

DOCUMENTS

APR 1 1980

98th Cor
2d Ses.

COMMITTEE PRINT NO. 6

FARRELL LIBRARY
KANSAS STATE UNIVERSITY

DISCHARGE OF LOW-LEVEL RADIOACTIVE WASTE TO THE SNAKE RIVER PLAIN AQUIFER

A REPORT

PREPARED BY

THE SUBCOMMITTEE ON ENERGY
AND THE ENVIRONMENT

OF THE

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS

OF THE

U.S. HOUSE OF REPRESENTATIVES
NINETY-SIXTH CONGRESS
SECOND SESSION



FEBRUARY 1980

Printed for the use of the
Committee on Interior and Insular Affairs

U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1980

58-310 O

DOCUMENTS
1980
LIBRARY
KANSAS STATE UNIVERSITY

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

HOUSE OF REPRESENTATIVES

MORRIS K. UDALL, Arizona, *Chairman*

PHILLIP BURTON, California
ROBERT W. KASTENMEIER, Wisconsin
ABRAHAM KAZEN, Jr., Texas
JONATHAN B. BINGHAM, New York
JOHN F. SEIBERLING, Ohio
HAROLD RUNNELS, New Mexico
ANTONIO BORJA WON PAT, Guam
BOB ECKHARDT, Texas
JIM SANTINI, Nevada
JAMES WEAVER, Oregon
BOB CARR, Michigan
GEORGE MILLER, California
JAMES J. FLORIO, New Jersey
DAWSON MATHIS, Georgia
PHILIP R. SHARP, Indiana
EDWARD J. MARKEY, Massachusetts
PETER H. KOSTMAYER, Pennsylvania
BALASAR CORRADA, Puerto Rico
AUSTIN J. MURPHY, Pennsylvania
BRUCE F. VENTO, Minnesota
NICK JOE RAHALL II, West Virginia
JERRY HUCKABY, Louisiana
LAMAR GUDGER, North Carolina
JAMES J. HOWARD, New Jersey
JERRY M. PATTERSON, California
RAY KOGOVSEK, Colorado
PAT WILLIAMS, Montana

DON H. CLAUSEN, California
Ranking Minority Member
MANUEL LUJAN, JR., New Mexico
KEITH G. SEBELIUS, Kansas
DON YOUNG, Alaska
STEVEN D. SYMMS, Idaho
JAMES P. (JIM) JOHNSON, Colorado
ROBERT J. LAGOMARSINO, California
DAN MARRIOTT, Utah
RON MARLENEE, Montana
MICKEY EDWARDS, Oklahoma
RICHARD B. CHENEY, Wyoming
CHARLES PASHAYAN, JR., California
ROBERT WHITTAKER, Kansas
DOUGLAS K. BEREUTER, Nebraska
MELVIN H. EVANS, Virgin Islands

CHARLES CONKLIN, *Staff Director*

LEE MCELVAIN, *General Counsel*

STANLEY SCOVILLE, *Special Counsel for Legislation*

HENRY MYERS, *Science Adviser*

GARY G. ELLSWORTH, *Minority Counsel*

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

MORRIS K. UDALL, Arizona, *Chairman*

JONATHAN B. BINGHAM, New York
BOB ECKHARDT, Texas
JAMES WEAVER, Oregon
BOB CARR, Michigan
DAWSON MATHIS, Georgia
PHILIP R. SHARP, Indiana
EDWARD J. MARKEY, Massachusetts
PETER H. KOSTMAYER, Pennsylvania
AUSTIN J. MURPHY, Pennsylvania
NICK JOE RAHALL II, West Virginia
BRUCE F. VENTO, Minnesota
JERRY HUCKABY, Louisiana
JAMES J. HOWARD, New Jersey
BALASAR CORRADA, Puerto Rico

STEVEN D. SYMMS, Idaho
MANUEL LUJAN, JR., New Mexico
DAN MARRIOTT, Utah
RON MARLENEE, Montana
MICKEY EDWARDS, Oklahoma
RICHARD B. CHENEY, Wyoming
DOUGLAS K. BEREUTER, Nebraska
MELVIN H. EVANS, Virgin Islands
DON H. CLAUSEN, California

ANDREA DRAVO, *Staff Consultant*

H. ELLIOT CHAKOFF, *Minority Nuclear Science Adviser*

NOTE.—The first listed minority member is counterpart to the subcommittee chairman.

LETTERS OF TRANSMITTAL

NINETY-SIXTH CONGRESS

MORRIS K. UDALL, ARIZ., CHAIRMAN

PHILLIP BURTON, CALIF.
ROBERT W. KASTENMEIER, WIS.
ABRAHAM KAZEN, JR., TEX.
JONATHAN S. BINGHAM, N.Y.
JOHN F. SEIBERLING, OHIO
HAROLD RUNNELS, N. MEX.
ANTONIO BORJA WON PAT, GUAM
BOB ECKHARDT, TEX.
JIM SANTINI, NEV.
JAMES WEAVER, OREG.
BOB CARR, MICH.
GEORGE MILLER, CALIF.
JAMES J. FLORIO, N.J.
DAWSON MATHIS, GA.
PHILIP R. SHARP, IND.
EDWARD J. MARKEY, MASS.
PETER H. KOSTMAYER, PA.
BALTASAR CORRAIDA, P.R.
AUSTIN J. MURPHY, PA.
NICK JOE RAHALL II, W. VA.
BRUCE F. VENTO, MINN.
JERRY HUCKABY, LA.
LAMAR GUDGER, N.C.
JAMES J. HOWARD, N.J.
JERRY M. PATTERSON, CALIF.
RAY KOGOVSEK, COLO.
PAT WILLIAMS, MONT.

DON H. CLAUSEN, CALIF.
MANUEL LUJAN, JR., N. MEX.
KEITH G. SEBELIUS, KANS.
DON YOUNG, ALASKA
STEVEN D. SYMMS, IDAHO
JAMES P. (JIM) JOHNSON, COLO.
ROBERT J. LAGOMARSINO, CALIF.
DAN MARRIOTT, UTAH
RON MARLENEE, MONT.
MICKEY EDWARDS, OKLA.
RICHARD B. CHENEY, WYO.
CHARLES PASHAYAN, JR., CALIF.
ROBERT WHITTAKER, KANS.
DOUGLAS K. BEREUTER, NEBR.
MELVIN H. EVANS, V.I.

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS U.S. HOUSE OF REPRESENTATIVES WASHINGTON, D.C. 20515

February 13, 1980

CHARLES CONKLIN
STAFF DIRECTOR

ROBERT A. REVELES
ASSOCIATE STAFF DIRECTOR

LEE MC ELVAIN
GENERAL COUNSEL

STANLEY SCOVILLE
SPECIAL COUNSEL
FOR LEGISLATION

GARY G. ELLSWORTH
MINORITY COUNSEL

Members, Committee on Interior and Insular Affairs
U. S. House of Representatives
Washington, D. C. 20515

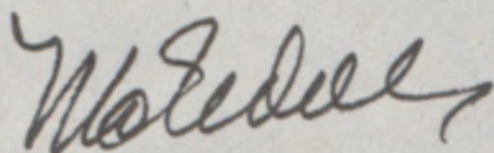
Dear Colleagues:

The Ranking Minority Member of our Subcommittee on Energy and the Environment, Steven Symms, has submitted to me information regarding the discharge of radioactive wastes by the Department of Energy's Idaho National Engineering Laboratory (INEL) into the Snake River Aquifer. I am ordering this information and Mr. Symms' comment to be printed as a Committee document because I believe they will be a positive contribution to the Committee's and the public's understanding of this nuclear waste management issue. The information presented represents a cooperative effort of the minority and majority staffs of the Energy and the Environment Subcommittee.

The Congress and our Federal agencies, as well as the nuclear industry, must strive to provide the public with accurate, complete and current information regarding nuclear operations and their attendant hazards and risks. Although Mr. Symms' investigation into the radioactive discharge into the Snake River Aquifer did not reveal any immediate threat to public health and safety resulting from the waste disposal technique, it is important that the Committee continue to oversee the Department's program and work to implement any disposal alternatives which may in the future be called for. I hope to coordinate these efforts with the ongoing work of Idaho's Governor John Evans, with Mr. Symms and with the Department.

I would like to recommend this report to the Committee and to thank Mr. Symms for his contribution.

Sincerely,



MORRIS K. UDALL
Chairman

(III)

IV

NINETY-SIXTH CONGRESS

MORRIS K. UDALL, ARIZ., CHAIRMAN

PHILLIP BURTON, CALIF.
ROBERT W. KASTENMEIER, WIS.
ABRAHAM KAZEN, JR., TEX.
JONATHAN B. BINGHAM, N.Y.
JOHN F. SEIBERLING, OHIO
HAROLD RUNNELS, N. MEX.
ANTONIO BORJA WON PAT, GUAM
BOB ECKHARDT, TEX.
JIM SANTINI, NEV.
JAMES WEAVER, OREG.
BOB CARR, MICH.
GEORGE MILLER, CALIF.
JAMES J. FLORIO, N.J.
DAWSON MATHIS, GA.
PHILIP R. SHARP, IND.
EDWARD J. MARKEY, MASS.
PETER H. KOSTMAYER, PA.
BALTASAR CORRADA, P.R.
AUSTIN J. MURPHY, PA.
NICK JOE RAHALL II, W. VA.
BRUCE F. VENTO, MINN.
JERRY HUCKABY, LA.
LAMAR GUDGER, N.C.
JAMES J. HOWARD, N.J.
JERRY M. PATTERSON, CALIF.
RAY KOGOVSEK, COLO.
PAT WILLIAMS, MONT.

DON H. CLAUSEN, CALIF.
MANUEL LUJAN, JR., N. MEX.
KEITH G. SEBELIUS, KANS.
DON YOUNG, ALASKA
STEVEN D. SYMMS, IDAHO
JAMES P. (JIM) JOHNSON, COLO.
ROBERT J. LAGOMARSINO, CALIF.
DAN MARRIOTT, UTAH
RON MARLENEE, MONT.
MICKEY EDWARDS, OKLA.
RICHARD B. CHENEY, WYO.
CHARLES PASHAYAN, JR., CALIF.
ROBERT WHITTAKER, KANS.
DOUGLAS K. BEREUTEN, NEBR.
MELVIN H. EVANS, V.I.

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

U.S. HOUSE OF REPRESENTATIVES

WASHINGTON, D.C. 20515

CHARLES CONKLIN
STAFF DIRECTOR

ROBERT A. REVELES
ASSOCIATE STAFF DIRECTOR

LEE MC ELVAIN
GENERAL COUNSEL

STANLEY SCOVILLE
SPECIAL COUNSEL
FOR LEGISLATION

GARY G. ELLSWORTH
MINORITY COUNSEL

February 8, 1980

The Honorable Morris K. Udall
Chairman, Energy & Environment Subcommittee
235 Cannon House Office Building
Washington, D.C. 20515

Dear Mo:

I believe the Energy and Environment Subcommittee meeting held in Idaho Falls, Idaho, on December 18, 1979, provided information that will be valuable to our Subcommittee in upcoming hearings on your bill, H.R. 6390.

The results of this hearing are presented in a report (Attached) that I had requested the staff to prepare. I request that you have this report produced as a "Committee Print" and made available to members of our Committee and the public at large.

Based on what I learned at these hearings, I believe that the Department of Energy must press forward with their review of alternative methods for disposal of low level wastes. The discharge of long half-life elements into the Snake River Aquifer is not acceptable to the general public—although the hearings found the amounts of these discharges to be insignificant and no threat to public health and safety. It was also determined that the discharges were in compliance with State health and safety standards as well as federal. I will closely study the results of DOE's alternative study work to be released in October, 1980.

While awaiting for the results of the DOE alternative study, I will press for:

- increased coordination of monitoring activities between INEL and the State of Idaho; and
- increased efforts to inform the general public of INEL activities, through public education programs.

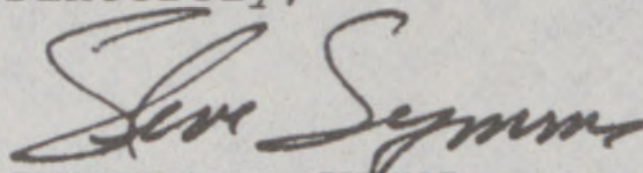
V

The Honorable Morris K. Udall
February 8, 1980
page 2

I believe that these two points are essential to the credible communication of DOE's work to the public.

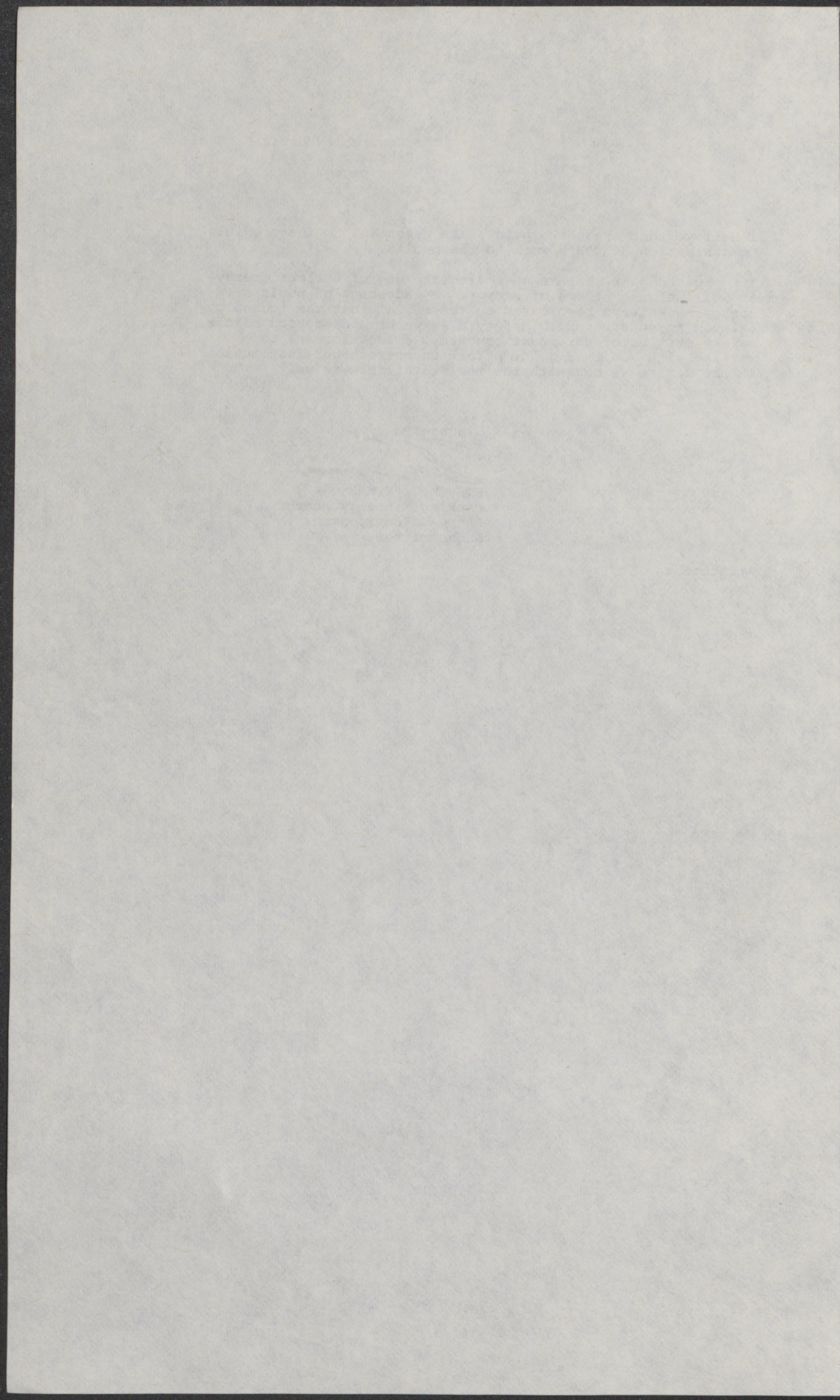
In the past, I have advocated the use of nuclear energy as well as other forms of energy. My advocacy of nuclear energy has always been based on the belief that the technology existed to ensure public safety. As we have discussed before, safety must be of paramount concern. I look forward to working with you in a joint effort to correct our institutions to the degree we can with the tools available to us.

Sincerely,

A handwritten signature in dark ink, appearing to read "Steve Symms", written in a cursive style.

STEVEN D. SYMMS
Ranking Minority Member
Energy & Environment
Subcommittee

Attachment

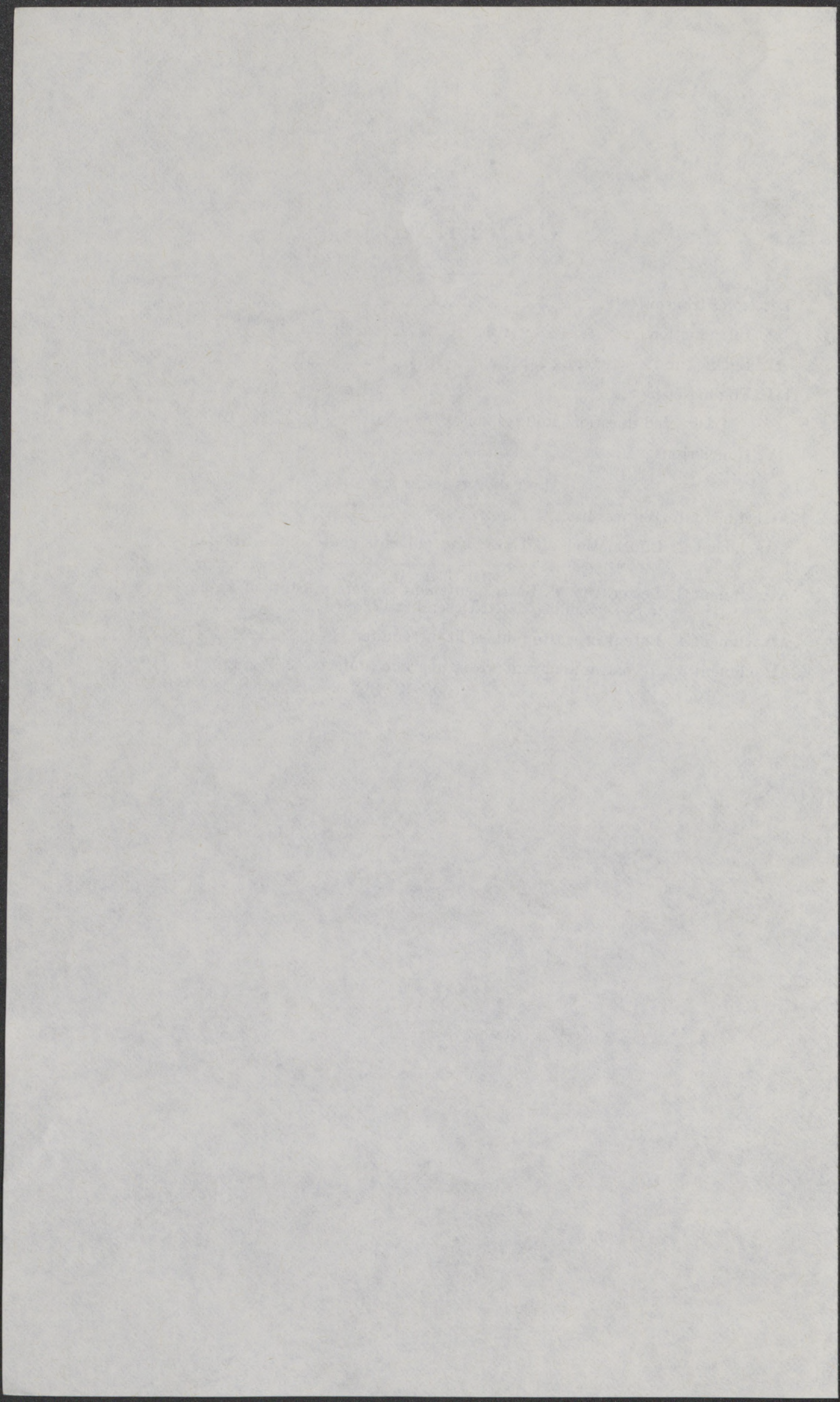


CONTENTS

	Page
Letters of transmittal.....	III
I. Introduction.....	1
II. Background.....	2
III. Finding of fact.....	2
Directed questions and responses by witnesses.....	3
IV. Conclusions.....	8

LIST OF ATTACHMENTS

Attachment 1. Witness list.....	10
Attachment 2. Information on INEL site effluents sent to the State of Idaho.....	11
Attachment 3. Letter from P. Batt, Lieutenant Governor, State of Idaho, to S. D. Symms, dated December 12, 1979.....	13
Attachment 4. Extent of waste plumes in the aquifer.....	14
Attachment 5. Recent and current waste upgrade projects.....	15



DISCHARGE OF LOW-LEVEL RADIOACTIVE WASTE TO THE SNAKE RIVER PLAIN AQUIFER

I. INTRODUCTION

On December 18, 1979, the Subcommittee on Energy and the Environment¹ held a public hearing in Idaho Falls, Idaho. The hearing was held to investigate the discharge of low-level radioactive wastes into the Snake River Aquifer (hereinafter referred to as "Aquifer") by the Idaho National Engineering Laboratory (INEL).

In early November 1979, Mr. Steven D. Symms, the Ranking Minority Member of the subcommittee, requested the subcommittee staff to review INEL's practice of discharging low-level liquid radioactive waste to the Aquifer. The subcommittee staff contacted staff members of the U.S. Department of Energy (DOE) both in Washington, D.C. and Idaho; and the U.S. Geological Survey (USGS) staff in Idaho. Using information documented in letter reports from these sources together with the final environmental impact statement (FEIS) on waste management operations at INEL (ERDA-1536 dated September 1977) the subcommittee staff reported the findings to Mr. Symms in a memorandum dated November 16, 1979. This report determined that the practice of liquid waste disposal to the Aquifer had been the subject of continued attention by DOE, USGS, and U.S. Environmental Protection Agency (EPA) over the past years. On the basis of this limited initial review of present monitoring programs by DOE, USGS, and EPA, there seemed to be no undetected threats to public health and safety or to INEL site workers.

As a result of continued public concerns expressed on this matter, Mr. Symms, in a December 4, 1979, letter to the chairman of the subcommittee, Morris K. Udall, requested that a public hearing be held in Idaho Falls to "... gather current information on the status of this important issue." The chairman granted the request for the hearing. In the absence of the chairman or a majority member, the hearing was chaired by Mr. Symms.

All members of the Idaho Congressional Delegation were informed of the hearing and were offered the opportunity to testify. Senator James A. McClure and Congressman George V. Hansen sent representatives to deliver oral statements for the record. Senator Frank Church declined to send a representative. Senator McClure also submitted material for the record. Relevant State and Federal agencies were requested by letter to testify and to submit prepared testimony. Representatives of DOE, USGS, EPA, and the State of Idaho testified as requested. Members of the public were offered the opportunity to make oral statements after all invited witnesses had testified. Mem-

¹ The Subcommittee on Energy and the Environment has jurisdiction over nuclear regulation and the disposal of nuclear waste.

bers of the public testified as follows: James Chadband, president of the Greater Idaho Falls Chamber of Commerce; Alex Creek, chairman of the INEL Relations Committee of the Greater Idaho Falls Chamber of Commerce; George Wehman, mayor of Ammons, Idaho; and Russell Lovell, a health physicist at INEL. A copy of the witness list is provided as attachment 1.

II. BACKGROUND

In early November 1979 stories appeared in several Idaho newspapers on the injection of liquid radioactive wastes into the Snake River Plain Aquifer by the Idaho National Engineering Laboratory (INEL). These reports appear to have aroused public concern and motivated action on the part of State and Federal Government officials.

On November 13, 1979 the Governor of Idaho, John V. Evans, announced the creation of a task force to review the practice of injecting very low-level radioactive wastes directly into the aquifer and to make recommendations to him. The work of the task force was presented in a report to the Governor on December 13, 1979. This report was submitted as testimony by the State at the hearing.

It was not the objective of this hearing to find fact on the performance of the news media or State officials in responding to disposal practices at INEL. However, statements that were made by some public officials on the basis of limited information may have led to some misunderstanding of the health and safety impacts of these practices in the public arena. Subsequent statements by some public officials indicate a belief that the situation had been overdramatized. (Attachment 3).

III. FINDING OF FACT

On December 12, 1979, the U.S. Department of Energy, U.S. Environmental Protection Agency, U.S. Geological Survey, and the State of Idaho were requested to provide prepared testimony for the record that addressed the following issues:

1. Knowledge of the history of the discharge of radioactive liquids into the Snake River Plain Aquifer.
2. Agency activities in monitoring these wastes and evaluating the risk to on-site personnel at the Idaho National Engineering Laboratory and the risk off-site.
3. Procedures in place to forewarn the public in the event there was to be a threat to public health and safety and the capability to detect this threat.
4. Agency efforts to monitor and model the movement of these wastes in the aquifer.
5. Alternatives available to the injection of these radioactive wastes into the Snake River Plain Aquifer and the feasibility of these alternatives.

It was felt that these five issues would provide the focal point for the gathering of pertinent facts upon which conclusions could be based. Issue number 3 is not the type of concern that would necessarily be of interest in the assessment of the risk presented to the public by the injection of liquid wastes into the aquifer, that is because of the low

concentrations of the radioactivity and its relatively slow movement in the environment. In the case of a mass accidental release of radioactive materials into the aquifer, effects would not be perceivable outside the INEL site for a substantial number of years due to the tendency of the solid materials in the aquifer to delay movement of the substances. Even a very large accidental release might never move outside the INEL boundaries. Therefore, a discussion of emergency preparedness is less relevant to waste disposal issues than to other INEL activities. In the aftermath of the Three Mile Island accident, however, no investigation of a potential radiological hazard to the public would be complete without an inquiry into the status of emergency planning at the site.

The hearings were prompted as a result of press reports and public concern regarding site activities at INEL. Substantial concern existed that the disposal of wastes could be causing a threat to public health. The representatives of the DOE, USGS, and EPA provided prepared testimony answering each question to the extent possible and applicable to their agency's role. The State of Idaho did not respond to the questions directly in prepared testimony but rather submitted a recently completed report² on the subject which addressed most of the questions.

The following presentation is organized to provide a summary of the key points made by each witness in response to each question. A summary follows each question which represents an analysis of the relevant facts including the oral testimony.

DIRECTED QUESTIONS AND RESPONSES BY WITNESSES

Question. What is your knowledge of the history of the discharge of radioactive liquids into the Snake River Plain Aquifer?

Key points

DOE.—A record and detailed description of liquid wastes discharged to the aquifer is detailed in the FEIS³ pages III-60 to III-85. Discharge to the aquifer has been in effect since 1952. A listing of DOE reports and their recipients in the State of Idaho government was provided and is included as attachment 2.

The State government was the recipient of monitoring reports since 1966 and radioactive waste discharge reports since 1973. The State also provided comments on the FEIS.³

EPA.—The EPA and its predecessor agencies have been generally aware of waste disposal practices at INEL. In a 1968 report the Federal Water Pollution Control Administration (FWPCA) expressed concern over disposal practices and recommended "eliminating discharge to ground water . . . by adopting another method of disposal." The Agency sent an inspection team to INEL following the release of the report. EPA commented extensively on the September 1977 FEIS³ and provided these comments for the record. While EPA's comments on the FEIS stated in part ". . . waste storage

² Radioactive Waste Task Force, Report to the Governor, State of Idaho, December 13, 1979.

³ ERDA-1536, Final Environmental Impact Statement, Waste Management Operations, Idaho National Engineering Laboratory, September 1977.

operations at INEL to date have not caused an unacceptable hazard to man or the environment," EPA also concluded in part, in their comments on the FEIS, that a need may exist to eventually eliminate reliance on soils to remove radioactivity from liquid wastes discharged to the ground.

USGS.—Since 1949 USGS has studied the aquifer to assess the effects of radioactive waste disposal on the aquifer. One aspect of this project was the determination of the natural chemical characteristics of the aquifer before waste disposal operations began. The results of the investigations over the past 30 years have been published or released in about 75 reports and papers available through the National Technical Information Service, for example, "The Influence of Liquid Waste Disposal on the Geochemistry of Water at NRTS, Idaho: 1952-1970" issued in 1974. Prior to publication all reports have been subject to extensive peer review within USGS and other Federal agencies, State agencies, universities, and scientific groups.

State of Idaho.—The report submitted by the Governor does not speak to this question.

Summary.—The USGS had examined the Snake River Plain Aquifer *prior* to its use for the disposal of wastes and has monitored, published, and made public the results of its work over the last 30 years. DOE and its predecessors have made information available on a continuing basis to the State of Idaho on the disposal of wastes to the aquifer since 1966. The EPA and its predecessors, that is, FWPCA, have reviewed the disposal practices at INEL since 1968.

Senator McClure in his prepared testimony submitted for the record indicated he was aware of the 1974 report by USGS on liquid waste disposal to the aquifer, that he had read it and discussed its findings with Senator Church and then-Governor Cecil Andrus, and to some extent with Congressman George Hansen in whose district the facility is located. Since that time he was aware of the FEIS³ published by DOE in September 1977. He expressed concern about the discharge of iodine-129 and isotopes of plutonium (i.e., 239 and 240) to the aquifer. He acknowledged that the concentration of plutonium was 200 million times lower than Federal and State of Idaho concentration guides and iodine was less than one-tenth the concentrations permitted by the same. His concern was that the long half lives of these elements (i.e. ranging from 25,000 to 16.5 million years) could cause a buildup in the aquifer. He suggested, ". . . there must be a more acceptable method to dispose of these dangerous elements." He stated, "I am not suggesting that we hit the panic button."

Question. What has been the role of your organization or agency in monitoring these wastes and evaluating the risk to on-site personnel at the National Laboratory and the risk off-site?

Key points

DOE.—The DOE's Radiological and Environmental Sciences Laboratory (RESL) has responsibility for environmental monitoring and surveillance at INEL and the surrounding area. On site RESL regularly samples air, water, and soil with quarterly reports. No measurable environmental effects from radioactivity have been observed in these programs. On site, over 100 wells are periodically monitored by

USGS and RESL. All wells from which water is produced for consumption by site workers are monitored monthly. RESL determines health and safety impacts from monitoring data. The site was designated a national Environmental Research Park in 1975 and as such is the subject of intensive independent university research.

EPA.—EPA conducts no on-site monitoring. However, off-site monitoring is conducted. EPA operates a nationwide monitoring and sampling system called "ERAMS". The major emphasis for ERAMS is to identify trends in the accumulation of long lived radionuclides in the environment. (Senator McClure's concerns about iodine-129 and isotopes of plutonium are covered by this point). The ERAMS results are "*either below detection limits, or represent normal background or represent radioactivity from fallout and do not show any radiation directly attributable to INEL.*" EPA concluded, "The maximum dose to an individual from air and water, and the total dose to all persons within 50 miles is exceedingly low."

USGS.—This agency has drilled wells and has traced the movement of liquid waste from the Idaho Chemical Processing Plant (ICPP) and the Test Reactor Areas (TRA) since disposal began in 1952.

State of Idaho.—The existing level of effort in monitoring by the State was unclear; however, the report² states, "increasing the State's monitoring capability would be appropriate". There is no direct evidence of independent assessment by the State. The State's report² says in part, "No monitoring program can ever be considered totally satisfactory."

Summary.—DOE's RESL performs environmental monitoring on-site and off-site. No measurable environmental effects from radioactivity have been observed in these programs. EPA makes off-site environmental measurements and finds no radiation attributable to INEL operations in the environment. This is not meant to imply that there is no radioactivity in the environment—there is, for example, that due to natural radioactivity and weapons testing fallout. The State report² recommended increased State funding of auditing and monitoring activities at INEL, however, it is not clear what would be achieved by this recommendation as specific deficiencies in any of the Federal programs were not identified.

Question. What are the procedures in place to forewarn the public in the event there were to be a threat to public health and safety and what is your capability to detect this threat? (Note—This is not of primary concern due to the low concentrations of radioactivity being injected into the aquifer and the slow movement of the radioactivity in the environment.)

Key points

DOE.—The ICPP is the only location where direct radioactive liquid release in the aquifer is feasible. There is in place an automatic diversion system for the injection well which routes significantly contaminated liquid to a 300,000-gallon tank. In the unlikely event of a radioactive release in excess of existing guidelines to the aquifer, DOE has access to the USGS predictive computer models that would enable any hazard to the public to be predicted. Any off-normal occurrence at INEL which might affect the safety of the site or public re-

quires prompt notification to the DOE Warning Communications Center in Idaho Falls, where personnel are on duty around the clock. Any notification initiates the emergency response procedures outlined in the DOE-ID Emergency Planning, Preparedness, and Response Program. This emergency plan contains procedures for notification of State and county authorities as appropriate. Each of the county governments adjacent to INEL (Bingham, Bonneville, Butte, Clark, and Jefferson Counties) have emergency plans which include response procedures for INEL emergencies affecting them. A review of the plan ⁴ indicates that there is a working agreement between the DOE and the State of Idaho.

EPA.—Under an emergency provision of the Safe Drinking Water Act, EPA has the authority upon receipt of information that a contaminant may present an imminent endangerment to the health of persons to take such action as is deemed necessary to protect the health of such persons—if the appropriate State and local authorities have not acted to protect the health. In early 1980 EPA will promulgate final regulations governing underground injection to protect underground sources of drinking water. These regulations will establish permitting requirements for the construction, operation, monitoring, and public notice requirements for well injection. EPA also stated, “We have offered our assistance to the State of Idaho in developing their off-site emergency plan in response to an emergency at INEL that would pose a hazard to the off-site population.”

USGS.—DOE has claimed access to the USGS predictive computer models in the event of contamination to the aquifer.

State of Idaho.—Although the State report ² does not speak to emergency planning, it does address monitoring at the site as well as the documentation and modelling of the movement of wastes through the aquifer.

Summary.—The DOE appears to have a comprehensive emergency plan in place. Predictive models to determine the impact of any radioactive liquid release to the aquifer exist under USGS. DOE has an automatic diversion system in place to prevent the introduction of wastes exceeding predetermined guidelines into the aquifer. The State report ² describes this system as “state-of-the-art or better.” No evidence was prepared by the State as to their emergency preparedness for radiological releases.

Question. What have been the efforts of your agency to monitor and model the movement of these wastes in the aquifer?

Key points

DOE.—The DOE monitoring effort was discussed previously. RESL monitors over 100 wells on-site with USGS.

EPA.—EPA has never had any program to directly monitor or model the movement of wastes in the aquifer.

USGS.—The USGS has had prime responsibility for studying the hydrology and geology of the INEL site for the past 30 years. The USGS had wells drilled and had traced the movement of liquid wastes from ICPP and TRA since disposal began in 1952. Currently several

⁴ DOE-ID Emergency Planning, Preparedness, and Response Program, IDM 0601.

underground plumes of waste products can be identified and mapped. None of the waste products have been identified beyond the INEL boundary. Attachment 4 is a table taken from USGS testimony which shows that a small fraction of the aquifer is being used by INEL's waste disposal activity. The most mobile of the waste products is tritium which moves away from the injection well at 4 feet per day. Calculations indicate this most mobile isotope, after it has moved a maximum of 43 miles from the injection well, would no longer be present in the aquifer due to natural radioactive decay. Long lived isotopes such as iodine-129 and plutonium (Senator McClure's concern) are not expected to move off-site due to the chemical behavior of these species in the aquifer. Less than one-tenth of one gram of plutonium was discharged to the injection well in 1978, this was contained in a total of 300 million gallons of water injected into the aquifer. USGS has planned to map and model the migration of the longer lived isotopes, iodine-129 and plutonium-239. USGS stated, "... none of the concentrations of the solutes modeled (attachment 4) will exceed current drinking water standards at the INEL boundaries".

State of Idaho.—The State's report ² states that "No monitoring program can ever be considered totally satisfactory". The State recommends increasing the size of the well network and making more frequent determinations which would provide "... more valuable information to decision makers". The State report ² mentions a computer model developed by the Idaho Department of Water Resources and the University of Idaho for the movement of wastes in the aquifer and concludes that it "basically agrees" with the USGS model. The report ² goes on to postulate possible monitoring deficiencies.

Summary.—All on-site monitoring is performed by USGS and DOE's RESL. Work to date by USGS indicates that the water in the aquifer will not exceed drinking water standards beyond the boundary of the INEL site. Discussions with USGS indicate that iodine and plutonium will not reconcentrate to higher concentrations than they were when originally injected into the aquifer. Thus, while they may build up due to their long half lives, they should not present any additional hazard beyond that presented when they were injected.

Question. What are the alternatives available to the injection of these radioactive wastes into the Snake River Plain Aquifer and what is the feasibility of these alternatives?

Key points

DOE.—In their FEIS ³ DOE identified alternatives to the existing disposal practices for low level liquid wastes. The FEIS stated, "At ICPP, methods are implemented as they become practically available for removing radioactivity from liquid waste streams". DOE presented a listing of expenditures for projects to upgrade waste activities which is included as attachment 5. Since Exxon Nuclear Idaho Company's (ENICO) assumption of management responsibilities at ICPP in late July 1979, from Allied Chemical, DOE has requested that ENICO perform a study of alternatives to current disposal practices. These were briefly outlined since their study efforts are not complete.

EPA.—EPA stated that they requested DOE to present alternatives to their various waste disposal practices and methods in their review

of the draft FEIS.³ However, in their testimony EPA stated, "EPA is not presently in a position to make a judgment of the feasibility of the alternatives".

USGS.—Did not speak to this question other than to demonstrate that a small portion of the aquifer is dedicated to handling low level waste (attachment 4).

State of Idaho.—The State report² recommends, "DOE stop the practice of disposing of low level radioactive wastes to the . . . aquifer". The State also recommends that DOE explore alternatives to its current practice of injection.

Summary.—DOE has spent considerable moneys to upgrade its waste management operations at the site in the past 9 years. In July 1979 DOE had its new ICPP contractor begin new alternative studies which are expected to be completed by October 1980. Several alternatives to injection well disposal are technically available. The alternatives include further processing of wastes prior to injection to remove some of the radioactive substances. Any substances so removed would entail some potential exposure of workers or the public in processing and ultimate disposal operations. The feasibility in terms of cost and environmental impact of the alternatives requires complete engineering studies and environmental assessments. The State recommendation to stop all injection well disposal could eliminate what may be the best alternative. Some witnesses argued that the current practice was environmentally benign and better understood than the alternatives. They were concerned that elimination of the injection well disposal option would result in an alternative that was not an environmentally acceptable one.

IV. CONCLUSIONS

The principal conclusions from this hearing are:

The Federal agencies responsible for conducting monitoring programs at INEL; namely, EPA, DOE, and USGS appear to be competently doing so. We identified no broken lines of communication among them or gaps in their programs to protect public health and safety. This monitoring information has been made publicly available.

The Federal agencies responsible for conducting the monitoring programs at INEL have been communicating with the State of Idaho. Detailed technical information on these programs has been publicly available over the past years through normal Federal publication distribution efforts.

The DOE has been conducting studies since July 1979 on alternatives to the current practice of injecting wastes into the aquifer. DOE's policy at ICPP has been to implement practically available methods for removing radioactivity from liquid waste streams. Although it appears unlikely that these studies will indicate that all disposal into the aquifer should cease, a mechanism exists for implementing any changes in disposal practices which may be advisable in terms of cost, feasibility and improvement in protection of public health and safety. DOE's current date for reporting on these alternatives is October 1980.

There is no significant evidence from the currently available information to indicate any health or safety problem with current disposal practice. The off-site waters of the aquifer are not now contaminated from current practice nor are they expected to be in the future. The levels of contamination within the INEL site boundaries are well below applicable standards and are expected to remain so.

ATTACHMENT 1

WITNESS LIST

HEARING OF THE SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT OF THE HOUSE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

TUESDAY, DECEMBER 18, 1979, 9:30-11:30 A.M., 1-3 P.M.

1. The Honorable James A. McClure, U.S. Senator, represented by Mr. Mike Field
2. The Honorable George V. Hansen, Member of Congress, represented by Mr. Tom Daley
3. The Honorable John V. Evans, Governor of Idaho, represented by Mr. Steven Allred, chairman of the Governor's Blue Ribbon Task Force on Nuclear Waste
4. Dr. Charles E. Williams, Manager, Idaho Operation Office of the Department of Energy
5. Mr. Douglas Hansen, Region 10, Environmental Protection Agency
6. Mr. Jack Barraclough, U.S. Geological Survey, Department of the Interior

NOTE.—All interested individuals, agencies, or organizations are requested to submit written testimony, which will be included in the official hearing record. Depending upon time constraints, short oral testimony may become possible.

ATTACHMENT 2

DECEMBER 4, 1979.

INFORMATION ON INEL SITE EFFLUENTS SENT TO THE STATE OF IDAHO

1. Annual environmental monitoring program reports for INEL

C. Stephen Allred, Idaho Department of Water Resources, Boise, Idaho.

W. Bruce Arnell, District Seven Health Department, Idaho Falls, Idaho.

Dr. Darrel W. Clapp, Idaho Department of Water Resources, Boise, Idaho.

Kenneth Dunn, Idaho Department of Water Resources, Boise, Idaho.

Robert D. Funderburg, Radiation Control, Idaho Department of Health and Welfare, Boise, Idaho.

James R. Ingalls, Public Health District 5, Twin Falls, Idaho.

James Jelke, Southeastern District Health Department, Pocatello, Idaho.

Dr. Milton Klein, Idaho Department of Health and Welfare, Boise, Idaho.

Henry Moran, Idaho Department of Health and Welfare, Pocatello, Idaho.

Dr. Lee W. Stokes, Division of Environment, Idaho Department of Health and Welfare, Boise, Idaho.

2. Quarterly INEL site environmental monitoring data reports

Dr. Darrel W. Clapp, Idaho Department of Water Resources, Boise, Idaho.

Robert D. Funderburg, Radiation Control, Idaho Department of Health and Welfare, Boise, Idaho.

3. Monthly radioactive waste management information reports

Hon. John V. Evans, Governor of Idaho, Boise, Idaho.

Dr. Lee W. Stokes, Division of Environment, Idaho Department of Health and Welfare, Boise, Idaho.

Dr. Darrell Clapp, Idaho Department of Water Resources, Boise, Idaho.

Robert Lenaghan¹, Acting Director, Idaho State Energy Office, Idaho.

4. Annual radioactive waste management information reports

Hon. John V. Evans, Governor of Idaho, Boise, Idaho.

Dr. Lee W. Stokes, Division of Environment, Idaho Department of Health and Welfare, Boise, Idaho.

¹ Reports have been sent to Kirk Hall up to this point. Robert Lenaghan will receive the next report.

Dr. Darrel Clapp, Idaho Department of Water Resources, Boise, Idaho.

Robert Lenaghan¹, Acting Director, Idaho State Energy Office, Boise, Idaho.

5. Annual industrial waste management information reports

Hon. John V. Evans, Governor of Idaho, Boise, Idaho.

Dr. Lee W. Stokes, Division of Environment, Idaho Department of Health and Welfare, Boise, Idaho.

Dr. Darrel Clapp, Idaho Department of Water Resources, Boise, Idaho.

Robert Lenaghan¹, Acting Director, Idaho State Energy Office, Boise, Idaho.

HISTORY OF WHEN DISTRIBUTION WAS FIRST MADE TO STATE

Monitoring reports have been sent to the State since 1966 (13 years).

Radioactive waste discharge reports have been sent to the State since 1973 (6 years).

1. Monitoring reports

1966–1968.—Sent monthly milk and air sample data to Dr. Terrell Carver, Administrator, Idaho State Health Department.

1968.—Started sending the annual Environmental Monitoring Program Reports to Mike Christie, Radiation Control Group.

1976.—Started sending Quarterly INEL Site Environmental Monitoring Data Reports to Dr. Lee Stokes, Director, Environmental Services, and Ken Dunn, Idaho Water Resources Department.

2. Waste management information

1973.—Started sending Monthly Reports on Radioactive Waste Information to Governor Cecil Andrus (November 14, 1973), carbon copies to Dr. Lee Stokes began in 1974 (August 1974).

1974.—Started sending Annual Radioactive Waste Reports to Governor Cecil Andrus (May 30, 1974), carbon copies to Dr. Lee Stokes and Mike Christie began in 1974 (May 30, 1974).

NOTE.—Information on annual waste data was compiled for the years 1962–1970, 1971, and 1972 sent to Governor Andrus (June 24, 1974)

1974.—Started sending Annual Industrial Waste Reports to Dr. Lee Stokes (October 8, 1974).

Topical reports

Topical reports that are not routinely issued, such as environmental impact statements (for example, Waste Management Operations at the INEL 1977) and U.S. Geological Survey reports (for example, The Influence of Liquid Waste Disposal on the Geochemistry of Water at the NATS—1974) and others have been sent to the State as they are issued.

¹ Reports have been sent to Kirk Hall up to this point. Robert Lenaghan will receive the next report.

ATTACHMENT 3

STATE OF IDAHO,
OFFICE OF THE LIEUTENANT GOVERNOR,
Boise, December 12, 1979.

Hon. STEVE SYMMS,
*304 N. 8th,
Boise, Idaho.*

DEAR STEVE: Thank you for the opportunity to offer testimony to your committee. You are to be commended for finding out first-hand the true facts concerning the issue of nuclear waste disposal in Idaho.

I am concerned that the matter has become emotional to the point that it is difficult to generate objective and unbiased scientific data. I regret that public statements, including my own—expressing concern, and widespread press coverage have overdramatized the situation.

The practice of discharging nuclear matter into the Snake River aquifer must be evaluated with great care. I hope that your committee can assess the ramifications of this practice with objectivity and consider the economic, as well as the health and safety, factors involved.

I am hopeful that, out of this controversy, better public understanding will emerge concerning the entire gamut of nuclear activity. I firmly believe that we must rely on nuclear sources for the generation of a substantial portion of our energy needs over the period of the next few decades. Obviously, too, the INEL facility is a vital part of our national defense effort. We must be sure that we do not shackle this facility to the point that it can no longer operate in a useful fashion.

Very truly yours,

PHILIP E. BATT,
Lieutenant Governor.

ATTACHMENT 4

EXTENT OF WASTE PLUMES IN THE SNAKE RIVER PLAIN AQUIFER AT IDAHO NATIONAL ENGINEERING LABORATORY AS OF 1979 AND PREDIC- TION OF EXTENT OF PLUMES BY 2000

Waste products	Half-life (years)	Maximum distance travelled (miles)	Area (square miles)	Percentage of aquifer area
1979				
Tritium.....	12.3	7.5	28.0	0.3
Strontium-90.....	28.9	1.5	1.5	.02
Iodine-129.....	16,400,000.0	1.8	2.5	.03
Heat ¹	(²)	2.0	2.5	.03
Chloride.....		5.5	15.0	.15
Sodium.....		5.0	12.0	.12
Nitrate.....		3.3	6.0	.06
Chromium.....		(³)	(⁴)	.08
2000				
Tritium.....	12.3	15.0	100.0	1.0
Strontium-90.....	28.9	2.0	2.5	.03
Chloride.....		20.0	112.0	1.1

¹ Where the ambient temperature of the ground water has been evaluated by migration of waste, heat is considered a waste product.

² Where no half-lives are indicated, the waste is nonradioactive.

³ About 3 to 4.

⁴ About 8.

ATTACHMENT 5

RECENT AND CURRENT WASTE UPGRADE PROJECTS

LINE ITEMS (OVER \$750,000)

Fiscal year	Project	Cost
1971-----	CPP radioactive contamination control improvements (includes new de-misting, super heating and filtering devices for removing radioactive pollutants from plant off-streams—new equipment for monitoring, diverting, retaining, and cleaning contaminated service wastewater)-----	\$1, 750, 000
1972-----	Atmospheric protection system at ICPP (includes new high efficiency air filtration system to clean up CPP off-gas system).	3, 372, 000
1974-----	CPP calcined solids storage and plant safety improvements-----	3, 325, 000
1975-----	TRA water recycle and pollution control-----	1, 000, 000
1976-----	Radioactive liquid waste system improvements—ICPP-----	5, 800, 000
1979-----	TAN radioactive liquid waste storage and transfer station-----	1, 000, 000
General Plant Projects (under \$750,000)*		
1975-----	ITSA pad air support structure and associated monitoring equipment for above ground waste storage.	\$265, 000
1975-----	ETR effluent control-----	73, 000
1975-----	CPP decontamination facility (includes piping, holdup vessels, and pumps to provide decontamination capability at the process equipment waste evaporator and off-gas treatment building).	
1976-----	RWMC drainage improvement subsurface disposal area-----	205, 000
1977-----	PBF hot waste storage capacity increase-----	247, 000
1977-----	PBF corrosive waste disposal modifications (includes construction of a lined pond to replace disposal well).	200, 000

UPCOMING WASTE UPGRADE PROJECTS

LINE ITEMS (OVER \$750,000)

Fiscal year	Project	Cost
1981 ¹ -----	TRA radioactive liquid waste cleanup system-----	\$4, 400, 000
General plant projects:		
1980-----	LOFT radioactive waste handling upgrade-----	150, 000
1980-----	WRRTF sanitary waste system drain field (remove treated effluent discharge line to well)-----	100, 000

¹ Subject to authorization and appropriation of funds by Congress.

