUILDING - 23 W. 4TH
TULSA, OKLAHOMA 74103

PHONE 518 384-1233
October 8, 1976

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W. R. Yinger

ATTACHMENT EIGHT

Office of Water Supply (WH-550)
Environmental Protection Agency
Washington, D.C. 20460

Attention: Comment Clerk, State Underground Injection Control
Program Regulations

On behalf of the 980 members of the OIPA, I would like to present comments on the impact of the proposed regulations for a State Underground Injection Control Program as published on August 31, 1976 in the Federal Register - Volume 41 #170. Succinctly stated, it is submitted that the EPA regulations as proposed, will result in a loss of oil production in Oklahoma and the nation, without providing any appreciable environmental improvement.

Initially, it must be emphasized that this Association supports efforts to maintain supplies of safe drinking water. This Association and its members have a long history of close cooperation with the Oklahoma Corporation Commission--- the state agency charged with regulation of oil and gas production in Oklahoma. Oklahoma producers are aware of and fully understand the Corporation Commission's rules, under which they have been operating for years. We also have a long history in the development of oil and gas reserves without adversely affecting the blue skies and waters synonymous with Oklahoma.

Specifically, I object to the unnecessary expenditures and unjustifiable efforts required by the oil producers and by the Oklahoma Corporation Commission to faithfully enact the proposed regulations. These unnecessary costs must be borne by the oil producers. The prudent producer will weigh additional costs of compliance against his income from a producing property and in many cases, be forced to close down marginal properties. These properties (i.e., stripper wells producing less than 10 barrels a day) represent 41.7% of Oklahoma's crude oil production. Approximately 65% of this stripper production is secondary recovery and will be immediately effected by proposed regulations. This puts about 48,000,000 barrels annually of Oklahoma crude oil production in jeopardy at a time when it is needed most by our country. This not only effects the crude producer but the economy of many sections of the state. Stripper wells are labor intensive projects and shutting them down will reduce the labor required by this portion of the industry.

The aforementioned unnecessary costs result from requiring review of all existing permits to determine compliance, not merely areas where underground drinking water sources may actually be threatened. The information requested is unwarranted and in many areas of older production is impossible to obtain. Limiting the life of permits to 5 years only adds further expense without adding significantly to the protection of drinking water supplies. Permits should be for a project's life, unless a threat to fresh water develops.

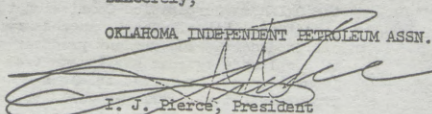
More unnecessary costs result from requiring a tabulation of all producing wells, injection wells, abandoned wells, dry holes and water wells within $\frac{1}{2}$ mile of an injection well. The tabulation for each well must show the operator, lease and well number. Casing data will include size of string, weight of pipe, depth and cementing data for surface, intermediate and long strings. Plugging data is required for all plugged wells. All of this is expensive and excessive. Duplication of effort results since any offset operators would be furnishing essentially the same information on offset wells. It also requires the trading of information that is confidential in nature. And once again, many older fields contain wells completed and perhaps plugged, prior to today's sophisticated technology and information requirements. Strict enforcement would shut many of these areas down since compliance would require reworking wells merely to obtain records.

In summary, I urge that the EPA reconsider the consequences of the costly and unnecessary requirements in the proposed regulations. I further urge the EPA to allow the states maximum flexibility in protecting our drinking water. The Oklahoma Corporation Commission has the responsibility for safeguarding Oklahoma's drinking water from underground injection contamination. They should be responsible for developing and implementing any new regulations.

The Oklahoma Independent Petroleum Association welcomes any opportunity to further present our position on these proposed regulations.

Sincerely,

OKLAHOMA INDEPENDENT PETROLEUM ASSN.



F. J. Pierce, President

IJP:lt

cc: John White, Regional Administrator
Environmental Protection Agency
1st International Building
1201 Elm Street
Dallas, Texas 75270

ATTACHMENT NINE

STATEMENT BY

CONLEY P. SMITH

VICE PRESIDENT

INDEPENDENT PETROLEUM ASSOCIATION OF MOUNTAIN STATES

Environmental Protection Agency Hearing

Proposed Regulations on Underground Injection Controls

Denver, Colorado

October 6, 1976

My name is Conley Smith and I am a partner in the firm of Smith-Fancher, Petroleum Consultants, of Denver, Colorado. I am also Vice President of the Independent Petroleum Association of Mountain States and am representing that organization in my testimony today. We appreciate the opportunity to comment upon the proposed Underground Injection Controls being considered by the Environmental Protection Agency.

Initially, let me state that the association I am representing is made up of more than 600 member firms in the nine state Rocky Mountain Region. We are all independent oil men involved primarily in the exploration for and production of crude oil and natural gas. We differ from the so-called "majors" in that none of our members, by definition, are integrated companies involved in production, transportation, refining and marketing. We are the little guys of the oil industry and consequently regulations which impose significant financial burdens upon operators affect us more severely than they might others who are larger and have greater capital resources at their command.

Although we, as independents, are not alone responsible for production of oil and natural gas in the Rockies, we do play a very substantial role in production from a region which in 1975 provided some 1.2 million barrels of oil per day valued at just under 4 billion dollars, much of this on Federal lands. We have reason to believe that this production can be substantially increased in the future and have been actively pursuing this goal within the limits of government regulations and capital resources. Inasmuch as independents discover more than

three fourths of the new domestic oil and natural gas and produce over one third of the crude oil, our drilling activities are of more than parochial interest. What we accomplish has a direct and immediate effect upon the energy production and economic development of the nation.

As individuals privileged to live in this part of the country we are very conscious of the need for protecting the quality of our air and water. As an association we have gone on record by adopting a policy which says: "We strongly support full development of the nation's resources in an orderly manner with due consideration to an intelligent protection of the environment for this and future generations." We want safe clean drinking water for ourselves, for our children and for our children's children. We have no quarrel with the underlying intent of the E.P.A. to develop effective regulations for the protection of fresh water aquifers from contamination from any man-made source. Such a goal is appropriate to your charge under Public Law 93-523, "The Safe Drinking Water Act." We are concerned however, about the method by which you satisfy your legislative mandate.

Regulations are becoming a way of life in America. Nevertheless, every Federal Governmental Agency with which we independent oil men have been associated has become so concerned with the accomplishment of their objectives through regulation that overkill is a matter of practice. Your proposed regulations are no exception in some respects. We operators know that it is not your regulations nor your forms, however massive or detailed, but our operations which will provide the safety you seek. I

regret to say that the oil and gas industry has not always been innocent of polluting the nation's waters. However, for many years now we have been conscious and have been careful in this region of protecting all potable water sources. In the oil and gas business we have been and we are responsible for protection of potable water sources under Federal or State regulations which were in effect long before the passage of the Safe Water Drinking Act in every state with enough oil or gas production to justify a regulatory agency. The United States Geological Survey and every State conservation commission are quite properly active in this field.

It is well that the E.P.A. chose Denver and the Rocky Mountain West as site of your first hearings on this matter because it is our area which will provide the most problems in the regulation of this Act. Our area is the headwaters of nearly every river in the Western United States. Those same formations in these Rocky Mountains which on or near ground surface furnish us with "Pure Rocky Mountain Spring Water" which, in turn, makes into a better than average beer often provide oil production at depth. One has only to look at the steep dip of some of these formations to realize that oil production at depth and near surface fresh water are frequently in close proximity to each other.

In the State of Wyoming, currently the fifth ranking state in terms of oil production, well over half the oil production has significant associated water production. Some of it is adequate for livestock consumption and it is used extensively in many of the arid areas of that rather arid

state. A small but significant per cent of the water production is fit for human consumption after minor filtration for suspended solids. Much of the produced water is "fresh" except that it contains some adverse contaminants, most notably sulfates, nitrates or sodium. Finally, some produced water is not potable by any definition. The point of this discussion is that a vast amount of the area's oil and gas production has concurrent contaminated produced water which must be disposed of underground. The second point we would bring to your attention is that the entire region is generally underpressured and that injection of fluids to improve hydrocarbon recovery efficiency is common.

The first question we are concerned with is the definition of potable or potentially potable water. Attached to the end of this statement is a single page copy of the "Water Standards for Livestock Use" prepared by the Wyoming Department of Agriculture. In this very arid region where water is precious we know of no water consumption by humans of above 200-300 ppm. Adequate drinking water even for livestock does not now exceed 3000 ppm. and this with severe limitations as to certain contaminants. Therefore, the proposed limitation that any underground water source with a level of total dissolved solids of 10,000 ppm. or less should be protected as a potential public water supply is patently absurd. The Department of Agriculture has done an immense amount of work in this area. There has been entirely too much work in the field of hydrology not to have a more accurate definition of potentially usable public

water sources. We respectfully suggest that the Agency do its homework on this definition of potable water that those who prepared the House Report which accompanied the Act obviously did not do for you.

What are the effects on the oil and gas industry of the Agency being overzealous and declaring water to be potable or potentially potable according to some arbitrary definition when in fact it is not potable and cannot reasonably be made potable?

(1) Expensive and unnecessary casing and cementing programs would result in the following side effects: (a) Recovery of casing in a salvage operation such as was necessary in the severe steel shortage two short years ago would be impossible; (b) County and state property values would decline because casing could not be salvaged and should not, therefore, be taxed; (c) Some drilling programs, both exploratory and development, would be discontinued because of the uncertainty of finding water production where the expense of disposal would likely be prohibitive; (d) Some existing oil production would be shut down because of the unnecessary additional expense of water disposal.

(2) In certain areas of relatively fresh waters there would be no place at any price where water could be disposed of other than the formation from which it came -- the oil productive or gas productive formation. In certain cases there are adverse effects in the hydrocarbon recoveries as in the following instances: (a) In all gas and gas condensate reservoirs, (b) in some oil reservoirs where water coning or water production through rock fractures are problems. Technically,

there would be instances where reinjection into the common reservoir would not be strictly legal because the water found in the common aquifers to certain reservoirs is fresher, i.e., more potable, than that produced with the associated hydrocarbons.

(3) What is the point of requiring new and expensive casing and cementing programs in areas where there are already hundreds or thousands of wells drilled under different criteria? In this region the farmers, ranchers and the Federal Government all arrived before the oil and gas operator and we have always made a conscientious effort to protect any waters considered usable by either wild or domestic animals.

In summary, we oil and gas operators need a regulatory definition of potable water which fits the real meaning of potable water.

May we make other suggestions for your consideration:

Gentlemen, we would like to see clear, concise and specific regulations so that we may be in total compliance. We would appreciate the exact requirements, not some broadly stated "minimum" requirements as outlined under Framework of the Regulations. We greatly prefer not to be subject to the whims of some field representative to be in compliance because the regulations themselves are

subject to such broad interpretations.

Please define what are contaminants to the best of your researched ability. We hope you will not expect a young field representative to define a contamination that you have not been able to define for him. In this connection we would appreciate the removal of such phrases as undrinkable for "aesthetic or other reasons" -- water that is discolored or smells or tastes bad does so because it is contaminated.

We recognize the need to add to the list of contaminants as our knowledge of what represents "good" potable water expands, but we wonder about the reference under Key Provisions --- to expected revised regulations. Surely the Agency does not envision a retroactive aspect to newly found contaminants except as they apply to blatant endangerment of potable waters.

We call your attention to Section 146.3 - "Duration of Permits". We see no need for the requirement to repermit at five year intervals. States have traditionally approved injection and disposal operations for the life of the project and this has worked out quite well. Your regulations provide for an annual report by the states which describe any violations and the remedial action taken. We believe repermitting to be an unnecessary duplication which will add a great paperwork burden both to ourselves and to the Agency.

Section 145.41 - "Review of Existing Underground Injections" is another example of overkill. Inasmuch as the large majority of injection wells create no endangerment to drinking water this section's requirement for review and study of all underground injections with the

power to shut down operations thought by the Director to be in non-compliance until remedial action is completed is excessive. Rather, the Director should be given greater discretionary authority to permit continued operations while remedial actions are being taken to correct any drinking water endangerment. He certainly should be authorized to halt operations in cases where continuance even during remediation would unduly endanger water supplies, but the regulation should be written in such a manner as to provide flexibility where circumstances warrant it.

Section 146.47 - "Application for UIC Permit for a New Underground Injection". We are concerned here with the term "wells of record". This all-inclusive term could mean that every well known to have been drilled must have records and this simply is impractical. Many wells in oil fields have limited records in existence and the wording of the proposed regulations should take this into account.

Section 146.49 - "Monitoring and Record Keeping". This section requires weekly monitoring requirements which we recommend be revised to monthly monitoring requirements. The increased burden which would be placed upon the operator through weekly monitoring serves no obvious beneficial purpose, but does increase operational costs. The requisite information would still be available to government for monitoring operations in accord with the regulations only the number of data points would be changed.

-9-

Under Sections 146.22 and 146.42 we object to the proposed regulation that surface injection pressure should be limited to preclude the possibility of fracturing the confining strata. We have a large number of "hard tight" formations in the Rocky Mountain area. It is necessary to fracture these formations to produce fluids from them and it will be necessary to frac them to reinject fluids. It is reasonable to require that any fracturing of formations be confined so that there is no communication with other water bearing strata.

Once again, let me express the appreciation of the members of the Independent Petroleum Association of Mountain States for the opportunity to make these comments and for your courteous attention to them.

Water Standards for Livestock Use

Good water should meet the following criteria:

Total Solids	Less than 1000 parts per million
Hardness	Less than 6000 parts per million
Sulphates	500 parts per million or less
Nitrates	Less than 45 parts per million
Sodium	500 parts per million or less

Total Solids

Good Water - Under 1000 parts per million
 Fair, Usable - 1000 to 3000 parts per million
 Poor, Usable - 3000 to 5000 parts per million
 Very Poor, Questionable - 5000 to 9000 parts per million
 Not Advised - 9000 or more parts per million

Maximum recommended for livestock usage is 5000 parts per million.
 Horses, however, can tolerate a maximum of 6000 parts per million.

Sulphates

The maximum recommended level of sulphates for cattle and horses is 1000 parts per million. The desirable level is 500 parts per million or less.

Nitrates

The levels for cattle only are:

0 - 45 Safe for use
 45 - 135 Doubtful
 135 - 225 Risky
 225 - 450 Do not use
 450 - 675 Sublethal - toxic
 675 + Lethal

Sodium

The maximum level of sodium livestock can tolerate is 2,000 parts per million.

Working Department of Agriculture
 Division of Laboratories
 April 7, 1977

Mr. ROGERS. Thank you, Mr. Russell for a very helpful statement.

Mr. Otts? Mr. Otts is employed by Gulf Oil Corporation, and is appearing today on behalf of the Production Department of the American Petroleum Institute.

Mr. Otts?

Welcome, all of you gentlemen to the committee.

STATEMENT OF J. M. OTTS, JR.

Mr. OTTS. Thank you, Mr. Chairman.

My name is J. M. Otts, Jr. I am employed by Gulf Oil Corporation, but I am appearing here today on behalf of the Production Department of the American Petroleum Institute. Joining me at the table today are R. M. Scott, engineer for Union Oil Company of California, representing Western Oil and Gas Association; S. J. Abbott, Jr., engineer for Atlantic Richfield Company, representing API, and W. S. Smith, attorney for Atlantic Richfield Company, also representing API. Also with me is Tom Calhoun of Calhoun Engineering, Inc., who will share my time by presenting a special report on the East Texas oilfield.

We are appearing with respect to amendments to the Safe Drinking Water Act as contained in H.R. 5829 and H.R. 5830. H.R. 5829 and H.R. 5830 have sections which would authorize additional appropriations for fiscal years 1978 and 1979 for State Injection Control Plans. Additionally, section 9 of H.R. 5830 would add a new section to the act requiring the Administrator to analyze the economic impact of rules issued or revised pursuant to the act.

The subjects mentioned concern costs of compliance; potential inflationary effects; availability of capital, effect on employment competition and small business; effect on consumer costs, energy use and availability, long-term economic growth, productivity, balance of payments, et cetera. This section is most germane to our further comments and should be made applicable in all respects to the Environmental Protection Agency's regulations concerning State Underground Injection Control Programs.

Our particular concern today relates to part C of the act and EPA's proposed regulations published August 31, 1976, which would implement that part of the act. Industry feels EPA's proposals are impractical and unwarranted. We believe that practical regulations can be developed on the basis of the Safe Drinking Water Act as it is currently written. Our comments to EPA have been directed to this end. However, if such regulations are not so written by the Agency then the Safe Drinking Water Act should be amended as suggested in our written statement to further clarify the Congressional mandate.

My oral presentation will touch only the highlights of my written statement. We are also submitting for the committee file the comments and supporting data submitted by API, WOGA and Texas Mid-Continent Oil and Gas Association to the Environmental Protection Agency with respect to the proposed regulations on State Underground Injection Control Programs published by the Administrator of the Agency in the August 31, 1976 Federal Register.

In respect to EPA's proposed regulations we are particularly concerned with subpart D called "Requirements Applicable to Injection Wells Related to Oil and Gas Production." In our opinion, the underground injection control program regulatory approach so far taken by EPA contravenes the act and ignores the items enumerated in section 9 of H.R. 5830.

In enacting part C of the act we understand Congress intended that if a State has a sound injection control program related to oil and gas production which protects underground sources of drinking water, then the Administrator is to approve that State's program. The Agency has ignored that intent.

Our submittal for the record leads to the conclusion that the major oil and gas producing States have sound programs which are protecting underground sources of drinking water. The "Economic Analyses State Underground Injection Control Program Proposed Regulations", commencing at page 316 of the Agency's "Draft Environmental Impact Statement State Underground Injection Control Program" is totally inadequate and greatly underestimates the costs and effects of these proposed regulations as they pertain to injection wells related to oil and gas production.

The proposed Federal regulations are redundant, prohibitively expensive and definitely inflationary if implemented. They will interfere with or impede the production of oil and gas by causing substantial reserves to be lost, substantially reduce daily production and either delay or prohibit many new injection operations. Such results will occur without a showing by the Agency that the requirements are essential to prevent endangerment of underground sources of drinking water.

Following publication of the proposed regulations, over 400 comments were received by the Agency few of which support the regulations. Industry organizations, State regulatory bodies, and independent and major producers have furnished the EPA many other detailed comments and data over a two year period without any significant effect as to the regulatory approach.

Section 1421(b)(2) of the act provides that no underground injection control regulation shall "interfere with or impede" petroleum production unless that regulation is "essential" to assure the protection of underground sources of drinking water. Notwithstanding this provision, EPA contends:

1. Uniform national regulations must be promulgated and followed by all States regardless of the effectiveness of present State programs.

2. The regulations will have comparatively small cost impact and will not "interfere with or impede oil and gas production."

3. EPA does not have to demonstrate the "essentiality" of its proposed regulations unless industry first demonstrates that the regulations will stop or substantially delay oil and gas production.

In contrast, industry contends:

1. Uniform regulations with extensive technical and procedural specifications are not required by the act. Uniform national regulations are unwise in view of widely different geographic and operating conditions.

2. EPA has significantly underestimated the cost impact of the proposed regulations.

API recently conducted a survey which showed a potential cost of hundreds of millions of dollars to prevent the loss of 3.5 billion barrels of oil and a reduction of some 600,000 barrels of daily production, excluding the East Texas Field which Mr. Calhoun will address.

Preparation of permit applications were estimated at \$14.4 million for some 43.4 thousand wells. Limiting injection pressure would cause estimated additional capital expenditures of over \$500 million to prevent the loss of some 210 million barrels of reserves.

WOGA has estimated a cost range to California from \$125 million to \$1.3 billion covering only three of the proposed requirements. The \$125 million estimate is an extremely conservative number.

3. EPA is required to demonstrate essentiality for its proposed regulations by the clear language of section 1421 [b][2] where they interfere with or impede injection operations related to oil or gas production. It has not done so. EPA claims that its DEIS shows "essentiality". This DEIS presents little credible evidence of contamination caused by oilfield underground injection operations.

The TMOGA comments are illustrative of comments forwarded by others. TMOGA points out that the Texas program is working extremely well and was recognized prior to passage of the act by former Administrator Train as being sufficient.

California is the third largest oil producing State. WOGA carefully researched and has documented the performance of California's regulatory system. A very few instances of contamination were found but in no case was the public health endangered.

A Louisiana Department of Conservation representative at an EPA public hearing testified that he knew of no contamination to fresh water aquifers caused by oilfield underground injection operations in Louisiana. Similar comments have been made by other States.

In summary, we firmly believe that the EPA has no statutory authority to require States which already have effective control programs to implement new programs. A State should not be forced to accept a layer of unneeded regulations which will interfere with or impede production of oil and gas and which have no environmental benefit.

In the detailed comments many suggestions were made as to how the proposed regulations could be made more practical. We firmly believe "patch work" is not the answer. A new, fresh EPA approach is necessary.

We believe guidance from your subcommittee is needed and should be adequate to redirect the Agency in the right direction. While we believe the present wording of Sections 1421(b)(2) and 1422(c) are clear, if necessary, this section could be amended to further clarify the Agency's changes.

API remains ready, as it has since the beginning of EPA's effort on the UIC program, to assist in any way possible.

I now request that you permit Mr. Tom Calhoun to make a short presentation describing the effect of the proposed regulations on one of the giant fields of the world.

[Testimony resumes on p. 279.]

[Mr. Ott's prepared statement follows:]

STATEMENT OF AMERICAN PETROLEUM INSTITUTE

THE U.S. HOUSE SUBCOMMITTEE ON HEALTH AND ENVIRONMENT
HEARINGS ON THE SAFE DRINKING WATER ACT AMENDMENTS OF 1977

April 1977

My name is J. M. Otts, Jr., I am employed by Gulf Oil Corporation, but I am appearing here today on behalf of the Production Department of the American Petroleum Institute ("API"). Joining me at the table today are R. M. Scott, engineer for Union Oil Company of California, representing Western Oil and Gas Association ("WOGA"), S. J. Abbott, Jr., engineer for Atlantic Richfield Company, representing API, and W. S. Smith, attorney for Atlantic Richfield Company, also representing API. Also with me is Tom Calhoun of Calhoun Engineering, Inc., who will share my time by presenting a special report on the East Texas oilfield.

We are appearing with respect to amendments to the Safe Drinking Water Act as contained in H.R. 5829 and H.R. 5830. H.R. 5829 and H.R. 5830 have sections which would authorize additional appropriations for fiscal years 1978 and 1979 for State Injection Control Plans. Additionally, Section 9 of H.R. 5830 would add a new section to the Act requiring the administrator to analyze the economic impact of rules issued or revised pursuant to the Act. The subjects mentioned concern costs of compliance; potential inflationary effects; availability of capital, effect on employment, competition and small

Page 2

business; effect on consumer costs, energy use and availability, long-term economic growth, productivity, balance of payments, etc. This section is most germane to our further comments and should be made applicable in all respects to the Environmental Protection Agency's (EPA) regulations concerning State Underground Injection Control Programs.

Our particular concern today relates to Part C of the Act and EPA's proposed regulations published August 31, 1976 which would implement that part of the Act. Industry feels EPA's proposals are impractical and unwarranted. We believe that practical regulations can be developed on the basis of the Safe Drinking Water Act as it is currently written. Our comments to EPA have been directed to this end. However, if such regulations are not so written by the Agency then the Safe Drinking Water Act should be amended as hereinafter suggested to further clarify the Congressional mandate

My oral presentation will touch only the highlights of my written statement. We are also submitting for the record of these hearings the comments and supporting data submitted by API, WOGA and Texas Mid-Continent Oil and Gas Association ("TMOGA") to the Environmental Protection Agency (hereinafter referred to as either "EPA" or "Agency") with respect to the proposed regulations on "State Underground Injection Control Programs published by the Administrator of the Agency in the August 31, 1976 Federal Register.

Page 3

In respect to EPA's proposed regulations we are particularly concerned with Subpart D called "Requirements Applicable to Injection Wells Related to Oil and Gas Production". In our opinion, the underground injection control program regulatory approach so far taken by EPA contravenes the Act and ignores the items enumerated in Section 9 of H.R. 5830.

In enacting Part C of the Act we understand Congress intended that if a State has a sound injection control program related to oil and gas production which protects underground sources of drinking water, then the Administrator is to approve that State's program. The Agency approach is 180 degrees in the opposite direction. Our further comments lead to the conclusion that the major oil and gas producing states have sound programs which are protecting underground sources of drinking water. The "Economic Analyses State Underground Injection Control Program Proposed Regulations", commencing at page 316 of the Agency's "Draft Environmental Impact Statement State Underground Injection Control Program" ("DEIS") is totally inadequate and greatly underestimates the costs and effects of these proposed regulations as they pertain to injection wells related to oil and gas production. The proposed Federal regulations are redundant, prohibitively expensive and definitely inflationary if implemented. They will interfere with or impede the production of oil and gas by causing substantial reserves to be lost, substantially reduce daily production and

Page 4

either delay or prohibit many new injection operations. Such results will occur without a showing by the Agency that the requirements are essential to prevent endangerment of underground sources of drinking water. Decreased domestic production will require increased foreign imports thereby increasing our balance of payments deficit. Such undesired results will occur without any commensurate environmental benefit. We suggest that the Agency be required to examine present State programs and to approve them if they are doing the desired job. The evidence is overwhelming that the States are doing this job. As an alternative position we have prepared certain changes to the wording of Sections 1421(b)(2) and 1422(c) of the Act.

The Agency provided a comment period concerning their proposed regulations which was extended to January 14, 1977. Over 400 comments were received by the Agency few of which support the regulations. In addition to these recent comments, API, other industry organizations, State regulatory bodies, and independent and major producers have furnished the EPA many other detailed comments and data over a two year period without any significant effect as to the regulatory approach.

You will recall that Section 1421(b)(2) of the Act provides that no underground injection control regulation shall "interfere with

Page 5

or impede" petroleum production unless that regulation is "essential" to assure the protection of underground sources of drinking water. Notwithstanding this provision, EPA contends:

1. Uniform national regulations must be promulgated and followed by all States regardless of the effectiveness of present State programs.
2. The regulations will have comparatively small cost impact and will not "interfere with or impede oil and gas production."
3. EPA does not have to demonstrate the "essentiality" of its proposed regulations unless industry first demonstrates that the regulations will stop or substantially delay oil and gas production.

In contrast, industry contends:

1. Uniform regulations with extensive technical and procedural specifications are not required by the Act. Uniform national regulations are unwise in view of widely different geographic and operating conditions.

2. EPA has significantly underestimated the cost impact of the proposed regulations. Considerable data have been submitted by industry - see the API, TMOGA and WOGA comments and case studies as examples - these data show that the proposed regulations would stop considerable present production resulting in loss of reserves; and, additionally, either prohibit or substantially delay some new injection operations.

API recently conducted a survey which showed a potential cost of hundreds of millions of dollars to prevent the loss of 3.5 billion barrels of oil and a reduction of some 600,000 barrels of daily production, excluding the East Texas Field. These losses could occur because of the lack of well information required in the proposed regulations. Appendix 2 of the API submission presents the details of the survey. Some 48 companies consisting of 28 API member companies and 20 Independent Producers participated in the API survey.

Preparation of permit applications were estimated at \$14.4 million for some 43.4 thousand wells.

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Limiting injection pressure would cause estimated additional capital expenditures of over \$500 million to prevent the loss of some 210 million barrels of reserves.

Two studies concerning the giant East Texas Field are attached to the API submission. One of these studies show the regulations could cost \$19 million in capital expenditures and treble operating costs. Over five billion barrels of salt water have been reinjected into the producing formation of the East Texas Field without one confirmed instance of fresh water contamination in the last 10 or 15 years. This field is closely monitored by the Texas Railroad Commission. Federal regulations could not improve this record.

A potential loss of 700 million barrels of oil could occur from this field under the proposed regulations. Mr. Calhoun will present a brief statement as to how this might occur following my statement.

WOGA has estimated a cost range to California from \$125 million to \$1.3 billion covering only three of the proposed requirements. The \$125 million estimate is an extremely conservative number. It is quite likely that the operators could be called upon to recement all idle and abandoned wells within a 1/2 mile radius of an injection well. If so, these additional costs are conservatively estimated at \$1.173 billion dollars. Whether we are talking about \$125 million or \$1.3 billion, these additional cost requirements would cause substantial, recoverable reserves to be left in the ground.

3. EPA is required to demonstrate essentiality for its proposed regulations by the clear language of Section 1421(b)(2) where they interfere with or impede injection operations related to oil or gas production. It has not done so. EPA claims that its DEIS shows "essentiality". This DEIS presents little credible evidence of contamination caused by oilfield underground injection operations. The comments by the Ad Hoc Committee of Petroleum Division of the American Society of

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Mechanical Engineers attached as Appendix 4 to the API comments examines this DEIS in detail and clearly establishes this fact.

The TMOGA comments are illustrative of comments forwarded by others. TMOGA points out that the Texas program is working extremely well and was recognized prior to passage of the Act by Administrator Train as being sufficient. Permits are required for all injection operations. Strict empirical proof must be submitted to the State by the Applicant that fresh water aquifers are fully protected. Hearings on contested cases are required. Monitoring and bookkeeping are required. The district offices of the Railroad Commission are most vigilant in its enforcement. Texas is not living in a vacuum. It knows how best to protect fresh water, and has been doing its job.

In 1975 over 5 billion barrels of formation water was reinjected in Texas with no evidence of groundwater contamination. The legislative history of the Safe Drinking Water Act discloses that "in

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many cases, sewage is injected directly into wells, containing aquifers throughout large areas," (remarks of Mr. Carter, page H10795, Congressional Record, 11-19-74). We, like TMOGA, believe that EPA regulations should be directed to this type situation rather than inserting itself into State functions which are already doing the job we all demand.

TMOGA has presented a detailed history of pollution laws and regulations in Texas. In Texas, under existing laws and regulations, over 123 thousand oil and gas wells have been effectively plugged and abandoned since 1964.

Presently in Texas there are approximately 44,000 injection wells. An examination of Commission files in 1975 found only seven active files involving groundwater contamination. These seven instances had been investigated by the Commission and remedial action taken. These active cases are continuing to be carefully monitored by the Railroad Commission.

An example of how burdensome the proposed regula-

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tions can be are shown by the following example. A randomly selected injection well in the Luling Field, Texas, required the accumulation of paper one-half inch high at a cost of \$1,600.00 in order to prepare one sample permit application. (Remember in Texas the wells have already been permitted by the Railroad Commission pursuant to sound rules requiring specific information that fresh water is not endangered.) Based on the paper work generated for this one well, a conservative estimate to meet the data requirements of the proposed regulations in the State of Texas would require a stack of paper over two football fields high.

What has been said with respect to Texas is equally true of the other major oil and gas producing States.

California is the third largest oil producing State. WOGA researched existing published instances of groundwater contamination. For example, in 1973 Robert W. Fri, EPA Deputy Director, testifying before this Subcommittee, presented a document

that indicated three known instances of groundwater contamination in California. The document identified a Tuolumne River gas well incident, a Santa Barbara boron contamination incident, and the failure of the Baldwin Hills Dam. The first two of these incidents had nothing to do with injection and the third was the postulated mechanical connection between an oilfield injection and the failure of a dam (vis-a-vis, the Denver Arsenal earthquakes).

WOGA also closely examined EPA's Environmental Impact Statement for any evidence of groundwater contamination from oilfield injection in California. None was found.

WOGA recognized that to demonstrate EPA had no evidence proving contamination is only the first step. A lack of evidence does not necessarily mean that there has been no contamination. WOGA therefore went one step further. In cooperation with the California Division of Oil

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and Gas Deputy Supervisors WOGA conducted an extensive review of State and operator records. After reviewing some 40 odd years of records, only six complaints of injection well-related problems were uncovered. In no case was there any damage to the public health. This is a remarkable record, considering that injection has been practiced for over 40 years and that a cumulative total of 14 billion barrels of water have been injected. These complaints and the resultant action by the Division of Oil and Gas and/or the operator are fully documented in the WOGA commentary.

A Louisiana Department of Conservation representative at an EPA public hearing testified that he knew of no contamination to fresh water aquifers caused by oilfield underground injection operations in Louisiana. Similar comments have been made by other states.

In summary, we firmly believe that the EPA has no statutory authority to require States which already have effective control programs to implement new programs. A State should not be forced to accept a

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layer of unneeded regulations which will interfere with or impede production of oil and gas and which have no environmental benefit. We seriously doubt if the EPA has looked in depth concerning any existing State program. EPA should be required to do so and instructed to show on a State-by-State basis what, if any, additional minimum requirements are essential to prevent endangerment of underground sources of drinking water. If none are found essential, then that State's existing program should be approved. We all want clean fresh, ground water. No one wants a license to evade this responsibility.

We urge that you and your staff read the comments furnished to the EPA which we are enclosing with this statement. Talk to the State regulatory bodies and ascertain their feelings and beliefs concerning the proposed regulations. Determine if EPA is abiding by your mandate as expressed in the Act. The guidelines which EPA is to follow are clearly stated in Section 1421(b)(1) of the Act. API believes that EPA has no authority to go beyond these guidelines.

In the detailed comments many suggestions were made as to how the proposed regulations could be made more practical. We firmly believe "patch work" is not the answer. A new, fresh EPA approach is necessary along the lines previously suggested

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by API in its January 12, 1977 cover letter to EPA is essentially as follows:

1. For each oil and gas producing state, examine the laws and regulations pertaining to underground injection operations applicable to oil and gas to determine that -
 - (a) Injection cannot legally be commenced prior to issuance and acceptance of a State permit or authorization.
 - (b) Violation of applicable laws, regulations or rules are punishable under State law.
 - (c) The purposes of the laws, regulations, rules and provision of the permit or authorization are to prevent endangerment of underground sources of drinking water.
2. Examine the history of underground injection operations in the State and establish the degree or amount of contamination of present

or potential underground sources of drinking water in relation to the extent of injection programs in existence in that State.

3. If the review shows that the state injection regulations are adequately protecting underground sources of drinking water, the program of that state should be approved as is.
4. If it is determined that a State has no permit program or it is established that substantial improvements are needed, then EPA should require minimum requirements which would
 - (a) Allow continued injection into existing wells unless it is known or believed that contamination of present and potential underground sources of drinking water is occurring.
 - (b) Provide for a permit or authorization system compatible with State laws and procedures for existing and new wells which would require only essential and available data as determined necessary under the particular circumstances by

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the State Director.

- (c) Require monthly records of pressure and volumes.
- (d) Require reports by operator as determined by the State Director.
- (e) Require periodic field inspections by the State of injection operations.
- (f) Provide for State review of its overall program to assure that the State program is protecting underground sources of drinking water.

We believe proper guidance from your subcommittee is needed and should be adequate to redirect the Agency in the right direction. While we believe the present wording of Sections 1421(b)(2) and 1422(c) are clear, if necessary, this section could be amended as shown below. The words in brackets constitute suggested deletions, and the underlined words suggest new wording, to-wit:

"(2) Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede --

"(A) [the] any underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production, or

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"(B) any underground injection for the secondary or tertiary recovery of oil or natural gas",

unless [such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection] the Administrator has first determined that such requirements are essential on a State by State approach to assure that underground sources of drinking water will not be endangered by any such existing or proposed injection.

Amend the second sentence of Sec. 1422(c) to read:

However, such program may not include requirements which interfere with or impede --

"(1) [the] any underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production, or
 "(2) any underground injection for the secondary or tertiary recovery of oil or natural gas",

unless [such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection] the Administrator has first

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determined that such requirements are essential to assure that underground sources of drinking water will not be endangered by any such existing or proposed injection.

We know that this Subcommittee is vitally interested in ensuring that the laws of Congress are properly interpreted and implemented in a sensible way. The implementing regulations and rules should necessarily be in harmony with the applicable statute, and their impact thoroughly considered in light of the items enumerated in Section 9 of H.R. 5830. As we have stated, the proposed regulations which we have discussed fail on both counts.

API remains ready, as it has since the beginning of EPA's effort on the UIC program, to assist in any way possible.

STATEMENT OF TOM CALHOUN

Mr. CALHOUN. Mr. Chairman, the gentlemen with me have been deeply involved in analysis of the Safe Drinking Water Act, the EPA proposed regulations and in determining order of magnitude numbers showing impact on our Nation if the proposed regulations are adopted. We will be pleased to respond to any questions you may have.

Mr. ROGERS. Mr. Calhoun, your statement will be made a part of the record [see p.282].

Mr. Calhoun. Yes, sir, and I am cutting down a lot of it.

The East Texas Field is well documented in the technical and historical literature of the Petroleum Industry; it has been the training ground for two generations of oil men.

Much has been written concerning this field because of its size and importance to the industry and to the citizens of the United States. Until the discovery of Prudhoe Bay in Alaska, this was the largest known oil reservoir in the United States. It is still the largest known oil reservoir in the lower forty eight States and the largest with ready access to domestic refineries. It has produced almost 4.5 billion barrels and has over 1 billion of reserves.

The East Texas Field was discovered in September, 1930. The original reservoir pressure was approximately 1,625 pounds. Reservoir pressure declined rapidly from the original pressure to approximately 1,000 pounds in 1942, due to large volumes of produced salt

water. If the reservoir pressure had continued to decline, the ultimate recovery would have been in the order of 3.5 billion barrels of oil, a loss of more than 2 billion barrels of recoverable oil.

There were two ways to prevent this tremendous waste of a natural resource: (1) drastically reduce the withdrawal rates, especially the production of water by shutting-in or drastically curtailing production from the field, or (2), maintain the producing rates, but reinject the produced water back into the reservoir to maintain reservoir pressure.

The operators decided to reinject salt water thereby protecting the environment from pollution and maintaining reservoir pressure. Injection was started in 1938.

The Environmental Protection Agency is concerned with possible damage to the environment involved in the injection of produced salt water. The petroleum industry is also concerned with any possible damage to the environment; our concern started nearly 40 years ago when we started returning produced salt water to the Woodbine formation. Since its inception 35 years ago, the East Texas Salt Water Disposal Company has injected more than 5 billion barrels of salt water into some 130 wells.

There has never been an instance reported in which the injection wells have been known to cause damage to, or pollution of, fresh water bearing formations.

We submit that this fact is the best positive proof of pollution free operations available. We also submit the fact that this action was taken over 30 years ago without any regulation or even encouragement from governmental bodies; it was done to prevent pollution and improve recovery efficiency.

We have investigated several methods of handling the salt water disposal problem in the East Texas Field while complying with the proposed EPA regulations. One obvious solution to the problem would be to shut-in all wells which produce water thereby eliminating the disposal problem. We estimate that this would reduce oil producing capacity by approximately 50 percent and reduce recoverable reserves by approximately 700 million barrels. Therefore, this method is not acceptable.

We have thoroughly investigated the problem of possible pollution of fresh water in the East Texas Field. We have studied every proposal from all interested parties with which we are familiar. Based on our studies, we respectfully submit the following conclusions:

(1) The effect of curtailing production from the East Texas Field by not producing salt water would be devastating from a sound reservoir engineering standpoint and would have a material effect on the economy due to its inflationary impact.

(2) The relocation of all injection wells to a position west of the original productive field limits would be unwise and would reduce the producing rates and the recoverable reserves from the East Texas Field. This would also have a tremendous inflationary impact, some \$20 million would have to be spent to do that.

(3) Injection of this produced water into any other formation in the area is impossible.

(4) It is a physical impossibility to raise a column of salt water from a depth of 3,700 feet to a depth of 500 feet with the reservoir pressure available in the East Texas Field.

(5) Injection operations conducted by the East Texas Salt Water Disposal Company should be permitted to continue in the same manner as they have been conducted since 1942.

(6) The proposed regulations would be detrimental to oil recovery and would be inflationary. The regulations would not add anything of a positive nature to pollution prevention.

I am alarmed by the regulations proposed by the EPA for the underground injection program as I understand them. These regulations would not only cause a severe reduction in oil and gas production and loss of reserves, but would work a severe economic hardship on the operators with no beneficial effect on potential pollution of fresh water sands.

Existing State regulations are more than adequate for the protection of fresh water sources from pollution from oil and gas field operations.

Many people do not consider the ultimate effect of added cost to the producing companies. In the end all production costs, whether it is for automobiles, food, or gasoline, must be passed on to the consumer. This is the cruelest tax of all.

One of the basic rules that all engineers must learn and live with states, "If it is not sound economics, it is not sound engineering."

As I understand the regulations, they are unsound from an economic and engineering standpoint and I respectfully request that they be reviewed with this in mind. While I am speaking as an interested party and engineer, I am also an interested consumer who understands the economic system which has made this country great. I fear that the system is in danger.

[Mr. Calhoun's prepared statement follows:]

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EAST TEXAS STATEMENT

The East Texas Field is well documented in the technical and historical literature of the Petroleum Industry; it has been the training ground for two (2) generations of oil men. Much has been written concerning this field because of its size and importance to the industry and to the citizens of the United States. Until the discovery of Prudhoe Bay in Alaska, this was the largest known oil reservoir in the United States. It is still the largest known oil reservoir in the lower forty eight (48) states and the largest with ready access to domestic refineries.

The East Texas Field was discovered in September, 1930. The original reservoir pressure was approximately 1625 pounds. Reservoir pressure declined rapidly from the original pressure to approximately 1000 pounds in 1942, due to large volumes of produced salt water. If the reservoir pressure had continued to decline, the ultimate recovery would have been in the order of 3.5 billion barrels of oil, a loss of more than two (2) billion barrels of recoverable oil.

There were two ways to prevent this tremendous waste of a natural resource: (1) drastically reduce the withdrawal rates, especially the production of water by shutting-in or drastically curtailing production from the field, or (2)

maintain the producing rates, but reinject the produced water back into the reservoir to maintain reservoir pressure. The operators decided to reinject salt water thereby protecting the environment from pollution and maintaining reservoir pressure. For this purpose the East Texas Salt Water Disposal Company was formed. The performance of the East Texas Salt Water Disposal Company in this regard has been outstanding. The ultimate recovery has been increased to above 5.6 billion barrels of oil. This is 2 billion barrels more than was estimated in 1938. The recovery efficiency will be approximately eighty (80) percent, more than twice the average ultimate recovery from most water drive recovery operations and three (3) to four (4) times the average recovery from depletion drive reservoirs. The water disposal operations have been a classic example of efficiency, sound engineering and sound economics. They have handled one of the largest water disposal problems in the world for thirty-five (35) years at a cost per barrel which is a tiny fraction of normal water handling cost. Their operations have been studied by petroleum industry people all over the world. They have set the standard for the industry and should be commended for their tremendous contribution to the industry, the nation and to the consumer.

The Environmental Protection Agency is concerned with possible damage to the environment involved in the injection of produced salt water. The petroleum industry is also concerned with any possible damage to the environment; our

concern started over thirty-five (35) years ago when we started returning produced salt water to the Woodbine formation. Since its inception thirty-five (35) years ago, the East Texas Salt Water Disposal Company has injected more than five (5) billion barrels of salt water into some 130 wells. There has never been an instance reported in which the injection wells have been known to cause damage to, or pollution of, fresh water bearing formations. We submit that this fact is the best positive proof of pollution free operations available. We also submit the fact that this action was taken over thirty (30) years ago without any regulation or even encouragement from governmental bodies; it was done to prevent pollution and improve recovery efficiency.

We have investigated several methods of handling the salt water disposal problem in the East Texas Field while complying with the proposed EPA regulations. One obvious solution to the problem would be to shut-in all wells which produce water thereby eliminating the disposal problem. We estimate that this would reduce oil producing capacity by approximately 50 percent and reduce recoverable reserves by approximately 700 million barrels. Therefore, this method is not acceptable.

We have investigated the possibility of moving all injection wells west of the original field limits and feel that this would also reduce production capacity and recoverable reserves though not to the extent estimated in Option 1. This method would also require the expenditure of approximately 20 million dollars for new injection wells and facilities and have a

substantial inflationary impact.

We have investigated the possibility of disposing of produced water in formations other than the Woodbine. We find no formation or group of formations in the area capable of taking such large quantities of water. Most disposal wells in other formations are capable of only taking about 300 barrels of water/day and the average costs is approximately \$250,000. If we assume at 300 barrels per well per day, this would require 2,000 disposal wells to dispose of the 600,000 barrels of produced water/day. This would require a capital outlay of 500 million dollars. Since injection capacity would start to decline immediately, we should plan on replacing ten (10) to fifteen (15) percent of these wells each year to maintain injection capacity. This would add an additional 500 to 750 million dollars over the first ten (10) years of operation. This annual capital outlay should decline after the first ten (10) years, but in any event, the capital outlay over the next twenty (20) years would probably exceed two (2) billion dollars. Therefore, even if this option were open from a reservoir engineering standpoint, it would be impossible from an economic standpoint.

The hydraulic gradient of salt water is approximately .455 psi per foot of depth; the deepest fresh water sands from which water is produced in the East Texas Field are 500 to 600 feet from the surface. The depth of an injection well is

approximately 3700 feet, therefore to reach the deepest fresh water sand, the water column would be 3200 feet. The pressure necessary to raise a column of salt water 3200 feet is 1460 pounds. The reservoir pressure in the East Texas Field is approximately 1040 pounds, and the pressure in the extreme western part of the field is about 1200 pounds. Therefore, it is a physical impossibility to raise a column of salt water high enough to endanger fresh water sands by pollution. Even if it were possible to raise a column of salt water to this level, pollution could not occur because of the nature of completion used in the injection wells. Surface pipe is set to a level below the Wilcox sand (about 1200 feet) and cemented to the surface. This is described more completely in comments made by Herman Engel of the East Texas Salt Water Disposal Company.

We have thoroughly investigated the problem of possible pollution of fresh water in the East Texas Field. We have studied every proposal from all interested parties with which we are familiar. Based on our studies, we respectfully submit the following conclusions:

- (1) The effect of curtailing production from the East Texas Field by not producing salt water would be devastating from a sound reservoir engineering standpoint and would have a material effect on the economy due to its inflationary impact.

- (2) The relocation of all injection wells to a position west of the original productive field limits would be unwise

and would reduce the producing rates and the recoverable reserves from the East Texas Field.

(3) Injection of this produced water into any other formation in the area is impossible.

(4) It is a physical impossibility to raise a column of salt water from a depth of 3700 feet to a depth of 500 feet with the reservoir pressure available in the East Texas Field.

(5) Injection operations conducted by the East Texas Salt Water Disposal Company should be permitted to continue in the same manner as they have been conducted since 1942. Since its inception thirty-five (35) years ago, the East Texas Salt Water Disposal Company has injected more than five (5) billion barrels of salt water into some 130 wells. There has never been an instance reported in which the injection wells have been known to cause damage to, or pollution of, fresh water bearing formations. We submit that this fact is the best positive proof of pollution free operations available. We also submit the fact that this action was taken over thirty (30) years ago without any regulation or even encouragement from governmental bodies; it was done to prevent pollution and improve recovery efficiency.

(6) The proposed regulations would be detrimental to oil recovery and would be inflationary. The regulations would not add anything of a positive nature to pollution prevention.

I am alarmed by the regulations proposed by the EPA for the underground injection program as I understand them. These

regulations would not only cause a severe reduction in oil and gas production and loss of reserves, but would work a severe economic hardship on the operators with no beneficial effect on potential pollution of fresh water sands. Existing state regulations are more than adequate for the protection of fresh water sources from pollution from oil and gas field operations.

Many people do not consider the ultimate effect of added cost to the producing companies. In the end all production costs, whether it is for automobiles, food, or gasoline, must be passed on to the consumer. This is the cruelest tax of all. One of the basic rules that all engineers must learn and live with states, "If it is not sound economics, it is not sound engineering." As I understand the regulations, they are unsound from an economic and engineering standpoint and I respectfully request that they be reviewed with this in mind. While I am speaking as an interested party and engineer, I am also an interested consumer who understands the economic system which has made this country great. I fear that the system is in danger.

Mr. ROGERS. Thank you very much. We appreciate the statements and the committee will look into this problem.

Dr. CARTER?

Mr. CARTER. Thank you, Mr. Chairman.

By primary recovery, how much of the oil from a field do you obtain? What percentage of the oil?

Mr. CALHOUN. It depends on your recovery drive mechanism. We have three basic drive mechanisms, the depletion drive, where the oil is produced by virtue of the energy inherent in the oil, the solution gas that is in solution in the oil under high pressure. This method will recover from 15 to 25 percent, generally around 20 percent. Water drive is much, much more efficient. That is where an active aquifer moves into the oil reservoir, and maintains the reservoir pressure, and pushes the oil. We will recover generally in the 40 to 60 percent range. The East Texas field is so efficient that our recovery will be in excess of 80 percent.

Mr. CARTER. But in order to do that, do you need to use secondary or tertiary methods of recovery?

Mr. CALHOUN. No, sir, this is not a secondary or tertiary method really. It is just maintaining the reservoir pressure by reinjected produced water.

We do have an active aquifer. It just is not active enough to replace the voidage rate that we had in the Thirties and Forties.

Mr. CARTER. Brine is usually associated with oil, is that not true?

Mr. CALHOUN. Yes, sir.

Mr. CARTER. I notice that you are a little bit displeased with some of the EPA's regulations. They differ with your point of view.

EPA states that uniform regulations must be promulgated and followed by all the States regardless of the effectiveness of present State programs. You do not agree with that?

Mr. OTTS. No, sir, we do not. It will impose a tremendous administrative burden upon the States and upon the industry itself to impose these regulations without regard to the efficiency of the present programs.

Mr. CARTER. What percentage of your oil would you use if you were not permitted to reinject the brine to the 3,700-foot level?

Mr. CALHOUN. In the East Texas Field, we would lose close to 70 percent; about 60 to 70 percent of the future oil reserve, some 700 million barrels out of about 1.1 billion.

Mr. CARTER. How much recoverable oil do you think you have in East Texas or in the East Texas Field?

Mr. CALHOUN. About 5.6 billion.

Mr. CARTER. Remaining?

Mr. CALHOUN. No, sir; 5.6 billion ultimately. We have produced about 4.5 billion. We have about 1.1 billion to go.

Mr. CARTER. Is EPA a little bit arbitrary about their regulations?

Mr. CALHOUN. Yes, sir.

Mr. CARTER. Pretty difficult to deal with?

Mr. CALHOUN. Yes, sir.

Mr. OTTS. Dr. Carter, I have with me some other gentlemen who have been deeply involved in the analysis of the Safe Drinking Water Act and the EPA proposed regulations for approximately two years. They have also been involved in developing these orders of

magnitude numbers that I gave, the 3.5 billion barrels of reserves that would be affected, and the fact that hundreds of millions of dollars may be involved in trying to prevent the loss of those reserves.

They have been working with the EPA for quite some time, and we can see little appreciable progress as a result of bringing these facts to light.

Mr. CARTER. Will they let you continue with your injection of brine in the East Texas field?

Mr. CALHOUN. No, sir, not the way the regulations are proposed.

Mr. CARTER. Not the way they are now?

Mr. CALHOUN. The proposed regulations that we saw last summer, the ones we met on in October in Dallas and December in Denver, there is no way you can comply with those regulations. So much of it is totally impossible.

Mr. CARTER. Do you inject to 3,700 feet?

Mr. Calhoun. No, sir. We have been doing that now, the water company has been doing it for 35 years. We have never had a problem. This has been a standard for the industry. People come from all over the world to see how we do it.

Mr. RUSSELL. Dr. Carter, one of the problems is that, like East Texas and many areas in Kansas, Oklahoma, Texas, many of these wells were drilled in the last century, that are involved in many of these secondary recovery type programs. Of course, as you possibly know, they were drilled with cable tool wells. The people that drilled them had no records, and although the industry that has developed in these secondary and tertiary type programs has done the best it can to find and locate these wells and properly abandon them, we do not have any records other than the fact that the well was drilled, so when the rules become so strict that you have to have all of the data available, including logs or whatever on these old wells, I think this is where we have a conflict with the way the rules read and have constructed with what we have in practicality in the field.

As prudent operators, we are going to do the best we can and we have done the best we can to prevent any contamination, and we will continue to do so, but there is a conflict in this area.

Mr. CARTER. You really do not know, with one of the wells, about different levels there. I am a little bit familiar with drilling, and I know that in the State of Kentucky they require a sample to be sent to the Department of Geology.

Mr. RUSSELL. Right.

Mr. CARTER. With the old wells you do not even know how deep they are, is that correct?

Mr. RUSSELL. In many cases this is true. By supposition we know pretty well what the formations are in those old wells by the newer wells that have been drilled, but I am familiar with certain cases where a field has been drilled as many as four times over its entire life, once back in the eighties plugged out, redrilled because of economic conditions or otherwise, where different processes have been employed.

Mr. CALHOUN. Dr. Carter, the EPA had a rule that said you had to have complete records on every well within a certain radius from

the injection well. Spacing is close in East Texas, 5-acre spacing and in Kilgore, and other towns we have town lot drilling.

We used to have two wells over there that pumped on the same pump jack. In one case, and I am going to speak from memory—my numbers might not be absolutely accurate—there were 142 wells that we had to have complete information on around one injection well, and very little, practically nothing, certainly not adequate for their demands, in the way of information was available on 102 of the 142 wells.

Now the way we understand those regulations, if we cannot fulfill all of those obligations, we have to shut that injection well in.

Mr. CARTER. You had to get details on 142 to inject in one?

Mr. CALHOUN. Yes, sir, and on 102 of those nothing was available.

Mr. CALHOUN. No evidence whatsoever. I grew up over there. You can see I am not a young man any more, but I grew up over there. When I was a little boy there were just great expanses where grass would not grow. The operators on their own, without anybody telling them what to do, went in there and cleaned up the mess. They started injecting that water, and now we have a textbook case. It is a model.

I think they have done a great job, and I hate to see them be penalized for doing a good job.

Mr. Carter. I certainly sympathize with you. It is good to have your testimony here today, gentlemen. I know that you are experts in this area. Thank you very kindly.

Mr. ROGERS. What are the geological conditions in the area, say of Texas, and what about the aquifers? Are there many there, and so forth?

Mr. CALHOUN. The Woodbine pinches out against the Sabine uplift. It pinches out here against the uplift. East Texas Field covers over 60,000 acres, 43 miles long, 10 miles wide in places. At one time it was within five counties, and now only Gregg, Rusk, and Upshur Counties are producing. There are no producing wells left in Cherokee and Smith Counties. The east edge of the East Texas field is around Longview and Kilgore. We have an outcropping of the Woodbine between Dallas and Fort Worth, where we can actually see it on the surface. It goes into the East Texas Basin.

We have dozens of Woodbine fields that take energy from this aquifer all over, a vast number of them, and in many cases we are injecting back into the Woodbine to maintain pressure in those fields, and that is the Woodbine aquifer.

The aquifer you are probably referring to are the fresh water aquifer in the Wilcox formation at a depth of 400 to 500 feet. Generally most waterwells are maybe 100 or 200 feet deep, and go down, some of them could go down as deep as 500. However, it is not necessary.

Mr. CARTER. What are the present control methods that you use now?

Mr. CALHOUN. We set surface pipe to 1,200 feet, and cement it to the surface. This is very well-documented by Herman Engel's testimony before the EPA in October in Dallas. If that is not made a part of this record, I would request permission to supply you with that.

Mr. CARTER. Yes, I think it would be helpful to have it in the record. Without objection, we will receive it.

Mr. CALHOUN. If you will just tell me how many copies you would like.

Mr. CARTER. Just one for the record.

Mr. CALHOUN. I have a copy that I can give you, so it will be a part of his record and I will get Herman to send more.

[Testimony resumes on p. 302.]

[The testimony referred to follows:]

COMMENTS RE EPA PROPOSED REGULATIONS, STATE UNDERGROUND INJECTION CONTROL PROGRAM, BY HERMAN A. ENGEL, PRESIDENT, EAST TEXAS SALT WATER DISPOSAL CO.—OCTOBER 13, 1976

In 1942, a group comprised of most of the oil company operators in the East Texas Field joined together to form the East Texas Salt Water Disposal Company in an endeavor to protect the environment by disposing of salt water produced with the oil from the Woodbine formation by injecting same into the producing formation at a depth of approximately 3,700 feet.

Since inception thirty-four years ago, the Company has injected more than five (5) billion barrels of salt water into some 130 wells, and there has never been an instance reported in which the injection wells have been known to cause damage to, or pollution of, fresh water bearing formations. Current operations are conducted through sixty-five (65) injection wells at an annual rate in excess of 200 million barrels, representing more than 98 percent of all the salt water produced in the field.

This is the largest operation of its type in the United States, and perhaps in the world, and is in the largest producing field ever discovered in the United States. Engineers, research groups, executives, regulatory agencies and others throughout the United States and from many foreign countries have, for many years, visited and studied our operations which were designed to prevent pollution. Operations are conducted in strict compliance with stringent rules and regulations set forth by the Texas Railroad Commission. Yet, the industry is now faced with a whole new set of regulations, none of which will have any beneficial effect on fresh water sources in the East Texas Field.

A very thorough review of the regulations as proposed by the Environmental Protection Agency in the "State Underground Injection Control Program" as published in the Federal Register August 31, 1976, causes one to view with alarm many of the completely unrealistic and needless facets of the proposed regulations. The imposition of these nonessential additional requirements to existing state regulations will needlessly interfere with or impede oil and natural gas production activities which, in all proba-

bility, will result in drastic curtailment of production throughout the entire East Texas Field where production currently exceeds 65 million barrels of oil annually. In addition, such regulations would not only cause certain operators to lose their correlative rights by being forced to prematurely abandon their properties, but would greatly magnify the potential of surface pollution and, thus, contamination of underground drinking water sources.

The outstanding record of no known instance of contamination to potable water sands in the 34-year history of this Company is the result of excellent drilling, completion and operating procedures designed for the injection of salt water in the East Texas Field and approved and regulated by the Texas Railroad Commission. The regulations, as proposed, seemingly ignore this record and would require the complete abandonment of all existing wells and many of the surface facilities. This would result in the drilling of a minimum of sixty-five (65) new wells at an average distance of two miles farther away from the oil field (some would be as far as five miles), and would require the installation of an additional 130 miles of pipelines on or near the surface as well as several additional large surface collection centers for storage of the salt water. Strict enforcement of the proposed regulations could also require the drilling of numerous additional wells which, in our opinion, would also be absolutely unnecessary. Total capital required for such additions would approximate \$20 million and operating costs would skyrocket. Needless to say, the added cost of compliance would be unconscionable for this small organization.

Specifically, sections 146.42 and 146.47 require a thorough review of all wells of record that have penetrated the injection zone within one-half mile of existing or proposed injection wells to assure that all such wells have been properly com-

pleted and/or plugged etc. Compliance with this requirement for all existing or any proposed new injection wells within the limits of the East Texas Field would be impossible as complete data are not available on all wells of record. In most instances more than 100 wells have been drilled to the injection horizon within a radius of one-half mile of each of our injection wells.

Exhibit A is a map of the East Texas Field showing the location of our existing injection wells and all of the 30,000 wells that have been drilled in the field. Circles of one-half mile radius have been drawn around each injection well. To avoid any implication that the East Texas Salt Water Disposal Company might have selected certain wells to overemphasize its position, the Texas Railroad Commission was asked to arbitrarily select any two of our injection wells so that a study could be made of the feasibility of complying with the presently proposed rule of submitting data on well completion and plugging reports for all wells of record penetrating the injection zone within a one-half mile radius of existing injection wells or proposed new wells. A very thorough check of the Railroad Commission files revealed numerous instances where such information is not available, thus the proposed rules would require the abandonment of those injection wells. Based on the experience of our staff, with respect to well data records, it is quite reasonable to assume that it would be impossible to comply with this facet of the regulations requiring information on all wells as many of the wells were drilled and abandoned more than 40 years ago.

Exhibits B₁ and B₂ illustrate in detail the location of the two wells selected by the Railroad Commission and the numerous wells located within the one-half mile radius. Of the 137 wells indicated on Exhibit B₁, complete data are available on only 109 or 80 percent of the total. Similarly, of the 72 wells on Exhibit B₂,

complete information is available on only 11 percent of the wells. Exhibits B3 and B4 show that 127 and 62 wells have been drilled within the one-half mile radius around two proposed injection wells in which drilling operations should begin immediately to dispose of the current large volume of salt water. Complete information is not available on all of these wells. Additional wells will be needed early next year. Should the proposed regulations be adopted by EPA, each of these new wells would of necessity be abandoned shortly after completion. However, in view of the economic waste which would result from the regulations as proposed, the drilling of most, if not all, of the planned additional wells would be deferred - thus resulting in curtailment of oil production. There are too many unknown relevant factors for one to quantify the extent of such curtailment. For example: When will the new rules become effective? Will the rules be as restrictive as proposed? What will the market price of this crude be in the near future?

To comply with this stringent requirement, the East Texas Salt Water Disposal Company would, as mentioned above, have to abandon all of the injection wells and drill replacement wells an average of some two miles from the existing locations and thus be farther from the field. On Exhibit A the heavy black dashed line on the left side illustrates the approximate line on which the replacement wells could be drilled without encountering other wells on which complete information is not available.

The capital investment required to provide the replacement wells, pipelines and additional surface pits to accumulate the salt water for injection would be on the order of \$14 million and operating expenses would treble immediately. These operating expenses would not decrease with the normal decline in oil production, thus the unit

cost of disposing of salt water for each barrel of oil produced will continue to rise.

The Environmental Protection Agency should give serious consideration to the fact that the needless relocation of the wells and the construction of several additional surface storage pits could increase several fold potential pollution damage on the surface and thus contamination of underground water sources by actions beyond our control. Relocating the wells would mean that more than 130 miles of additional pipelines and numerous surface collection pits would be needed, many of which would be routed through or located in or adjacent to existing residential areas, schools, lakes, parks, farming areas, townsites, etc. Since inception of this Company in 1942, there has been only one incident in which the Company, or the program of injection, has been accused of damaging a fresh water zone. The accusation was proven to be completely false when the East Texas Salt Water Disposal Company drilled a water well for the accuser utilizing proper water well completion practices and produced a satisfactory fresh water well adjacent to one of its disposal wells. That fresh water well has now been in use by the accuser for eight (8) years. The contamination about which the landowner had complained was the result of improper procedures utilized by the accuser in the drilling and completion of her well. Several disposal wells have been drilled within cities and municipalities that depend on fresh water from the shallow Willcox formation sands. However, none have reported any instance of contamination by our injection operations. One must conclude that the present program for drilling and completing disposal wells is sufficiently adequate to protect the fresh water sands in the East Texas Field. It should be noted that this completion program provides for the cementing of surface casing below all of the porous sandy formations (approximately 1,100 feet in East Texas) above the Woodbine formation, thus it is

obvious that the completion procedures now utilized provide more than adequate protection for the shallow drinking water zones.

Section 146.42 also requires that "injection be maintained through tubing with a suitable packer set immediately above the injection zone". However, the Director is permitted to approve certain exceptions to this, if "the injector demonstrates to the satisfaction of the Director that the injection will not endanger underground drinking water sources". Strict enforcement by the Director could result in requiring this Company to drill more than 30 additional wells to provide adequate injection capacity. This would result in additional capital investment in excess of \$5 million.

A sincere effort has been made to consider other measures which might be utilized to enable us to comply with the proposed regulations. For example, there are no other formations in the area of the East Texas Field that are thick enough or sufficiently extensive to take the large produced water volumes that come from the field. The cost of drilling and maintaining monitoring wells around each injection well would, of course, be prohibitive. The use of casing surveys is also quite costly, and is of value only at the moment the survey is made. Such surveys cannot predict a potential leak which might occur one minute after completion of the survey.

The East Texas Field, discovered in 1930, is the largest field ever discovered in the lower 48 states and will ultimately produce more than 5½ billion barrels of oil, of which one billion remain to be recovered.

Due to the massive extent and thickness of the highly permeable Woodbine formation, the injection pressure at the face of the formation in the injection well dissipates rapidly as distance from the well increases. At a distance of

500 feet, the approximate average well spacing in the field, the pressure increase declines to about 5 PSI, or only 0.4% of average reservoir pressure in the disposal well area. Thus, the small localized pressure buildup around the disposal wells is negligible insofar as contributing to possible flow of Woodbine salt water upward through improperly completed or abandoned wells and into the shallow fresh water sands. Inasmuch as the dominant factor is the overall level of reservoir pressure, relocation of the injection wells some two miles or more down dip would have no beneficial effect on potential pollution of fresh water sands. Exhibit C illustrates the pressure distribution around a typical salt water disposal well in this field. This exhibit is based on studies resulting from many thousands of actual pressure tests.

Average reservoir pressure in the field is about 1,000 PSI, but due to geologic conditions there is a pressure gradient from west to east with the maximum pressure of about 1,200 PSI occurring along the western edge where the disposal wells are located. Even in the area of maximum reservoir pressure, the Woodbine sand will only support a salt water column up to a depth of about 1,100 feet or the approximate base of fresh water Wilcox sands (3,000 PPM total solids or less). Thus, as shown in Exhibit D, Woodbine salt water cannot flow up and into the Wilcox sands.

The only viable threat to underground pollution of drinking water in East Texas occurs in the injection wells themselves. A casing leak potentially could allow flow of injected water into drinking water sands. However, all of the disposal wells have at least one string of casing cemented from below the deepest Wilcox sands to the surface and the continuous monitoring of the injection casing - - surface casing annulus would promptly indicate such a leak. Each injection well is monitored three times daily. This has proven to be the most effective method of

leak detection. Periodic reporting the results of such monitoring to the EPA or the Texas Railroad Commission is valueless. When on the rare occasion a leak does occur, an immediate report is made to the Railroad Commission and the leak is promptly repaired under their supervision and guidelines.

There are numerous other requirements in the proposed regulations which do not enhance the objective of protecting fresh water sands in the East Texas Field. The voluminous amount of material required for permitting of each well and the need to repermit each well every five years would not only be extremely burdensome and costly, but nonessential and nonproductive. This is also true of many of the other requirements.

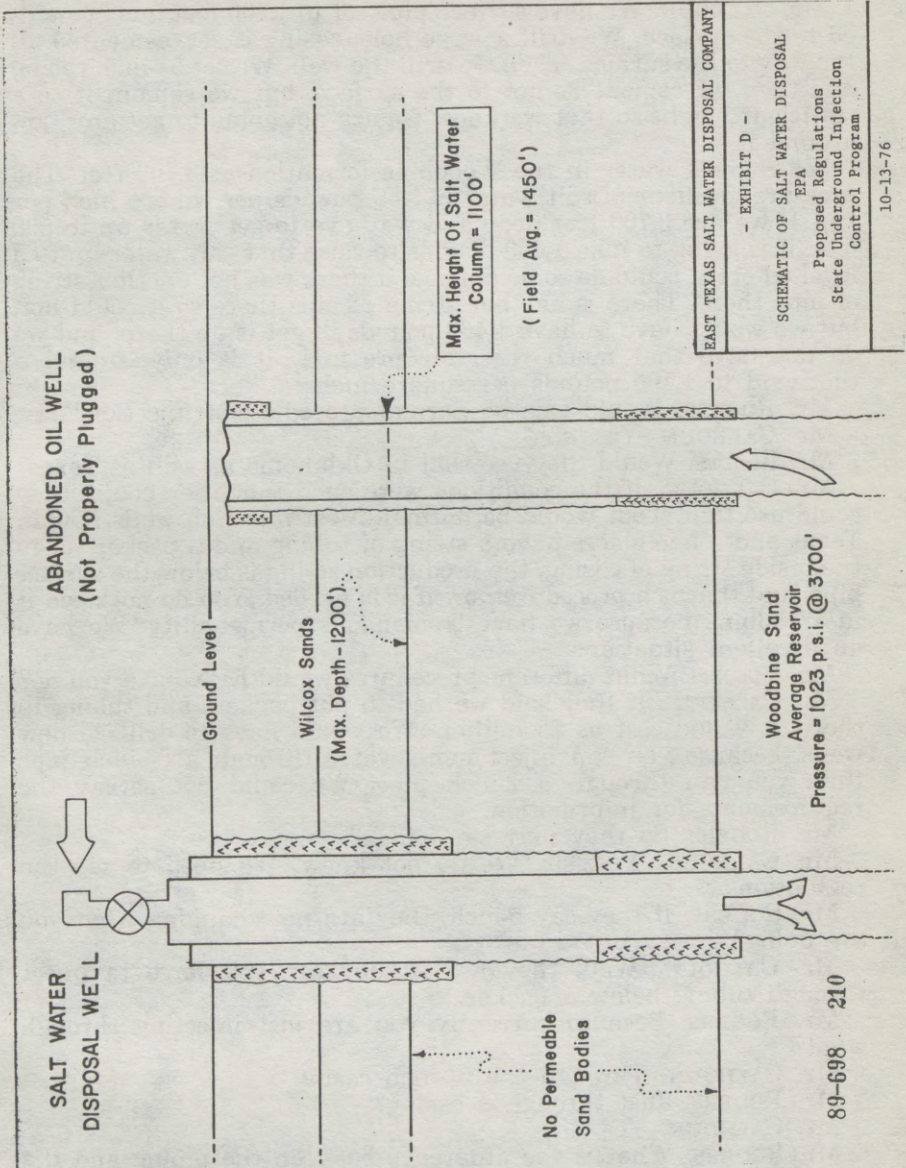
It is the opinion of the Management of the East Texas Salt Water Disposal Company that existing regulations of the Texas Railroad Commission are sufficiently adequate to protect underground fresh water sources in the East Texas Field and that none of the regulations proposed by EPA as pertain to Subpart "D" are needed. It is requested that the EPA give serious consideration to the exemption of the State of Texas from such redundant regulations as proposed and permit the continuation of operations under the existing regulations of the Texas Railroad Commission and other state agencies.

If, in the wisdom of EPA, the foregoing is not viable, the extravagant waste of money and effort should at least be minimized by including a provision in the regulations that the Director can obtain from the EPA an exemption from such regulations for certain "projects" such as that conducted by the East Texas Salt Water Disposal Company. It would be understood that the then existing operations had demonstrated that the injection had not endangered underground sources of drinking water, nor will continued use endanger underground sources of drinking water when

conducted under the regulations of the appropriate state agency.

Should the EPA ignore the advice and wisdom of many highly trained and experienced individuals who undoubtedly have requested exemptions similar to those outlined above, then to avoid complete chaos, disruption of the production of oil and the tremendous loss of reserves in the United States, Sections 146.42 and 146.47 must be revised. In lieu of requiring complete information on "all wells of record", the requirement should be for "all available information for all wells of record, etc.".

If it becomes apparent that the EPA will not alter the stringent proposals sufficient to permit the continuation of our current safe and efficient operations, the East Texas Salt Water Disposal Company cannot justify the wasteful drilling of much needed additional wells and the construction of new surface facilities during the next few years pending the final outcome of such proposed regulations. This would, of course, necessitate drastic curtailment of oil production in the field.



Mr. CALHOUN. We have surface pipe set to 1,200 feet and cemented to the surface. We drill a large hole, casing is set, cemented all the way to the surface. Then we drill the well. We set 5½-inch casing and then we cement it, not to the surface, but we cement it to a sufficient height so that we know we are not going to get any flow around it.

We reinject water in the Woodbine formation at 3,700 feet. The pressure gradient of salt water is .455 pounds per square inch per foot. If we are 3,700 feet deep and we have to get water up to 500 feet, it is going to take 1,460 pounds to raise that salt water up to a level where it could do some damage if there was not another string of pipe there. There is another string of pipe there so it could not, but we would have to have 1,460 pounds to get it up there, and we do not have that much reservoir pressure. It is only around a thousand to 1,100 pounds per square inch.

Mr. ROGERS. Would this be normal procedure of injection?

Mr. CALHOUN. Yes, sir.

Mr. ROGERS. Would they use that in Oklahoma as well as Texas?

Mr. CALHOUN. If the conditions were such that they could, they could use that. That would be normal. Most injection wells now in Texas and other places have a string of tubing and a packer set in the inside string of casing, the production string is below the surface pipe, and that is a procedure now if it is needed. You do not need it in Woodbine because we have tremendous permeability. We have an excellent situation.

Mr. ROGERS. What different procedures would EPA have you do?

Mr. CALHOUN. If they said we had to put packers and tubing in there, it would cost us \$5 million. We would have to drill 35 new wells, because you can inject more water through a 5½-inch pipe than you can through a 2-inch pipe. We could not satisfy the requirements for information.

Mr. ROGERS. So they may say 5-inch?

Mr. CALHOUN. Yes, sir. We do not know. We need to see the regulations.

Mr. ROGERS. If they say 5-inch, they are not changing what you are doing?

Mr. CALHOUN. Well, they are if they say you have to inject through tubing below a packer.

Mr. ROGERS. Because currently you are just injecting through what?

Mr. CALHOUN. Through the 5½-inch casing.

Mr. ROGERS. Just through a casing?

Mr. CALHOUN. Yes, sir.

Mr. ROGERS. What is the difference between the piping and the tubing?

Mr. CALHOUN. Sir?

They would require that we would have a packer.

Mr. ROGERS. A packer?

Mr. CALHOUN. Yes, sir. This is a device that, say we have some 5½-inch casing here. We run 2-inch tubing in and we have a packer set down here so there cannot be any flow above this packer.

Mr. ROGERS. Do you use the 2-inch pipe within the casing?

Mr. CALHOUN. We do not currently because we do not need any.

Mr. ROGERS. Are they proposing that?

Mr. CALHOUN. Yes.

Mr. ROGERS. To require you to put a 2-inch pipe in?

Mr. CALHOUN. Well, they say tubing and a packer and 2 inches is about as large as we could get it.

Mr. ROGERS. If you use the packer?

Mr. CALHOUN. Yes, sir.

Mr. OTTS. In the existing wells with 5½-inch casing, 2-inch tubing is about the largest you could insert, which would reduce the injectivity.

Mr. ROGERS. Of getting it back into the ground?

Mr. OTTS. Since I have already interrupted, might I add one other thing?

There are a number of communities on this East Texas field trend who are getting their present water supply and have been for years from these fresh water aquifers, so they are in current use already; am I correct?

Mr. CALHOUN. Absolutely. They have been taking water out of there for over 100 years.

Mr. OTTS. And there has not been an instance of pollution with the systems used and with the regulatory approach that the State of Texas has taken?

Mr. CALHOUN. Mr. Chairman, if something bad was going to happen, we would have seen it by now.

Mr. ROGERS. Has the East Texas Company been sued by any private parties for contamination of private drinking water supplies?

Mr. CALHOUN. No, sir.

Mr. ROGERS. There have been no suits?

Mr. CALHOUN. There was a lady who had trouble drilling a water well. She was going to drill a shallow water well and she did not make the kind of well she thought she was going to have. This was 25 years ago.

Mr. ROGERS. So there have been no judgments?

Mr. CALHOUN. No, sir.

Mr. ROGERS. No trials?

Mr. CALHOUN. No.

Mr. ROGERS. Or suits by the State of Texas?

Mr. CALHOUN. The water company went out and drilled the well 50 feet from her location and got her a water well that makes more water than she can use and it has been there for 25 years.

Mr. ROGERS. Have there been any suits instituted by the State of Texas for violation?

Mr. CALHOUN. No sir, not to my knowledge.

Mr. SCOTT. Mr. Chairman, my name is Robert M. Scott. I was introduced at the beginning of the presentation.

EPA requires the use of tubing and a packer but allows that exception can be made after a showing in an elaborate procedure. In the case of the East Texas Field here, as Mr. Calhoun has already indicated, the reservoir pressure is simply insufficient to raise the fluid level to a point where any contamination of fresh water aquifers could occur.

Now in this case, and in many others as you go through the specific technical and procedural requirements of the regulation, you find that there has been no evidence of contamination, and yet we are saddled with a regulatory procedure that requires a detailed showing and public hearings, et cetera, to go full circle and end up where we started from.

In reference to one of your earlier questions about geologic and geographic variability, I think that the subsurface geology of the different States is sufficiently different that it is inappropriate to take Texas' technical procedural requirements and apply them in California.

The Western Oil and Gas Association commentary closely examines the particular requirement that all wells have surface casing cemented to the surface opposite aquifers of 3,000 milligrams per liter or less total dissolved solids. A requirement such as that make sense in the State of Texas where aquifers of that TDS content are typically found only in the shallow formations we normally associate with ground water.

In the case of, for instance, California or Alaska, waters of that TDS content can be encountered at any depth. In one field in California, for example, such water is encountered at approximately 8,500 feet. The requirement that you have surface casing cemented opposite that aquifer is nonsensical. To get around that requirement you must essentially go through the EPA procedure and then end up right back where you started from. It is a very complex and costly procedure. In some cases, and hopefully perhaps some of this could be modified, even this alternative is not allowed.

For instance, in the injection wells it is a very explicit requirement that this casing be cemented to the surface. I think this lack of flexibility is the basic issue.

Mr. ROGERS. But that is the way you do it, is it not? I thought I understood you to say what you do with casing is cement it to the surface.

Mr. SCOTT. I might elaborate on that.

When Mr. Calhoun is talking about a particular East Texas Field well, it is a well completed specifically for injection purposes. The wells I am talking about are existing wells that were converted to injection. Typically, if you can visualize pieces of pipe, a piece of surface pipe or casing is set to a given depth that the State regulatory agencies have determined is necessary to protect ground water, and they have various statutory definitions of ground water but it is usually couched in the word "usable." That pipe is almost always cemented to the surface. It is a large piece of pipe and, because of its weight, et cetera, it cannot be carried to a very great depth. Then they commence drilling through that pipe to the formation which will produce oil, and set a smaller string. There are then concentric pieces of pipe.

On the longer string, typically, cement is emplaced around the casing to a certain height, to insure that the casing is held in place. There is an area therefore where the casing has not been cemented.

Now if it is reasonable to expect that aquifers of 3,000 milligrams per liter of total dissolved solids or less exist between the depth of the producing horizon and the surface there is a good chance that there is an area that is not cemented.

I think that Mr. Abbott made a point there that the setting of the surface pipe already protects all the water that ever could be usable. We can go to different definitions of what constitutes usable water, but setting arbitrary numerical limits on what constitutes future use and what must be protected is where we run into trouble. This is where the concept of national uniform requirements as far as the technical and procedural aspects are concerned really cause some very significant problems.

Mr. ROGERS. In other words, you would be concerned about whether it is mandatory or whether it should be discretionary?

Mr. SCOTT. That is one aspect. The second aspect is that the discretionary provisions can be exercised only with showings of, and I quote the regulation compelling evidence. We have created machinery, the result of which we end up right where we started from, but we have spent a lot of money and a lot of time to get there. In many cases, the way provisions have been developed, that option does not exist.

Superimposed over all that is a lack of any benefit to be accrued from the whole process.

Mr. CARTER. \$1,600 worth of paperwork, did you say?

Mr. CALHOUN. That is true in a simple case. In the East Texas Field where you might have 100 wells to do, instead of having a half-inch stack of paper that costs \$1,600, we might be looking at a stack of paper you cannot put in a filing cabinet.

Mr. ROGERS. In other words, you cannot take a particular area and say a certain procedure is proper for that area?

Mr. SCOTT. That is the point that API is making. The areas are unique and that effective regulations have been developed for those areas. The concept of taking all the variability out of it is counterproductive.

Mr. ROGERS. But you don't feel that your injection is bringing salt water intrusion into the freshwater aquifers.

Mr. SCOTT. Historically there is little or no evidence to support that contention. I would like to mention to the Vamoosa situation you brought up earlier. I think Mr. Abbott has some specific information on that situation.

Mr. ROGERS. Could you identify yourself for the record, please?

Mr. ABBOTT. My name is Seth Abbott. Mr. Scott mentioned the Vamoosa and you had earlier inquired about it.

Mr. ROGERS. Yes, in Oklahoma.

Mr. ABBOTT. The EPA in Dallas invited the USGS man who authored that study to Dallas for a conference, and he, the EPA man, invited some industry people to attend. We had several experts there. We have not had the opportunity to study the report. We have just heard an oral report. It appears that the judgments the author has made are based purely upon log analyses, taken from two different periods of time, one set taken from the period of about 25 to 30 years ago, and the second set taken from operations conducted within the past 5 years.

His analysis of those logs is the basis upon which he has said that there is a rise in the saltwater-freshwater interface. He has considered all of the possibilities that he can think of, and concluded that it was the injection of salt water by the operators.

Two things: One, there is considerable doubt, considerable question, let me put it that way, about the reliability of his log analyses, and he admits that.

Secondly, if you assume that over the past 30 years the operators had injected in each of those 30 years the amount of water they injected 2 years ago, you would not be able to come up with the answer to his problem, so it appears on the surface that there is some other explanation for it. It is not the injection of water.

Mr. ROGERS. How do you think the salt water got into it?

Mr. ABBOTT. We don't know. We are studying it. One possibility is that it is a product of several factors including withdrawal of fresh water. This would reduce the pressure and allow the saltwater-freshwater interface to rise. That could be a contributing factor. We are just now entering into a study to determine the cause. At this moment we don't think that it is caused by the injection of salt water. There has been no analyses of water to verify, as I understand it, his conclusion that the saltwater-freshwater interface has risen.

Mr. ROGERS. This says that a 3-year study of the Vamoosa aquifer in north central Oklahoma has turned up numerous examples of contaminated freshwater wells used for home and for livestock.

Mr. ABBOTT. I have talked specifically with the man, with the Oklahoma Corporation Commission, who is charged with that element of their regulations.

Mr. ROGERS. And they feel there is no—

Mr. ABBOTT. And he says he knows of no instance in that area where a freshwater well has been contaminated.

Mr. ROGERS. He disputes this?

Mr. ABBOTT. He disputes that.

Mr. ROGERS. I would like for the staff to have that verified, and if necessary we will have them up before the committee, both of them, Oklahoma and the geographic—let's do that immediately.

Mr. ABBOTT. That man is Sam Shakely.

Mr. ROGERS. And I think the Federal man is Lugoz, Joseph D. Lugoz, a hydrologist for the United States Geological Survey, because I think it would be important for us to have that.

Mr. ABBOTT. We do too. We don't know what the answer is. We are trying to find out.

Mr. ROGERS. We have some questions we will just ask you to answer for the record. It won't be necessary to go into it now.

[The following letter and attachment was received for the record:]

American Petroleum Institute
2101 L Street, Northwest
Washington, D.C. 20037
202-457-7300



Frank N. Ikard
President

May 3, 1977

Honorable Paul G. Rogers
Chairman, Subcommittee on Health
and the Environment
Committee on Interstate & Foreign Commerce
Room 2415
Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

At the hearing held by your Subcommittee on April 22, 1977 on 1977 Amendments to the Safe Drinking Water Act (H.R. 5829, H.R. 5830, and H.R. 6159), you requested that the API witness, Mr. J.M. Otts, answer certain questions propounded by the Subcommittee in writing. Enclosed are the answers to those questions.

Sincerely,

A handwritten signature in cursive script that reads "Frank Ikard".

Enclosure

THE U.S. HOUSE SUBCOMMITTEE ON HEALTH AND ENVIRONMENT
HEARINGS ON THE SAFE DRINKING WATER ACT AMENDMENTS OF 1977 --

April 22, 1977

QUESTIONS FOR OIL PRODUCERS FOR THE RECORD

QUESTION: 1. Would you please relate to us now, and in detail for the record, the basis for your assumption that the proposed regulations pertaining to underground injections will cause lost production?

RESPONSE: The proposed regulations would seriously impact underground injection operations as presently practiced by industry in the many States in many different ways. The nature and severity of the impacts would vary with geographic location, subsurface geologic conditions, age of the particular operation, volumes of oil and gas and formation water produced, and the production practices developed over many years by operators and State regulatory bodies. Many of the proposed "minimum requirements" cannot be met, particularly in the older production areas, with the result that considerable production would be halted or would require expenditure of such magnitude that continued production would be uneconomic and certain new injections either long delayed or completely stopped.

QUESTION: 1a. What do you premise your calculations upon?

RESPONSE: Calculations for the determination of the amount of lost production were based on the premises that (a) permits for some existing and new injection and disposal operations could not be obtained because some of the data required by the regulations are not available and there are no reasonable alternatives which operators could select which are acceptable in lieu of certain data, (b) the cost of complying with and/or implementing the regulations will be so prohibitive that some existing injection and disposal operations will be shut-down and some new operations will be foregone or substantially delayed, (c) the specific language of Sections 146.42 @ (1), (2) and (3) would play havoc with California with

Page 2

little reliance placed on Section 146.42(c) (1), (2) and (3) to provide relief and (d) the limitation on injection measures as contained in 146.42(a)(5).

QUESTION: 1b. Are your calculations derived from a "mandatory" interpretation of the regulations or a discretionary interpretation of the regulations? Please cite specific language in the regulations upon which you base your calculations.

RESPONSE: Calculations were based on a "mandatory" or literal interpretation of the words in the regulations. Such an interpretation is the only reasonable one a regulatee can make of regulations where great values of resources and initial investment are involved. In the case of the UIC regulations, the States will be receiving grants from the Federal government to administer the regulations. We believe the States would enforce the regulations as written in order to ensure that they will continue to receive Federal money. Any so-called flexibility or State discretion is either not present or inadequately expressed.

Several examples of troublesome provisions are:

(1) §146.41(a)(1) The Director shall obtain data necessary to make the determinations required under §146.42.

(a)(3) Underground injections reviewed by the Director that do not endanger underground drinking water sources may continue operation under a permit issued in compliance with §§146.42 and 146.47.

We'll tie these two provisions in with §146.42(a)(6) and §146.47(a)(2)(ii) and (iii).

§146.42 is entitled "Requirements for Existing and New Underground Injections".

(a) The Director shall review data on existing underground injection and on proposed new underground injections to insure that:

Page 3

(1) All underground drinking water sources of 3,000 mg/l total dissolved solids or less are protected by surface casing cemented to the surface;

(2) Injection is maintained through tubing with a suitable packer set immediately above the injection zone;

(3) The long string is cemented with sufficient cement to assure no migration of injected fluid above or below the injection zone.

These three provisions would either shut-down almost all California production or cost from \$125 million to \$1.3 billion to comply. See the WOGA comments. No reliance can be placed on the so-called discretionary provisions of §146.42(c)(1), (2) and (3).

(5) Surface injection pressure is limited to preclude the possibility of fracturing the confining strata.

See the API Survey for the very sizeable impact this provision would have on reserves, daily production, and expenditures.

(6) All well completion and plugging reports for wells of record penetrating the proposed injection zone within a one-half mile radius of the proposed well injection have been thoroughly reviewed to insure that all wells are properly completed and/or plugged that in the judgment of the Director a potential threat to underground drinking water sources; and (Underlining added.)

§146.47 is entitled "Application for UIC Permit for a New Underground Injection".

...

(a)(2)(ii) A map showing name and location of all producing wells, injection wells, abandoned wells, dry holes, and water wells of record within a one-half mile radius of the proposed injection well; and

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(a)(2)(iii) A tabulation of all wells requested under (ii) penetrating the proposed injection zone, showing: operator; lease; well number; surface casing size and weight, depth and cementing data; intermediate casing size and weight, depth and cementing data; long string size and weight, depth and cementing data; and plugging data. (Underlining added.)

~~Many wells were drilled, plugged and abandoned more than fifty years ago. Many records are non-existent. Many records are unreliable. It wasn't until about 1945 that records were reliably maintained. We can find little in the proposed regulations which provide for flexibility or State discretion on which we are willing to rely. Little tangible benefit would be realized by reviewing all existing data for a field or an area -- such as the East Texas Field - where no known fresh water problems have arisen.~~

The answer would seem to be that if a State is maintaining a careful surveillance program, is comfortable with the data it already has and is adequately protecting groundwater, it shouldn't be required to inaugurate the EPA program unless the EPA has demonstrated essentiality for its proposed requirements.

QUESTION: 1c. Please submit for the record a detailed analysis with documentary and support materials of your calculations pertaining to lost production due to compliance with underground injection regulations.

RESPONSE: The API, TMOGA and WOGA comments were submitted for the record of this hearing. For convenience, we are attaching the following:

1. East Texas Field calculations.
2. API Survey.
3. The Table of Contents of the WOGA comments and pages 15-43 of Part III of these comments.

QUESTION: 1d. In what areas will you be prevented from drilling? Why?

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RESPONSE: The regulations will not prevent drilling for oil and gas because drilling does not involve underground injection and is not covered by the regulations. New injection operations could be prevented, however, in a variety of ways. One of these would be the unavailability of data on old wells in a field which is proposed for an injection or disposal project. This circumstance could delay a development drilling program, or adversely affect a secondary or tertiary operation which could also delay drilling.

QUESTION: 2. What are the primary geological conditions in the area of most of your wells? How many aquifers are generally found in the area where you drill?

RESPONSE: We drill in all parts of the continental U.S. and Alaska, both onshore and offshore. There are no specific geological conditions which are necessarily common for the entire area. Instead conditions do vary according to area. Likewise, the number of aquifers generally found also varies with the area. On the average, we would expect to see only one or two aquifers per well.

QUESTION: 2a. What control measures do you presently employ to protect the aquifer in the area where you drill? What is the cost of these measures?

RESPONSE: Protection of the aquifers is of prime importance and preparations begin in the planning stage of the operation. All fresh water aquifers are drilled using a fresh water mud with controlled fluid loss properties. All fresh water zones are covered with casing prior to penetration of any known hydrocarbon zones. In most areas, the casing is cemented to the surface using proper cementing techniques, to ensure a reliable cement sheath throughout the aquifers. It is difficult to determine a separate cost for this protection, since it is an integral part of our drilling program. However, the following example will give an approximation of the costs to protect underground fresh water supplies based on running surface casing to 1000' and cementing to the surface. This

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cost would approximate \$15,000. Surface casing has other utility than simply to protect underground fresh water; and, therefore not all of this cost should always be charged to fresh water protection. An API environmental cost survey indicates that an allocation of these costs for the protection of fresh water ranges from 35% to 100%. In some cases other costs are associated with protecting fresh water such as electric logs to identify fresh water aquifers and the use of special drilling muds. Normally the above procedures are used to protect fresh water. California has used successfully certain alternative methods which are covered thoroughly in the WOGA comments. Various other areas, small in number, have used satisfactory alternatives which are mentioned in the comments submitted to EPA.

QUESTION 2b. What alternative methods do you use? At what cost?

RESPONSE: Except as mentioned above, normally no alternative methods are used.

QUESTION 2c. What technology do you foresee on the horizon?

RESPONSE: The technology on the horizon deals with improving the efficiency of the cementing operations and developing better methods of determining more precisely the existence and extent of fresh water aquifers.

Mr. ROGERS. Are there any other questions?

Mr. CARTER. No, sir. I have enjoyed the presentation very much.

Mr. RUSSELL. Mr. Chairman, I would like to supplement some prior comments here with regard to the tubing and packer situation as mentioned in East Texas. I would like to mention the fact that in many areas, particularly in the older areas of the United States, Texas, Oklahoma, Kansas, Kentucky, New York, one of the practices with slim hole completion of well, say, with 1-inch pipe, 2 $\frac{1}{8}$ inch pipe, much smaller than the 5-inch referred to in East Texas, so that if an interstring of tubing and a packer were required in those small diameter wells, I think we would see that we have reached a situation whereby most of those wells would have to be abandoned. It would be uneconomic to do so. The rates of injection would be such in many of these smaller marginal areas whereby the reserves then would be lost because it would be entirely uneconomic to change it.

Mr. CARTER. You couldn't get the 2-inch into it.

Mr. RUSSELL. It would reduce the flow so much and the cost of doing it would be so great with the reserves involved that it just wouldn't be worthwhile.

Mr. CARTER. And all of the pipe used in the East Texas field is 5-inch or greater.

Mr. CALHOUN. All of the pipe varies. Some of those wells were drilled 40 years ago. Right now the current completion practice, and it has been for 25 years for injection wells is 5 $\frac{1}{2}$ inch pipe.

Mr. ROGERS. The majority definitely would be 5 inches?

Mr. CALHOUN. Five and one-half inches.

Mr. SMITH. I would like to make one comment representing the API here.

One thing I would like to point out, which has been pointed out, the States of Texas, Louisiana, Oklahoma, California, and other States presently have very good programs which are protecting the fresh water and laying on the Federal regulations is just not needed to protect it.

I was wondering, Mr. Kimm mentioned they were going to designate 18 States which have vast underground injection operations initially, and if these States are presently doing a good job which have vast injection operations underground and they are protecting the fresh water, why do they have to be named? I don't know why they would have to be named. That's a good question.

Mr. ROGERS. To name them?

Mr. SMITH. Yes. I know they are going to list the States that are going to have to follow these minimum requirements, and the question I am raising is if the States presently have sound programs which are protecting fresh water aquifers, why do they have to be named, to follow his prescribed Federal programs?

Mr. ROGERS. Yes. Well, perhaps, I don't know. We will get into that. It may be that they are trying to set a minimum standard. Then if the State meets that or exceeds it, then there is no problem.

Often, as you know, that is the way Federal law is handled, where we ask a minimum be adhered to, and a State, as long as they are doing that, assumes primary responsibility, or if they go above it, that is the State's concern.

Now, I would be concerned about what is happening in Oklahoma just recently, and we will be looking at other situations as well, contamination situations, because water in many areas is even as important to the Nation as oil.

I think we have to make intelligent judgments. We certainly don't want to cut down oil production.

Mr. SMITH. I agree.

Mr. ROGERS. I am sure you don't either.

Mr. RUSSELL. That's absolutely right.

Mr. ROGERS. To contaminate rather limited water supplies as well. So if we can reach a proper balance and a proper approach—and I think this is what this committee wants to do—we want to try to do that. We certainly don't want to stop production of oil, and I think in the basic law it's written that we don't, but only in those instances where it really contaminates drinking water.

Mr. SMITH. Yes, sir.

Mr. ROGERS. I think that is our approach.

Mr. SMITH. I am saying the States do have good programs which do accomplish that, many of them.

Mr. ROGERS. We want to make sure of that, and we certainly will have that checked out.

Mr. CARTER. Mr. Chairman, I would like to ask these gentlemen if the people in EPA with whom they work are really conversant with the drilling of oil wells and the geology and so on.

Mr. RUSSELL. On the whole, no sir, in my experience.

Mr. CARTER. They really don't know; it's a new field for them.

Mr. RUSSELL. But they are learning; they are attempting to learn, and I am satisfied with that. But with the background and so forth, in most cases, I think at least in my experience, they are not familiar with the details and techniques and engineering problems. Am I correct in that?

Mr. ABBOTT. I think that is right. We have worked quite closely with one who has had some practical experience, but most of them do not.

Mr. ROGERS. All right.

Thank you so much for your presence here today. We are grateful.

Mr. OTTS. Thank you for allowing us to be here.

Mr. ROGERS. This will conclude our hearing.

[The following statements and letter was received for the record:]

STATEMENT OF THE NATIONAL ASSOCIATION OF COUNTIES

THE NATIONAL ASSOCIATION OF COUNTIES* APPRECIATES THE OPPORTUNITY TO SUBMIT THE FOLLOWING STATEMENT CONCERNING THE IMPACT OF THE SAFE DRINKING WATER ACT ON LOCAL GOVERNMENTS. AT THE OUTSET, WE WANT TO COMMEND THIS COMMITTEE FOR HOLDING HEARINGS ON THIS PROGRAM. THE DATE OF THESE HEARINGS PARALLEL NACo'S EFFORTS TO MORE CLOSELY STUDY THE OVERALL IMPACT OF THE REQUIREMENTS OF THE SAFE DRINKING WATER ACT ON COUNTY GOVERNMENTS. HOWEVER, WE HAVE NOT YET COMPLETED OUR WORK IN THIS AREA.

AS PART OF OUR EFFORTS TO LEARN MORE ABOUT THE PROGRAM'S IMPACT ON COUNTIES, NACo HAS SENT THE ATTACHED DRINKING WATER SURVEY TO OVER 250 COUNTIES OF ALL SIZES. THE QUESTIONS THAT WE HAVE ASKED COUNTIES WILL GIVE THIS COMMITTEE AN IDEA OF THE TYPES OF ISSUES THAT WE BELIEVE ARE OF PRIMARY CONCERN TO LOCAL GOVERNMENTS INVOLVED WITH THE SAFE DRINKING WATER ACT. THESE SURVEYS ARE NOT SCHEDULED TO BE COMPLETED UNTIL MAY 1, 1977.

WE WILL HOWEVER BE MAKING A NUMBER OF PRELIMINARY OBSERVATIONS TO THIS COMMITTEE CONCERNING THIS PROGRAM BASED ON THE LIMITED KNOWLEDGE THAT WE HAVE GATHERED TO DATE. FIRST, WE WOULD OPPOSE ANY MAJOR CHANGES TO THIS LAW UNTIL LOCAL GOVERNMENTS HAVE HAD MORE EXPERIENCE WITH THE IMPLEMENTATION OF THIS PROGRAM. WE ARE STILL NOT CERTAIN JUST HOW INVOLVED LOCAL GOVERNMENTS ARE OR WILL BE WITH THE IMPLEMENTATION OF THE SAFE DRINKING WATER ACT.

* The National Association of Counties is the only national organization representing county government in the United States. Through its membership, urban, suburban and rural counties join together to build effective, responsive county government.

The goals of the organization are to:

- improve county governments;
- serve as the national spokesman for county governments;
- act as a liaison between the nation's counties and other levels of government;
- achieve public understanding of the role of counties in the federal system.

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WE BELIEVE THAT THERE ARE TWO MAJOR WAYS THAT LOCAL GOVERNMENTS WILL BE INVOLVED WITH THIS PROGRAM. FIRST, COUNTY GOVERNMENTS MAY OWN OR OPERATE THAT WATER SUPPLY SYSTEMS IN AN AREA. WHERE THIS IS THE CASE, THE COUNTIES WILL BE REQUIRED TO COMPLY WITH THE INTERIM PRIMARY DRINKING WATER STANDARDS BY JUNE 24, 1977. AS THAT DATE HAS NOT YET ARRIVED, WE DO NOT KNOW HOW MANY LOCAL GOVERNMENTS WILL BE UNABLE TO COMPLY WITH THESE REQUIREMENTS. WE BELIEVE HOWEVER, THAT A LARGE NUMBER OF WATER SYSTEMS MAY NOT MEET THIS DEAD-LINE.

THE SECOND WAY IN WHICH LOCAL GOVERNMENTS WILL BE IMPACTED BY THIS PROGRAM IS IF THE STATES CHOOSE TO DELEGATE ENFORCEMENT RESPONSIBILITIES TO THE LOCAL GOVERNMENTS. UNTIL THE STATE HAS ACTUALLY ASSUMED PRIMARY ENFORCEMENT RESPONSIBILITY (PRIMACY), IT IS PREMATURE TO FORECAST THE EXTENT TO WHICH THEY WILL CALL UPON LOCAL GOVERNMENT TO ASSIST THEM WITH THE ENFORCEMENT RESPONSIBILITIES TO THIS PROGRAM. FURTHERMORE, AS WE STILL HAVE NOT REACHED THE DATE FOR MEETING THE INTERIM PRIMARY DRINKING WATER STANDARDS, IT IS PREMATURE TO TALK ABOUT ENFORCING THESE STANDARDS.

IN DISCUSSING EITHER OF THESE TWO AREAS, WE ARE ONLY SPECULATING ABOUT THE POSSIBLE ROLE OF LOCAL GOVERNMENTS IN THIS PROGRAM. THE SAFE DRINKING WATER ACT DOES NOT SPECIFICALLY IDENTIFY THE ROLE OF LOCAL GOVERNMENTS IN THIS PROGRAM. THE ACT FAILS TO ADDRESS THE POSSIBLE FUNDING NEEDS OF LOCAL GOVERNMENTS WITH RESPECT TO THIS PROGRAM AS WELL AS THE INTERGOVERNMENTAL PROCESS THAT SHOULD BE FOLLOWED IN IMPLEMENTING THIS PROGRAM.

THE ACT DOES NOT ENCOURAGE STATES TO SHARE FUNDS WITH THOSE LOCAL GOVERNMENTS WHICH MAY BE ASSISTING THE STATES IN CARRYING OUT THE RESPONSIBILITIES OF THIS ACT. WE ARE CONCERNED ABOUT THIS POINT AS IT IS EVEN QUESTIONABLE WHETHER LOCAL GOVERNMENTS WHICH ARE OPERATORS OF WATER SUPPLY SYSTEMS WILL BE ABLE TO

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COMPLY WITH THE INTERIM PRIMARY DRINKING WATER STANDARDS WITHOUT SOME TYPE OF FEDERAL ASSISTANCE. MANY LOCAL GOVERNMENTS HAVE ALREADY INDICATED THE NEED FOR FEDERAL ASSISTANCE TO AID THEM UPGRADE THEIR DRINKING WATER SYSTEMS. THE VARIANCES AND EXEMPTIONS THAT THE ACT DOES PROVIDE FOR SYSTEMS UNABLE TO COMPLY WITH THE STANDARDS MERELY DELAYS THE REQUIREMENT TO ATTAIN THESE STANDARDS. THEY DO NOT OFFER ANY POSITIVE ASSISTANCE FOR THOSE LOCAL GOVERNMENTS MAKING A CONCERTED EFFORT TO COMPLY WITH THE MANDATES IN ORDER TO PROVIDE THEIR RESIDENTS WITH SAFE DRINKING WATER.

HOWEVER, WE WILL HAVE TO WAIT UNTIL JUNE 24, 1977, TO DETERMINE EXACTLY HOW MANY COUNTIES AND OTHER WATER SUPPLIERS WILL BE UNABLE TO MEET THESE STANDARDS. THUS IT WOULD BE PREMATURE TO SUGGEST THE TYPE OF ASSISTANCE THAT IS NECESSARY TO HELP LOCAL GOVERNMENTS MEET THE MANDATES OF THIS PROGRAM.

WHILE WE DO NOT SUPPORT ANY MAJOR CHANGES TO THE LAW AT THIS TIME, WE DO SUPPORT THE AMENDMENTS CONTAINED IN H.R. 6159 WHICH WOULD WAIVE THE RESTRICTIONS ON RECEIVING FEDERAL STATE PROGRAM GRANTS FOR THOSE STATES WHICH ARE PRESENTLY ATTEMPTING TO ASSUME PRIMACY. MANY STATES HAVE SIMPLY NOT HAD ENOUGH TIME TO SOLVE THE FINANCIAL AND LEGISLATIVE PROBLEMS WHICH ARE TEMPORARILY PREVENTING THEM FROM ASSUMING PRIMACY.

WE BELIEVE THAT IN THOSE AREAS OF THE COUNTRY WHERE STATES DO NOT ASSUME PRIMACY, THEREBY REQUIRING EPA TO BEAR THIS RESPONSIBILITY, THAT EPA SHOULD TURN TO LOCAL GOVERNMENTS FOR ASSISTANCE IN ENFORCING THIS ACT. MANY LARGE COUNTIES WOULD BE WELL QUALIFIED AND WILLING TO ACT AS PRIMARY OR CO-ENFORCERS OF THE LAW SO AS TO WORK WITH EPA IN THIS CAPACITY. WE BELIEVE THESE COUNTIES SHOULD HAVE THE OPPORTUNITY TO DO SO IF THEIR STATES REJECT THIS RESPONSIBILITY.

WE ALSO SUPPORT THE STUDIES SUGGESTED IN THE AMENDMENTS TO THE SAFE DRINKING

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WATER ACT. WE BELIEVE THAT THEY WOULD PROVIDE VALUABLE INFORMATION CONCERNING SOME OF THE QUESTIONS THAT WE BRING TO THIS COMMITTEE TODAY. HOWEVER WE MIGHT ADD THAT THERE ARE CERTAIN TO BE QUESTIONS AND PROBLEMS WITH THE ACT OF WHICH WE WILL NOT BE AWARE BEFORE JUNE 1977. THEREFORE IT MAY BE BETTER TO POSTPONE THESE STUDIES UNTIL AFTER THIS DATE WHEN WE WILL BE IN A BETTER POSITION TO DETERMINE THE IMPACT OF THIS ACT AS REGARDS THE ABILITY OF WATER SYSTEMS TO COMPLY WITH THE DRINKING WATER REGULATIONS. WE BELIEVE THIS WOULD MAKE US BETTER ABLE TO SUGGEST THE TYPES OF QUESTIONS THAT EPA STUDIES SHOULD ADDRESS AND WOULD THUS, BE MORE EFFECTIVE USE OF LIMITED RESOURCES.

WE ALSO STRONGLY FAVOR THE AMENDMENTS WHICH PROVIDE FOR GRANTS TO TRAIN STATE AND LOCAL AGENCY PERSONNEL TO CARRY OUT THE MANDATES OF THIS ACT. UNDOUBTEDLY ONE OF THE MAJOR AREAS IN WHICH LOCAL GOVERNMENTS HAVE IDENTIFIED THE NEED FOR ASSISTANCE IS THE TRAINING OF THEIR PERSONNEL TO MEET THE TECHNICAL REQUIREMENTS OF THIS PROGRAM.

IN CONCLUSION, WHILE WE SUPPORT MOST OF THE AMENDMENTS THAT ARE CONTAINED IN THE BILL BEFORE THIS COMMITTEE TODAY, OUR MAJOR MESSAGE IS THAT WE BELIEVE THAT ANOTHER LOOK AT THIS LAW WILL BE NEEDED AFTER JUNE 24, 1977. WE BELIEVE THE COMMITTEE WILL THEN HAVE TO ADDRESS THE ROLE OF LOCAL GOVERNMENTS IN THIS PROGRAM. THEY MAY HAVE TO PROVIDE SOME TYPE OF FINANCIAL AND TECHNICAL ASSISTANCE TO ASSIST LOCAL GOVERNMENT COMPLY WITH THE REQUIREMENTS OF THE ACT. ADDITIONALLY THEY MAY HAVE TO REQUIRE THAT STATES WORK MORE CLOSELY WITH LOCAL GOVERNMENTS ENFORCING THE MANDATES OF THE ACT. IN SHORT, WE ARE UNPREPARED TO GIVE THE COMMITTEE ANY MORE DIRECTION ON THESE ISSUES AT THIS POINT. WE BELIEVE, HOWEVER, THAT AFTER JUNE 24, 1977, WE WILL HAVE A BETTER IDEA OF WHAT IS NEEDED, AND WE URGE THIS COMMITTEE TO GIVE FURTHER CONSIDERATION TO AMENDING THIS LAW AT THAT TIME.

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WE APPRECIATE YOUR ATTENTION TO OUR STATEMENT AND OFFER ANY ASSISTANCE TO YOUR STAFF IN CONSIDERATION OF THIS IMPORTANT PROGRAM. WE WOULD BE HAPPY TO SHARE THE RESULTS OF THE SURVEYS THAT WE HAVE CONDUCTED ON THIS PROGRAM WITH THIS COMMITTEE. WE EXPECT THE MAJORITY OF THESE SURVEYS TO BE RETURNED TO US BY MAY 1, 1977.

Survey Questions Regarding the Impact of the
Safe Drinking Water Act on County Government
 and Water Suppliers.

1. How many drinking water supply systems serve your county residents?
 0-4 ____; 5-14 ____; 15-24 ____; 25 and over ____.
2. How many of these systems are owned and operated by the county?
 0 ____; 1-4 ____; 5-14 ____; 15-24 ____; 25 and over ____; all ____.

If your answer to question 2 is "0", please skip to questions 15 through 19.

3. Does your raw water supply come from underground or surface sources?
 underground ____ surface ____ both ____.
4. How many people do the county owned and operated systems serve?
 0-4,999 ____; 5,000-9,999 ____; 10,000-24,999 ____; 25,000-49,999 ____;
 50,000-99,999 ____; 100,000-249,999 ____; 250,000-499,999 ____;
 500,000-999,999 ____; 1,000,000 and over ____.
5. How many of these systems will be able to meet the interim primary drinking
 water regulations by June, 1977 as required by the 1974 Safe Drinking Water
 Act?
 Number of systems which will meet regulations ____.
 Number of systems which will not meet regulations ____.
 Number of systems not aware of regulations and/or not certain whether reg-
 ulations will be met ____.
6. Are your county suppliers encountering problems in meeting the treatment ____,
 monitoring ____, record keeping ____, and/or public notification require-
 ments ____, required by the act? (Please check appropriate responses).

If you have checked one or more of the above responses, please explain the
 reason for this problem. _____

7. If you are planning to apply for a variance or exemption from the interim
 drinking water regulations, what will be your reason?

The act provides for the granting of variances and exemptions to water sup-
 pliers under the following circumstances (please check the appropriate re-
 sponse if you intend to apply for a variance or exemption).

- | | |
|-----------------|--|
| <u>Variance</u> | <ol style="list-style-type: none"> 1. Raw water sources are such that we cannot meet requirements
 of the maximum contaminant levels of drinking water regula-
 tions despite application of best available technology and
 treatment methods _____. 2. The techniques specified are not needed because the water
 source already meets the water quality standards _____. |
|-----------------|--|

Exemption 1. Due to compelling factors (including economic factors) the water system is unable to comply with a maximum contaminant level or treatment technique requirement _____.

8. Will your county's water supply systems be able to meet the drinking water regulations independently or do you plan to collaborate with other systems in order to share equipment, facilities, personnel, and/or other expenses on a regional basis?

1. We will operate (treatment, monitoring, laboratory testing, etc.) water supply system independently _____.

2. We will collaborate with other water suppliers _____.

If you will be working with other water suppliers on a regional basis, please describe your regional program including the number of systems involved in the program, and the responsibilities to be shared or transferred between systems. We are particularly interested in the extent to which your county's responsibilities will change under the new arrangement _____

9. Do the national interim primary drinking water regulations differ substantially from those regulations presently used in your county? Yes _____ No _____.

If so, in what area(s) is this difference the greatest?

Maximum contaminant level-treatment requirements _____;

Monitoring and testing requirements _____;

Record Keeping requirements _____; Public notification requirements _____; Other _____.

10. From the county viewpoint, are the interim drinking water regulations established by the Safe Drinking Water Act, reasonable and acceptable? Yes _____ No _____ If not, why? _____

11. Will meeting these regulations impose a substantial financial burden on the county water suppliers? Yes _____ No _____

What do you foresee as being the source(s) of these increased expenses?

Need for additional administrative personnel _____; need for additional

technical personnel _____; monitoring and testing expenses _____;

treatment expenses _____; other _____.

Expected total cost increase _____; Cost/Unit increase _____.

12. Have your county suppliers requested technical and/or financial assistance from your state to help them comply with the treatment _____; monitoring and/or laboratory testing _____; requirements of the interim regulations? If requested, was this assistance received? Yes _____ No _____

13. Does your county need federal funds to aid them in building or upgrading the county water supply system? Yes _____ No _____

If so, please explain how these federal funds would be used. _____

14. Will an increased demand for water in the future make it difficult for your county to meet the requirements (i.e. monitoring, treatment, testing) of the act? Yes _____ No _____ Don't know _____

Intergovernmental Roles in Implementation of the Safe Drinking Water Act.

15. Who would you prefer to see assume primary enforcement responsibility for the act? Environmental Protection Agency _____ State _____ Other _____
(Act currently encourages states to assume this responsibility).
16. Do you think the act will be a good way to improve the safety of drinking water? Yes _____; No, drinking water is safe enough now _____; No, the act will not be effective _____. Please give your reasons for your answer _____

If your state has accepted primary enforcement responsibility please answer questions 17, 18 and 19.

17. Has your state adopted drinking water regulations which are more stringent than the federal drinking water regulations? Yes _____ No _____
18. Has your state attempted to involve your county in implementing the state's drinking water program in any way? Yes _____ No _____ If so, in what way?

19. Has your county received any of the grant funding appropriated to your state for surveillance or other implementation responsibilities? Yes _____ No _____

If so, what percentage of the state's allocation was received? _____
How was it spent? _____

CONTACT INFORMATION:

NAME: _____

TITLE: _____

PHONE: _____

STATEMENT OF AMERICAN PUBLIC HEALTH ASSOCIATION

H.R. 5830 - Safe Drinking Water Act Amendments

May 5, 1977

Section 4-Training

The language of this section will make the provision of training to governmental personnel engaged in safe drinking water programs and others with suitable qualifications mandatory. In order to fully implement the provisions of the Safe Drinking Water Act, a supply of trained manpower must be insured through federally supported training programs.

APHA strongly supports the provision of Section 4 which mandates that training to personnel of state and local agencies be provided without charge. The ruling by the Office of Management and Budget that state and local governments must pay a fee for federal pollution control courses in order to make the courses self supporting or even profit making has resulted in reductions in training. In these days of severe cutbacks in local funding, few state or local agencies can afford to bear the extra burden of training fees. Everyone suffers as a result. We are encouraged by the wording which would reverse this policy and provide training to governmental agencies without charge.

Section 5-Grants for State Programs

APHA is aware that many states have had difficulty meeting the requirements of primary enforcement responsibility under the Safe Drinking Water Act. Often, the inability to meet "primacy" requirements stems not from the state's lack of effort in meeting these requirements, but from circumstances beyond the direct control of the state agency. An example is the need for certain legislative authority which must be obtained through normal state legislative processes, an effort which is often time consuming and over which the state drinking water agency has little control.

The provisions of this section will allow a state to receive federal grant funds beyond the cut-off date for "primacy" provided that the state can demonstrate significant progress toward assuming primary enforcement responsibility. APHA feels this waiver is necessary to allow states to continue their preparation towards primary enforcement responsibility without suffering a loss of funds critical to the process.

Section 1447-Federal Agencies

Section 1447 requires that federal facilities must comply with all applicable state regulations, including "administrative" requirements. APHA supports this provision.

Section 1451-Economic Impact Assessment

The provisions of Section 1451 calling for the preparation of a detailed economic assessment statement to accompany the

promulgation or revision of any rule or regulation under this Act are extremely disturbing. Not only are such assessments time consuming, expensive, and difficult to develop, but the dollar values of the known positive health aspects of drinking water which is free from contamination would be extremely difficult to access. Added to this is the problem of accessing health impacts which are less well documented. Low levels of some 300 toxic substances, including many known or suspected carcinogens to human and laboratory animals have been found in the nation's drinking water supply. The sustained exposure to chronic low level contaminants may have unknown adverse health effects and in some instances can cause acute conditions, evident only under stress or after long-term exposure. It would be very difficult to attempt to access the positive economic impact of regulations which would affect these substances in drinking water.

APHA is fearful that an economic impact assessment of the kind described in Section 1451 will give inadequate attention to positive health effects and will result in inaccurate and unbalanced reflections of the true impact of such proposals.

We urge, therefore, that Section 1451, Economic Impact Assessment be removed from H.R.5830.



Foremost FOODS COMPANY

Crocker Plaza - One Post Street - San Francisco, CA 94104

April 15, 1977

TESTIMONY

OVERSIGHT HEARINGS ON SAFE DRINKING WATER

INTRODUCTION

Thank you for allowing Foremost Foods Company to submit this testimony before the Subcommittee on Health and the Environment's April 1977 oversight hearings on Safe Drinking Water.

I am Dr. Jerry T. Hutton and serve as Vice President, Director of Research of the Foremost Foods Company, a Division of Foremost-McKesson, Inc., a California based corporation.

Foremost Foods Company sales for the fiscal year closing March 31, 1977 will be about \$600 million. Foremost-McKesson, Inc., sales for the same period will approximate \$2.6 billion.

The Foremost Foods Company operates in five food areas: dairy products, grocery products, industrial food ingredients and drinking water. We are the nation's largest processors of (bottled and vended) drinking water. In addition, the company processes and/or distributes food products in 19 foreign countries. I am submitting Foremost-McKesson's most recent annual report, which provides a description of our business interests in greater detail.

On behalf of the Foremost Foods Company, I hereby submit for inclusion in the 1977 oversight proceedings on Safe Drinking Water the following observations and recommendations for your consideration.

BACKGROUND

Federal standards for drinking water were first issued in 1914 to prevent the interstate spread of communicable disease.

In 1962 the U.S. Public Health Service set mandatory limits for health related chemical and biological impurities, and recommended limits for impurities affecting appearance, taste and color. Although these standards applied only to interstate carriers, most states and major cities used them as guidelines to regulate the quality of drinking water within their jurisdictions.

In 1974 the Food and Drug Administration (FDA) established Quality Standards for Bottled Water and in 1975 FDA issued Good Manufacturing Practices for the processing of bottled water.

a Foremost-McKesson company

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In 1974 Congress passed the Safe Drinking Water Act giving the Environmental Protection Agency (EPA) responsibility for setting minimum national drinking water standards for all public water systems having at least 15 service connections or serving at least 25 people.

Although the Safe Drinking Water Act was well designed to achieve its intended purpose, it has served to create inter-statutory conflicts which have proven difficult to resolve on an inter-agency basis.

PROBLEM

Drinking water now is regulated by two federal agencies, FDA and EPA. They operate under legislative authority flowing from four different statutes.

- . Federal Food, Drug and Cosmetic Act.
- . Federal Insecticide, Fungicide and Rodenticide Act.
- . Safe Drinking Water Act.
- . Toxic Substances Control Act.

In addition, the Federal Trade Commission (FTC) exercises regulatory authority over the advertising and merchandising of drinking water products, treatment devices and services offered for sale to the public.

This divided authority has caused inter-agency conflicts, intra-agency misunderstandings and confusion as to: (a) which regulations apply, (b) which treatment chemicals and techniques are acceptable, and (c) what procedures are to be followed when seeking regulatory clearance of new treatment techniques.

Four examples serve to illustrate the problem:

- (1) Commenting in a recent "Professional Nutritionist" magazine interview (Exhibit 1 - page 2) on the divided regulatory authority of FDA and EPA, Dr. Robert Angelotti stated, "... industry, until this situation changes, is caught in the middle."
On page 3 in the same article, Dr. Angelotti reviewed the unsuccessful year-long effort to develop a "memorandum of understanding" between the two agencies.
- (2) A priority effort "... to determine whether water is a food, regulated by FDA ... or is not a food, and therefore subject to regulation by a myriad of EPA regulations and offices" was called for in an issue paper prepared by EPA's Office of Pesticide Programs (OPP) for the Carter Administration transition team, according to a December 20, 1976 article in Food Chemical News (Exhibit II).

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Chlorination was cited as a specific water treatment practice in need of regulatory clarification. Regulatory alternatives explored in the issue paper included:

- (a) Reliance by EPA "... on FDCA to promulgate tolerances for allowable residues of the disinfectant or its metabolites in water where levels appear due to intentional use of the pesticide in water treatment."
- (b) "... subjecting chlorine (and all dually registered pesticides) to all relevant authorities' ... and probably creating 'unresolvable disagreements,'"
- (c) "... exempting pesticides or devices used as water or waste effluent disinfectants from FIFRA, with a subsequent 'loss of a significant use enforcement authority under FIFRA' which would not solve the tolerance jurisdictional problem since 'FDCA contains no provision for jurisdictional relief by exemption;'"
- (d) "... continuing to ignore the requirements of pesticide law where conflicting jurisdictional mandates arise, 'which would mean that FDA and EPA 'will continue to be faced with tolerances incompatible between FDCA and other statutes. . . .'"

In addition to these considerations, implementation of the Toxic Substances Control Act could make the present situation even more uncertain.

- (3) The question of regulatory jurisdiction for silver as a bacteriostat in drinking water is especially frustrating. Two separate events suggest the need to clarify inter-agency responsibility and procedures.
 - (a) The FDA (Exhibit III) ordered cessation of the use of silver-impregnated filters aboard interstate carriers even though the EPA (OPP) had registered the filters as bacteriostats in potable water supplies.

Later (Exhibit IV) FDA agreed to continue permission for use of the filters produced by the Ogden Filter Company until the EPA acts on a petition from the firm for a tolerance for silver in water. FDA asked that the petition be filed within 60 days.

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- (b) Ionics, Inc., filed a Food Additive Petition with FDA in April 1975 (Exhibit V) seeking clearance to use silver at concentrations up to 50 parts per billion as a disinfectant in potable water. Subsequently, the petition was referred to EPA's Office of Pesticide Programs where its regulatory status remains uncertain.
- (4) "Interim Requirements for Registration of Bacteriostatic Water Treatment Units for Home Use" (Exhibit VI) describes the data and the claim limitations which EPA requires in an application for registration of home use bacteriostatic water treatment units.

To define the data required for registration and to limit the label and advertising claims which may be used with respect to pesticidal action is clearly within the authority of EPA under its Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) mandate.

However, EPA restrictions on label and advertising claims dealing with the removal of non-pesticide substances such as chemicals, odors, color and particulate matter are confusing and appear to be in potential conflict with authority held by the Federal Trade Commission.

PUBLIC IMPLICATIONS

When quarterly consumer notification of sub-standard water quality goes into effect in mid-1977 per the Act, the public implications of the regulatory confusion outlined in this testimony are likely to be at least fourfold:

- (a) Widespread concern among consumers about the safety of their drinking water supply.
- (b) A consumer demand for alternate sources of safe drinking water and for water treatment devices capable of improving water quality and water safety.
- (c) Public and private sector hesitancy to commit the financial resources needed to assure consumers of a safe and drinkable water supply, pending clarification of the regulatory situation.
- (d) Confusion and loss of confidence in both industry and government at the consumer level.

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RECOMMENDATIONS

It is respectfully requested that Congress:

- (1) Review, clarify and define the current roles of all agencies responsible under one or more statutes for the quantity, quality and safety of drinking water.
- (2) Take appropriate action to assure the American public of a safe and affordable supply of water to drink.

EXHIBITS

- I. The Professional Nutritionist; Winter 1977, pages 1-5.
- II. Food Chemical News; December 20, 1976, pages 24-25.
- III. Food Chemical News; May 31, 1976, page 25.
- IV. Food Chemical News; July 19, 1976, page 22.
- V. Commerce Clearing House; August 4, 1975, page 47,019.
- VI. Federal Register, Vol. 41, No. 152, Thursday, August 5, 1976, pages 32778-32782. (NOT PRINTED)

EXHIBIT (1) FROM THE PROFESSIONAL NUTRITIONIST--Winter 1977

Who Safeguards Your Drinking Water?

Victor J. Kimm
Deputy Assistant Administrator
Office of Water Supply
U.S. Environmental Protection
Agency
Washington, D.C.

Dr. Robert Angelotti
Special Assistant to the Director for
Program and Organization
Bureau of Foods
U.S. Food and Drug Administration
Washington, D.C.

Regulating the safety of the drinking water supply in the United States isn't easy. Not only is the definition of "safe" evolving, the regulations needed to assure the reasonable safety of drinking water are seen by many as inconsistent and confusing.

Many nutritionists consider water a food and an essential part of the total dietary intake. This concern alone is sufficient cause for *The Professional Nutritionist* to closely monitor all aspects of the search for safe drinking water. (See PN Vol. 8, No. 1, Winter 1976.)

In the following article PN interviews two influential regulatory officials in the area of water quality. Questions concerning the safety of drinking water are posed to Victor Kimm of the Environmental Protection Agency (EPA), and Robert Angelotti of the Food and Drug Administration (FDA). Their agencies exercise primarily regulatory responsibilities for the safety of drinking water at the Federal level.

Readers are invited to examine and compare the EPA and FDA responses to better appreciate the complex and often overlapping relationships that plague the two agencies. Also, bear in mind that new safety standards for drinking water will be proposed this year.

How will these predictably tougher standards affect the food processing industry, an essential member of the nation's nutrition community? Should the food sector start now to think of responding to the new water safety standards that will surely impact them over time? Perhaps a convocation to discuss the role of safe water in foods is needed.

"Who safeguards our water?" If you believe water and nutrition are related, this question is germane. Read on.

THE PROFESSIONAL
NUTRITIONIST

190 Ninth Street
San Francisco, CA 94103

What is drinking water?

Kimm: The Safe Drinking Water Act of 1974, EPA's new legislative mandate, focuses on the quality of water at the tap—as provided by all public water systems serving more than 25 people. This definition includes about 50,000 community systems serving resident populations, and another 200-300,000 self-supplied, non-community systems—such as parks, restaurants, and motels—which service the traveling public. So for our purposes, drinking water is water delivered by any of these suppliers.

Under the legislation, EPA is required to develop drinking water standards, and work with the states to ensure that the systems conduct periodic monitoring and, where necessary, initiate remedial actions to comply with the standards.

Angelotti: Drinking water is defined under the Federal Food, Drug and Cosmetic Act as an article used for food or drink for man or other animals. That is the legal definition of water included in the Act.

More recently, under the Safe Drinking Water Act, the EPA has been given the responsibility for issuing primary drinking water standards, which would be revisions of the (1962) Public Health Service drinking water standards.

Is our water safe?

Kimm: By and large, our waters are safe. But I don't think that the question can be answered quite that simply. To discuss the public health implications of drinking water, one should differentiate between three separate types of problems.

The first deals with the traditional waterborne diseases—typhoid and cholera. Modern waterworks practices, including disinfection, have virtually eliminated these diseases in the United States.

The second dimension of the problem typically is seen in outbreaks of intestinal distress caused by either chemical or biological agents. There are about 4,000 cases of such illnesses reported each year, although the actual number is believed to be much higher. These outbreaks stress the importance of constant vigilance in operations and in monitoring water quality.

The third area deals with our growing concern about the long term and perhaps very serious health impacts of small amounts of a variety of contaminants, including a variety of organic substances. This new area of public health concern takes us to the limits of current scientific knowledge; it is one of the major areas of current research and regulatory development.

Angelotti: Safety is a relative term, and it is virtually impossible, scientifically, to prove safety...some waters are more safe than others. I think one could say that generally, throughout the United States, water is safe for human consumption.

But there are a lot of questions and concerns relative to water quality and safety in our country today...the whole issue of viruses and water, and whether current water treatment practices totally eliminate viruses of public health concern from the water supply.

Another question: possible reaction products when one chlorinates a municipal water supply for purposes of eliminating bacterial pathogens and viruses in water. There is evidence now indicating that such chlorination treatments may result in the formation of chlorinated end products which may be carcinogenic.

So what is considered safe today may not be considered safe a few years from now because as science advances, new information is forthcoming which affects safety evaluation criteria.

What is EPA's jurisdiction relating to water safety?

Kimm: P.L. 93-523 establishes the Administrator of EPA as the leader of a national drinking water program. EPA is required to develop drinking water standards at the tap and set minimum requirements for the supervision of public water systems. The states are assigned responsibilities for program implementation and enforcement, including assuring that public water supply systems provide public notification of problems as required by the statute.

EPA is also charged with the development of regulations to minimize the pollution of ground water aquifers which serve as a source of drinking water for 50% of the nation's population. This program is also to be

administered by the states. Federal grants to states are available to support both program areas.

EPA's regulatory efforts, then, are supported by activities aimed at: (1) determining the current state of knowledge as to the adequacy of analytical methods, health effects, control technology, and related economic effects as a prerequisite to setting drinking water standards; (2) establishing and implementing research where existing knowledge is inadequate relative to known or potentially troublesome constituents; and (3) developing public information, technical assistance, and technology transfer efforts to assist the citizen, public water supply systems, and the states in actively applying existing knowledge today.

What is FDA's jurisdiction relating to water safety?

Angelotti: The Food and Drug Administration has always been in the water business, and we have issued regulations and advisory opinions concerning the use of water in food, drug and cosmetic manufacture...we've always had the responsibility for bottled water. In 1970, when the Federal Reorganization Plan No. 3 was implemented, the national water program administered by the U.S. Public Health Service was changed dramatically.

That national program was split up so that part of the responsibilities under it were given to the newly formed EPA, and other activities were transferred to the FDA. Joint authority, then, is currently exercised over water at the Federal level by EPA and the FDA. And industry, until this situation changes, is caught in the middle.

Starting about February '76, there have been a whole series of conferences between the two agencies directed toward clarifying the roles of the two agencies...we're at that point where the people involved at the operational levels of both agencies feel that they have a solid set of recommendations that they can offer to their respective administrators, and a draft document has been prepared for review by the appropriate administrative echelons within the two agencies.

The approach the groups have taken is that EPA has been identified by Congress as the primary

lead agency at the Federal level. It's my personal hope that we could develop what we call a memorandum of understanding between the two agencies...that would be published in the Federal Register. I hope we could do all this before the end of this calendar year. (PN interviewed Dr. Angelotti in late 1976.)

We are proposing that under this new understanding the FDA would...continue to exercise regulatory control over bottled water. The issue that's going to be most difficult to resolve between the two agencies is that of additives and their safety. EPA, in reviewing the language of its Act, feels that Section 1442 (Safe Drinking Water Act), does provide it with authority to perform investigations and research on various chemicals, either direct or indirect, that get into water. Because of this authority, EPA can evaluate the safety of water additives.

Thus, a system could be evolved whereby FDA could defer safety evaluation of additives to EPA and when EPA, through its studies and investigations, determines that an additive is not safe for use in water, FDA with the appropriate data provided by EPA would promulgate appropriate regulations for controlling the safe use of the additive or for banning its use.

I can't guarantee that this would be a mechanism acceptable to either the people to whom I report...or the American people; however, this seems to me an ideal situation.

What roles do other groups play in the determination and regulation of safe drinking water?

Kimm: Under the provisions of the Safe Drinking Water Act, in formulating regulations, EPA is required to consult with the National Drinking Water Advisory Council and the Secretary of Health, Education, and Welfare (HEW). The Council is a committee of 15 interested private citizens which meets regularly to review the activities of the program and particularly the nature of standards as they are developed. In practice, the agency has developed its standards using an open process in which state regulatory agencies, the impacted industry, other Federal agencies, environmentalists, and

other representatives of the public have been providing meaningful opportunities to comment as the regulations were developed.

In addition, the Act required that EPA contract with the National Academy of Sciences (NAS) to undertake a two-year study of the health effects of all drinking water contaminants which may adversely impact man, as a basis for a revised set of drinking water standards. This report will be completed in early 1977. It will be made available for public review and comment as EPA begins work on the revised standards.

Angelotti: Let's start at the state level. There are water-control agencies—state-control agencies—in each of the states that look to the Federal government for the establishment of standards, operating procedures, and so forth. But these things aren't done independently by the Federal government without input from the state-control authorities, municipal-control authorities, or without input from affected industry members. Also, there are a number of national associations that are concerned with water in one way or another—organizations such as the American Bottled Water Association, and the American Waterworks Association.

I would say that the establishment of good manufacturing practices, if I can use that term, and the establishment of standards of both quality and safety, are not the product of any one group by itself, Federal level or otherwise. But they are an amalgam of the best thinking and the best information of all these various groups.

What is the most pressing water-related issue confronting your agency today, and why?

Kimm: Perhaps the most difficult problem to deal with is the control of organic contaminants in drinking water.

With analytical developments of the last few years, we are able to identify a large number of organic contaminants in drinking waters. One group of such contaminants are called trihalomethanes, which are formed by the interaction of chlorine, our most frequently used disin-



fectant, and by naturally occurring humic acids, which are present in almost all surface waters.

We are concerned about these small quantities of organic contaminants because some of these materials, at higher levels, have been found to produce increased cancer in laboratory animals and to produce other adverse effects in man.

We are now looking at two separate aspects of this problem. The first concerns trihalomethanes. The second category concerns the thousands of synthetic organic materials which are entering our water supply sources through upstream pollution, and which are not removed by conventional water treatment practices.

Angelotti: At the moment I think the question that the scientific community and the agencies involved have to address immediately is the one of the use of sanitizing or disinfecting chemicals in water. The traditional process has been a filtration process in which we remove the particulate material, followed by a chemical disinfectant, usually chlorine.

The evidence coming to us today indicates that chlorine may result in certain kinds of reaction products being formed in water. What is the health significance of these reaction products—are these really carcinogenic, some of them? Do they have other kinds of biological effects about which we don't have too much information? These questions have to be pursued—should be pursued—with utmost haste and purposeful deliberation.

In the meantime, however, it would be improper in my view to needlessly alarm the American public, because at the moment, we're going to have to go with chlorination until we discover a substitute. Chlorine is the system of choice for the destruction of waterborne pathogenic microorganisms that pass through the filtration step. To advocate the discontinuance of water chlorination today in the absence of a known and workable substitute is to invite serious waterborne infectious disease epidemics for our people.

What research is being done to resolve questions concerning drinking water?

Kimm: Basically, EPA is funding an expanded research program to develop the scientific and technical information for better drinking water standards in the future.

This work includes developing improved analytical methods; monitoring studies to tell us more about the prevalence of contaminants; studying health effects of specific contaminants; developing improved control technologies to remove undesirable materials; as well as studies of the cost and economic impacts of additional treatment techniques.

Angelotti: There are two areas in which we have a continued interest and activity.

One relates to the mineral content of water, particularly the heavy metal concentrations in water. We've had active research programs in methodology development for identifying and measuring heavy metals—lead, cadmium, arsenic, and so forth—in food and water. And we are in the process of developing tolerances for these materials in foods. EPA at the same time, through the drinking water standards, is establishing tolerances for these same types of minerals in water. What EPA learns about water is applicable to what we're going to do about foods, because the concern is the total dietary intake.

The other area that we're actively pursuing is the area of disinfectants. The concern at the moment is that of chlorine...and we fully intend to establish food-additive regulations for chlorine and chlorine use.

The heavy metals work that I alluded to earlier is being performed both in-house, with FDA, and through FDA contractual arrangements with people outside the organization.

The chlorine data are those data which have been submitted to this agency by industry. Industry must show FDA that these uses are safe, and every use of chlorine intended for direct contact or indirect contact (processing water) with foods, drugs and cosmetics must be supported by laboratory data which demonstrate safety and efficacy to

our scientific satisfaction. Regulations will be issued for such approved uses, and any uses not covered by these regulations will constitute an illegal act.

How can industry help answer the various research questions?

Kimm: In the implementation of the Safe Drinking Water Act, we have worked to obtain the broadest possible discussion of our standards as they were developed. As we develop regulatory strategies for dealing with the long term impacts of low levels or organic contaminants, industry may be able to contribute scientific information and expertise which will be helpful in our deliberations.

Industry efforts to try and develop standards outside of government regulations and to work with reputable testing institutions like the National Sanitation Foundation, are a very fine example of industry beginning to deal with the problems themselves—and hopefully thereby avoiding the need for Federal or state registration.

Finally, industry can and should provide detailed comments on proposed regulations as they appear in the *Federal Register*—and elsewhere.

Angelotti: I think industry consistently has been contributing valuable information...the government and the regulatory agencies could not operate independently of the involved industries. It has to be a partnership.

In my view, industry has an obligation and a responsibility to continually look to the future and to try to identify, ahead of time, public health problems that may result from the practices and operations that it currently employs or is planning for the future.

Further, industry information should be widely disseminated and made available to the public and government. Proprietary rights to information should be restricted only to those situations that truly represent "trade secret" information. The tendency is to call most information "trade secret" when really only some limited portion of it is "trade secret." Secrecy results in duplication of effort and needless expenditure of national resources.

How can industry prepare for future water regulations?

Kimm: I think that the major area of interest to industry will be the composition of the revised Drinking Water Standards which will be proposed next year (1977) following the NAS study mentioned above. Here I would hope that industry scientists will provide us with information and advice on the report of the National Academy of Sciences, and on the many issues which EPA will surface as we develop, prepare and finally promulgate these regulations.

Full participation by the industry in this process is urged and welcomed.

Angelotti: I would only say that in today's world it is not reasonable to expect that we're ever going to evolve a system in the absence of regulation. There will always be regulation because there are always those segments of any part of the sociology you want to look at that are self-centered and interested in self-aggrandizement—to the detriment of the majority of the community. And it is those kinds of situations that regulation is directed to control.

Fortunately, the vast majority of the people who are in business in this country are honest people—who have no intention of purposely affecting adversely someone's health. Regulation for the most part is superfluous to these people, because they operate within good manufacturing practices in the absence of regulation.

But we're always going to have regulation, and the industry has to recognize that there will always be regulation. They should be developing this kind of information, and making it available to the government.

What is the future role of the EPA and FDA concerning water?

Kimm: Both EPA and FDA share mutual interest in providing the highest quality drinking water for all Americans and shall continue to cooperate as closely as possible in this important undertaking. If the ongoing research uncovers problems,

we shall have to respond accordingly, for both programs are concerned with public health and safety.

Angelotti: The future role of the two agencies will be determined by both agencies working in concert with each other...if the concept of the lead agency is to prevail, then EPA will have to do whatever is appropriate to put itself in that lead agency position. ■



PRIORITY EFFORT ON DETERMINATION OF WATER STATUS SOUGHT BY EPA OFFICE

The Environmental Protection Agency's Office of Pesticide Programs has strongly recommended that a "priority effort...be mounted" to determine whether water is a food, regulated by the Food, Drug and Cosmetic Act (and therefore by the Food and Drug Administration) or is not a food, and therefore subject to regulation by a myriad of EPA regulations and Offices.

OPP's concern is based on its difficulties in determining whether or not chlorine and the chlorination of water should be regulated under the Federal Insecticide, Fungicide and Rodenticide Act, which could lead to a ban of water chlorination as a possible carcinogen.

If water is a "food," as it "has been defined and considered for years under FDCA, then perhaps "EPA could rely fully on FDCA to promulgate tolerances for allowable residues of the disinfectant or its metabolites in water where levels appear due to intentional use of the pesticide in water treatment," thereby avoiding the problems that may be encountered with regulation of chlorination under FIFRA, the issue paper prepared for the Carter Administration transition team noted.

Noting that EPA's Office of Water Supply "takes the position that potable water should not be considered a food under FDCA," the OPP issue paper commented, "That is all well and good, but perhaps naive," explaining: "FDA and OPP believe that such a determination cannot be made to eliminate water from FDCA jurisdiction."

Other alternatives to chlorination regulation explored in the issue paper included:

- (1) subjecting chlorine (and all dually registered pesticides) "to all relevant authorities," making chlorination subject to regulation under FDCA, FIFRA, the Water Supply Act and the Water Pollution Act and probably creating "unresolvable disagreements;"
- (2) exempting pesticides or devices used as water or waste effluent disinfectants from FIFRA, with a subsequent "loss of a significant use enforcement authority under FIFRA" which would not solve the tolerance jurisdictional problem since "FDCA contains no provision for jurisdictional relief by exemption;" or
- (3) continuing to ignore the requirements of pesticide law where conflicting jurisdictional mandates arise," which would mean that FDA and EPA "will continue to be faced with tolerances incompatible between FDCA and other statutes providing for limits on contaminants or residues in water."

EPA REGISTRATION DOES NOT FULFILL FOOD ADDITIVE REQUIREMENTS, FDA SAYS

The Food and Drug Administration has ordered cessation of the use of silver-impregnated filters aboard interstate carriers even though the Environmental Protection Agency had registered the filters for use as bacteriostats in potable water supplies.

In a letter to the Ogden Filter Company, Dr. Robert Angelotti, Associate Director for Compliance in the Bureau of Foods, pointed out that the EPA registration does not satisfy the requirements of the Food Additive Amendment.

Asserting that the use of silver constitutes a food additive use, Angelotti noted the need for the firm to obtain a food additive regulation prescribing safe conditions of use, including any necessary tolerances. He pointed out that no tolerances have been established either by FDA or EPA.

In the absence of an appropriate regulation, he said, FDA can no longer permit the use of the silver-impregnated filter for use aboard interstate carriers, and ordered removal of the filter from the approved list of equipment for carriers within 30 days. He also gave the firm 30 days to respond to his letter of April 30.

The FDA-er promised to review "on a priority basis" the design and food additive status of any other filter Ogden would like to substitute for its silver-impregnated product "so that your customers will not be seriously affected during our review."

FDA REVERSES POSITION ON USE OF SILVER-IMPREGNATED FILTERS

The Food and Drug Administration has agreed not to remove silver-impregnated filters produced by the Ogden Filter Company from the agency's list of accepted equipment for interstate carriers (See FOOD CHEMICAL NEWS, May 31, Page 25).

After meeting with attorneys representing the firm (See FOOD CHEMICAL NEWS, June 14, Page 2), FDA agreed to continue permission for use of the filters until the Environmental Protection Agency acts on a petition from the firm for a tolerance for silver in water.

FDA asked that the petition be filed within the next 60 days.

Sen. McClellan (D-Ark.) also urged the agency to leave the Ogden filter on the interstate equipment list.

COMMERCE CLEARING HOUSE

EXHIBIT (V)
August 4, 1975
Page 47,019

Acrylonitrile/butadiene/styrene/methyl methacrylate copolymer (21 CFR 121.2637) be amended to provide for additional safe uses of the copolymer. Use of the copolymer, currently restricted to low moisture fats and oils, would be expanded to include contact with all types of food, except that it could not be used in fabricating bottles intended to hold carbonated beverages or beer.

The environmental impact analysis report and other relevant material have been reviewed, and it has been determined that the proposed use of the additive will not have a significant environmental impact. Copies of the environmental impact analysis report may be seen in the office of the Assistant Commissioner for Public Affairs, Rm. 15B-42 or the office of the Hearing Clerk, Food and Drug Administration, Rm. 4-65, 5600 Fishers Lane, Rockville, Md. 20852, during working hours, Monday through Friday.

FAP 5H3073, 3-12-75. 40 F. R. 13541.

223 Silver.—Jonics, Inc., P.O. Box 99, Bridgeville PA 15017. Proposes establishment of a food additive tolerance for residues of the disinfectant silver in potable water at 50 parts per billion resulting from the use of silver nitrate in the filtration of water. PM33.

FAP 5H3079, 4-17-75. 40 F. R. 17872.

225 Sanitizing solution.—Notice is given that a petition has been filed by Vestal Laboratories, St. Louis, Mo., proposing that § 121.2547 *Sanitizing solutions* (21 CFR 121.2547) be amended to provide for the safe use of an aqueous solution containing *ortho*-phenylphenol, *ortho*-benzyl-*para*-chlorophenol, *para*-tertiary amylphenol, sodium alpha-alkyl (C₈-C₁₀)-omega-hydroxy-poly(oxyethylene) sulfate with the poly(oxyethylene) content averaging one mole, potassium coconut oil soap, and isopropanol or hexylene glycol as a sanitizing solution for food processing equipment and utensils.

The environmental impact analysis report and other relevant material have been reviewed, and it has been determined that the proposed use of the additive will not have a significant environmental impact. Copies of the environmental impact analysis report may be seen in the office of the Assistant Commissioner for Public Affairs, Rm. 15B-42 or the office of the Hearing Clerk, Food and Drug Administration, Rm. 4-65, 5600 Fishers Lane, Rockville, MD 20852, during working hours, Monday through Friday.

FAP 5H3037, 4-18-75. 40 F. R. 15206.

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CALGON CORPORATION CALGON CENTER BOX 1346 PITTSBURGH, PA. 15230 (412) 923-2345

May 5, 1977

Honorable Paul G. Rogers
House of Representatives
Washington, D.C. 20515

Dear Mr. Rogers:

In connection with the hearings held on April 22 by the Subcommittee on Health & Environment, Calgon Corporation wishes to submit comments for the record.

Calgon is a major producer of granular activated carbon for the treatment of drinking water, and also for pollution control systems. Granular carbon is a highly effective medium for the removal of organic chemical contaminants from water. We believe that our experience in the water treatment field over a period of many years, and in particular our experience over the last two years since passage of the Safe Drinking Water Act, may be of interest to you and other members of the committee.

Some of the comments which follow bear directly on provisions of H. R. 5829 and H. R. 5830. Others are of a more general nature. We respectfully offer these comments for your review:

H. R. 5829. Provision of funds for technical assistance and training of workers, for state public water supervision programs, for underground water source protection programs, and for a survey of rural drinking water supplies.

Comment on H. R. 5829: Calgon believes that these funding programs should be enacted in the interest of furthering the progress which is now being made toward protection of public and other drinking water supplies. The need for further training of workers and for the other activities covered by H. R. 5829 is apparent, if such progress is to continue.

As a longtime supplier of products and services for the municipal water treatment field, we can attest to the accelerated activity resulting from passage of the Safe Drinking Water Act. The number of inquiries from municipal water treatment officials has more than doubled over the last few years. Clearly, there is a strong interest in improving water quality.

Of the 37 municipalities or water companies in the United States now using Calgon granular activated carbon for drinking water, more than half installed carbon systems after passage of the Safe Drinking Water Act.

Honorable Paul Rogers

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May 5, 1977

H. R. 5830. Provision to require a report from EPA within 18 months on costs and methods of complying with national primary drinking water standards. Comment: Calgon believes that a report of this type is essential, and wishes to offer the following cost information on carbon systems. A discussion of carbon systems is relevant here because laboratory tests show that granular activated carbon effectively removes pesticides, which is one of the requirements of the Interim Primary Drinking Water Standards.

Cost of operating a granular activated carbon system

<u>System size, millions of gallons per day</u>	<u>Annual operating cost, including amortization based on 20-year write-off*</u>
less than 5 mgd	\$ 300,000
30 mgd	\$1,100,000
70 mgd	\$1,900,000

* Operating costs include the initial carbon fill, reactivation of carbon on a 30-day cycle, and the carbon reactivation system.

To place these figures in some perspective, a 30 mgd system is approximately the capacity of the water treatment plants for cities such as Fort Wayne, Indiana and Kansas City, Kansas.

The figures listed above are for medium sized or large communities, where it is economically feasible to install a carbon reactivation system at the water treatment plant. For smaller communities, producing less than one million gallons of water per day, Calgon offers a carbon service, which requires no capital investment by the municipality. With the service, Calgon provides fresh and reactivated carbon as needed for a pre-negotiated monthly or quarterly fee. This service approach makes it possible for residents of a community to enjoy the benefits of carbon-treated water at costs between \$60,000 and \$100,000 per year, the cost varying with the volume and quality of the water to be treated.

Laboratory tests have shown that granular carbon will remove the pesticides aldrin, dieldrin, endrin, DDE, DDT, DDD and toxaphene as well as PCB (Arochlors 1242 and 1254) to less than one microgram per liter. Sources of the cost data and laboratory data are listed on the pages titled "References" attached to this letter.

H. R. 5830. Provision to require a report, from EPA within 18 months, projecting future supply levels of safe drinking water. Comment: Calgon believes that a report of this nature is essential to future planning efforts related to improvement of water quality.

A possible concern in projecting future supply levels of safe drinking water is the availability of an adequate supply of granular activated carbon for use in improving water quality. At the present time American producers of granular activated carbon have unused production capacity in excess of 50,000,000 pounds per year. At 20,000 pounds of carbon to treat a million gallons of water each day, this unused capacity of the carbon industry would be enough to treat approximately 2.5 billion gallons of water per day. This is the equivalent of 18 cities the size of Pittsburgh.

Honorable Paul Rogers

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May 5, 1977

Attached to this letter is an article from the April 18, 1977 issue of Chemical and Engineering News, which summarizes the present overcapacity of the carbon industry. Moreover, production capacity can be greatly expanded with a lead time of two years.

Carbon capacity is adequate, and we believe the need for the benefits produced by activated carbon treatment has been well established.

As indicated on the preceding page the Interim Primary Drinking Water Standards require the removal of toxic pesticides. This can be accomplished with carbon. A longer-range consideration involves removal of trace organics and known or suspected carcinogens such as chloroform and other haloform compounds.

(In this regard, we think it is of interest to point out that Calgon has recently developed a special type of granular carbon which exhibits a high capacity for chloroform over an extended period of time.)

Although standards for removal of trace organics and carcinogens will not become effective until 1979, Calgon believes there is every reason for municipalities to act now to install carbon treatment systems. This precaution will provide a considerable measure of protection against many types of organic compounds whose hazardous effect on health can only be estimated at this time.

At present Calgon-produced carbons are being used to treat water supplies for approximately 11,000,000 people in the United States, Europe and the Far East. In the United States there are 37 such cities, with a total population of approximately two million. These include suburban Pittsburgh, Pa., Lawrence, Massachusetts, East St. Louis, Illinois and Terrebonne Parish, Louisiana.

In Europe, where concern over water quality has been accelerated due to the heavy industrial use of waterways, approximately 17 cities with a combined population of more than 9 million are using Calgon-produced carbon to purify drinking water. These include such major population centers as Paris, Florence, Genoa, Turin, Cologne, Dusseldorf and Zurich. Calgon-produced carbon is also being used to treat water for part of the population of Tokyo.

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In summary, Mr. Chairman, we believe that: (1) funding for the Safe Drinking Water Act of 1974 should be extended, (2) granular activated carbon can play a much more significant role in water purification because it affords protection against organic contaminants, (3) that granular carbon production capacity is more than adequate.

Attached for reference are two items: one headed "References" which consists of excerpts taken from technical papers or publications, and a copy of an article from the April 18, 1977 issue of Chemical and Engineering News, which reports on carbon production capacity.

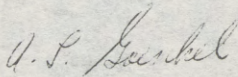
Honorable Paul Rogers

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May 5, 1977

Copies of the technical publications are available on request to Calgon. Also, I would like to add, we should be most happy to provide answers to any questions which might occur as a result of these comments, or on any other aspect of the water quality issue.

Respectfully submitted,



A. L. Goeschel
President

Attachments

Industry / Business

C&EN 4/18/77 pp10-11

Activated carbon growth tied to water rules

Mentions Calgon

Producers confront serious overcapacity, but this could change quickly if EPA decides to require that all drinking water be carbon filtered

William J. Storck
C&EN, New York

Activated carbon producers in the U.S. are faced with serious overcapacity. However, the situation could change rapidly if the Environmental Protection Agency proposes that all drinking water be treated with activated carbon.

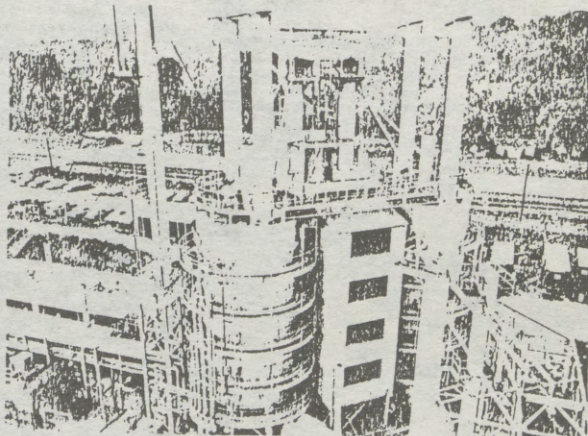
Total capacity for activated carbon is about 200 million lb per year, but the industry is producing only about 190 million lb per year—two thirds of capacity.

However, waiting in the background are the Safe Drinking Water Act and the Water Pollution Control Act Amendments of 1972 ready to spur activated carbon sales. Whether he knows it or not, Douglas M. Costle, the new EPA administrator, could be the best salesman the seven major activated carbon producers have. With a single stroke of his pen he could set drinking water guidelines for wastewater effluent standards that could force many water and sewage authorities to install activated carbon systems.

Activated carbon is made in two main types—powdered and granular. There is a third kind—extruded—that basically is a pelletized carbon. The third is more regular in shape than the other two. This makes it easier to size, and it is good for applications in which packing and pressure drop are factors such as some types of gas filters. The percentage of sales for extruded activated carbon is small, however.

The market for activated carbon is broad and difficult to track down. Besides water and wastewater treatment, which makes up about a third of the activated carbon market, carbon is used in air pollution control, catalyst applications, sugar decolorizing, solvent recovery, purification of chemicals and gases, dry cleaning, rubber reclamation, auto evaporative control systems, and cigarette filters.

Activated carbon has long been a staple of the sugar industry where it is used as a decolorizing agent. In fact, the sugar market traditionally has been the largest carbon outlet. However, in this and other industrial markets, the product is, at best, holding its own.



Two multiple hearth furnaces at Calgon's plant in Catlettsburg, Ky.

It is the water and wastewater markets that offer the greatest potential for activated carbon. However, the regulations that would practically force installation of carbon systems have not been forthcoming from the government. "Water markets have not developed and they won't develop until EPA puts the squeeze on," says Paul Stubbe, sales manager of ICI United States' carbon units.

It is this squeeze that the activated carbon industry is hoping for. Thomas A. McConomy, director of Calgon's adsorption systems division, says, "If EPA doesn't do anything, the water and wastewater markets will grow at a rate of about 15% per year."

This growth will not help the total carbon market much at all. A 15 to 20% growth rate for the water markets represents only about 5 to 7% for the entire industry. If the remaining markets remain stable, it will take more than a decade for demand to catch up with capacity. What is needed is a massive shot in the arm.

This shot in the arm may be coming, but just when is anybody's guess. To see how it's coming requires a bit of history.

The major use for activated carbon in water treatment over the years has been for the removal of taste and odor. But in the early 1970's carbon adsorption of pollutants got a great deal of publicity. Chlorinated organics showed up in the drinking water of New Orleans, and at the same time EPA was pushing for passage of the Safe Drinking Water Act. EPA, the

lay press, and environmental groups were all extolling the virtues of carbon for removing many suspected carcinogenic organics, such as carbon tetrachloride, chloroform, and other toxic substances that had been found in drinking water in cities across the country.

Indeed, it is found that the very act of chlorinating water and wastewater could produce many of these chemicals. So it stood to reason that a carbon adsorption system following chlorination could be effective in protecting the health of the users of water in a community—in other words, virtually everyone.

At this point there are various scenarios for the carbon market. EPA could promulgate water concentration standards for specific chemicals. The agency also could require certain cities in which there is a problem or potential problem to install systems that would remove toxic chemicals.

Or, in the most drastic step, EPA could require all water treatment plants to install systems to remove the chemicals. This last possibility is not as farfetched as it may seem. A study has been done for EPA on whether it is feasible. The idea is that by installing such systems, there would be no exotic chemical surprises at the water treatment plants. All organics would be filtered out.

One aspect of the EPA study is finding out whether there will be enough capacity in the activated carbon industry to supply all of the water treatment plants if uni-

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versal carbon treatment becomes a reality. EPA seems to say there is not.

Calgon's McConomy counters that there is enough capacity in the industry to handle any eventuality—at least for a while.

According to McConomy, if EPA were to act with a grant program for water treatment (which is not included in the act) the present excess capacity would allow producers to keep up with demand. He says that producers easily could make a combined 50 million to 100 million lb more per year than they are presently turning out and that municipalities could not install carbon systems any faster than that. It would take two years for demand to catch up with capacity; and two years is just about the time that it takes to bring an expansion on stream.

McConomy says that if no grant program comes out of Washington, the producers would not use all of the present capacity for three or four years.

Although there is this overcapacity, one would never know it to look at the investment and production plans of the major activated carbon producers. Charles Aman, manager of technical services for Husky Industries, the fourth largest producer of activated carbon in the U.S., says that his company "is preparing facilities for what it thinks EPA should say in its standards."

Westvaco and Calgon both have expanded in the past few years. Westvaco closed down one of its older production facilities and replaced it with newer, more efficient kilns at its Covington, Va., site. This move resulted in a net increase in capacity of about 4 million lb per year. Calgon has left its older plant at Neville Island, Pa., pretty much alone, but has expanded its facility at Catlettsburg, Ky. Calgon also has built a plant in Belgium to serve its European market and to remove its exports from this country. ICI United States is placing a \$10 million expansion in its Marshall, Tex., plant that will boost capacity about 40%.

In addition to these producers, two new companies are coming into the picture. Amoco Oil subsidiary of Standard Oil

(Ind.) is operating a pilot plant in Naperville, Ill., which is producing what the company calls a "superactive" carbon. And Carborundum has been operating a pilot plant for the past few years producing a granular carbon. Amoco has not yet made a decision on commercial production. Carborundum says that it will make an announcement in the immediate future.

Considering the present overcapacity, these two companies apparently don't regret starting their investments so soon. Amoco project manager Joe D. Walk says, "Even though there is tremendous overcapacity, many companies are expanding. They must know something." Of the two newcomers, Carborundum could be the biggest factor in the activated carbon market. It could provide quite a bit of competition to Calgon, if Carborundum is willing to make a big enough commitment in capital investment.

Another unknown in the market is American Norit, the North American subsidiary of Norit ND of the Netherlands. Although American Norit is presently engaged solely in importing carbon from its European parent, it does have production facilities in Jacksonville, Fla., that are not currently in operation.

The main area of concern is just what EPA and Congress will do about the presently mandated Best Available Technology (BAT) standards due in the 1980's. Amoco's Walk says that the carbon market will turn on BAT. ICI's Stubbe echoes this, saying that if the government goes soft on BAT the industry could be in for a pretty rough time. Most of the carbon for wastewater use is classified as BAT.

There are moves in Congress to get a deadline for best practicable treatment pushed back from July 1 of this year to July 1, 1979—at least on a case-by-case basis.

Of course, not all activated carbon goes for water and wastewater treatment. About two thirds, or 125 million lb per year, goes for other uses. Some of these uses also have been affected by governmental action.

Witco Chemical, headquartered in New York City, with production facilities in Petrolia, Pa., is operating at about 95 to 100% capacity. The company has received a list from the Occupational Safety & Health Administration for filtration systems for industry including workplace respirators. It also is manufacturing activated carbon for home water purification units and for cigarette filters, among other products.

Witco illustrates one of the interesting things about the activated carbon market. Although the industry as a whole is operating at just two-thirds capacity, many of the producers are putting out almost 100%. The biggest of these, ICI, indicates in its annual report for 1976 that its estimated 75 million lb-per-year facilities are going full speed. Willard Clark, vice president of Barnebey-Cheney in Columbus, Ohio, says that the company's facilities are actually strained. "Everytime a customer sneezes, I feel it," he says.

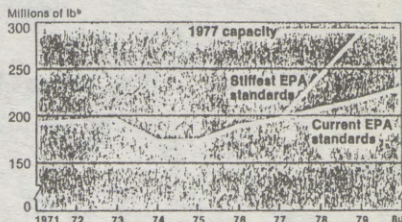
If what five of the seven manufacturers say is true—that they are operating at 95 to 100% of capacity—the two companies that already have expanded, Westvaco and Calgon, are holding all of the excess. Some producers place the blame for this situation on lack of acceptance so far for granular carbon in the water treatment field. Granular carbon apparently is having a slow time making its case of greater recycling potential than for powdered carbon.

As one last wrinkle, the U.S. is importing about 15 million lb of activated carbon per year. The U.S. is more than balancing that, however, with exports of more than 28 million lb per year. A large percentage of the export market goes to Japan and to Canada. Future export potential is hard to pin down, since many foreign countries also are busy building carbon plants.

Even considering the foreign and domestic U.S. "ifs," the general feeling about the activated carbon market is summed up by Joseph Enneking, Union Carbide's project manager for the company's carbon products division: "The ultimate potential is just huge."

	Location	Millions of lb per year
Westvaco Corp.	Covington, Ky.	85
ICI United States	Marshall, Tex.	76
Calgon Corp.	Catlettsburg, Ky., Pittsburgh	86
Husky Industries	Romeo, Fla.	22
Barnebey-Cheney Co.	Columbus, Ohio	12
Union Carbide	Fostoria, Ohio	6
Witco Chemical	Petrolia, Pa.	5

... but production could get tight quickly if EPA stiffens water treatment standards



^a Will add 40% more capacity in 1978-79. ^b Figures cover total activated carbon production, about 15% greater than Commerce Department figures. Sources: Commerce Department, company estimates

[Whereupon, at 4 p.m., the subcommittee adjourned.]

