

factor), the chronic RfD is estimated to be 10.0 mg/kg/day.

ii. *Drinking water.* The theoretical residues calculated for dietary intake included intake from drinking water (one-half of the 3 kg food consumed per day is assumed to be liquids.) Since 2-methyl-1, 3-propanediol is a surfactant, and is water soluble, it is expected that some exposure in drinking water will occur. However, it is unlikely that drinking water exposures exceeding those calculated above, assuming direct application of pesticides containing this inert would occur due to runoff or leaching into groundwater. Biodegradability studies indicate that 2-methyl-1, 3-propanediol is inherently biodegradable (modified Sturm test; 54% of the material degraded in the observed time.)

2. *Non-dietary exposure.* 2-Methyl-1, 3-propanediol is currently used as a neutralizer, emollient, emulsifier, and humectant in numerous personal care products. The chemical is also used in the synthesis of polyester polyols for solvent and waterborne urethane and high solid and powder polyester coatings. The chemical also holds several FDA approvals and clearances for use in food contact applications, including its use in adhesives, resinous and polymeric coatings, paper and paperboard in contact with aqueous, fatty, and dry foods, slimicides, and polyurethanes in contact with bulk dry food.

#### D. Cumulative Effects

There is insufficient information to determine whether other compounds have a common mechanism of toxicity to 2-methyl-1, 3-propanediol.

#### E. Safety Determination

1. *U.S. population.* Using the above estimated RfDs, the adult estimated daily intake (EDI) represents 5 percent of the acute RfD and 8 percent of the chronic RfD. EPA generally has no concern for exposures below 100% of the RfD because the RfD represents the level at or below which daily aggregate dietary exposure over a lifetime will not pose appreciable risks to human health. It should be noted that the exposures estimates are conservative and exaggerated.

2. *Infants and children.* The EDI for a child represents 16 percent of the acute RfD and 26 percent of the chronic RfD. Based on these data, it may be concluded that there is a reasonable certainty that no harm will result from aggregate exposure to 2-methyl-1, 3-propanediol residues to the U.S. population, including both adults and children.

#### F. International Tolerances

There are no international tolerances listed for 2-methyl-1, 3-propanediol.

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BILLING CODE 6560-50-S

### ENVIRONMENTAL PROTECTION AGENCY

[FRL-7269-3]

#### Underground Injection Control (UIC) Program; Hydraulic Fracturing of Coalbed Methane (CBM) Wells Report—Notice

**AGENCY:** Environmental Protection Agency.

**ACTION:** Notice of availability of draft report and request for comment.

**SUMMARY:** The Environmental Protection Agency (EPA) has completed a draft report titled, "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs" EPA 816-D-02-006. The draft report contains the preliminary results of Phase I of an investigation undertaken by EPA to evaluate the impacts to underground sources of drinking water (USDW) by hydraulic fracturing of coalbed methane wells (herein known as hydraulic fracturing). Based on the information collected, EPA has preliminarily found that the potential threats to public health posed by hydraulic fracturing of CBM wells appear to be small and do not appear to justify additional study. The purpose of this notice is to inform the public of the availability of the draft report for review and to seek public comment on the draft report.

**DATES:** EPA must receive public comment, in writing, on the draft report by October 28, 2002.

**ADDRESSES:** Comments may be submitted electronically, by mail, or through hand delivery/courier. Follow the detailed instructions as provided in section I of the **SUPPLEMENTARY INFORMATION** section.

**FOR FURTHER INFORMATION CONTACT:** L. Cronkhite, Ground Water Protection Division, Environmental Protection Agency, Mail Code 4606M, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460, PH: (202) 564-3878. E-mail: [cronkhite.leslie@epa.gov](mailto:cronkhite.leslie@epa.gov).

**SUPPLEMENTARY INFORMATION:**

#### I. General Information

*A. How Can I Get Copies of the Draft Report, "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs" and Other Related Information?*

1. *Docket.* EPA has established an official public docket for this action under Docket ID No. W-01-09-II. The official public docket consists of the *Draft Report, Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs*, documents referenced in this action, any public comments received, and other information related to this action. The official public docket is the collection of materials that is available for public viewing beginning August 27, 2002 at EPA's Water Docket at 1301 Constitution Ave., NW., Room B135, Washington, DC 20004. The OW Docket is closed from August 12 through August 26, 2002, for relocation. This Docket Facility is open from 9 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The Docket telephone number is (202) 566-2426.

2. *Electronic Access.* You may access this **Federal Register** document electronically through the EPA Internet under the "**Federal Register**" listings at <http://www.epa.gov/fedrgstr/>.

An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may use EPA Dockets at <http://www.epa.gov/edocket/> to submit or view public comments, access draft report, "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs," access the index listing of the contents of the official public docket, and access those documents in the public docket that are available electronically. Once in the system, select "search," then key in the appropriate docket identification number.

Certain types of information will not be placed in the EPA Dockets. Information claimed as CBI and other information whose disclosure is restricted by statute, which is not included in the official public docket, will not be available for public viewing in EPA's electronic public docket. EPA's policy is that copyrighted material will not be placed in EPA's electronic public docket but will be available only in printed, paper form in the official public docket. Although not all docket materials may be available electronically, you may still access any of the publicly available docket

materials through the docket facility identified in section I.A.1.

For public commenters, it is important to note that EPA's policy is that public comments, whether submitted electronically or in paper, will be made available for public viewing in EPA's electronic public docket as EPA receives them and without change, unless the comment contains copyrighted material, CBI, or other information whose disclosure is restricted by statute. When EPA identifies a comment containing copyrighted material, EPA will provide a reference to that material in the version of the comment that is placed in EPA's electronic public docket. The entire printed comment, including the copyrighted material, will be available in the public docket.

Public comments submitted on computer disks that are mailed or delivered to the docket will be transferred to EPA's electronic public docket. Public comments that are mailed or delivered to the Docket will be scanned and placed in EPA's electronic public docket. Where practical, physical objects will be photographed, and the photograph will be placed in EPA's electronic public docket along with a brief description written by the docket staff.

#### *B. How and To Whom Do I Submit Comments?*

EPA has established an official public docket for this action under Docket ID No. W-01-09-II. The official public docket is the collection of project-specific materials. You may submit comments electronically, by mail, or through hand delivery/courier. The Agency would prefer that commenters cite, where possible, the paragraph(s) or sections in the report or documents to which each comment refers. Commenters should use a separate paragraph for each issue discussed. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your comment. Please ensure that your comments are submitted within the specified comment period. Comments received after the close of the comment period will be marked "late." EPA is not required to consider these late comments.

##### 1. Electronically

If you submit an electronic comment as prescribed below, EPA recommends that you include your name, mailing address, and an e-mail address or other contact information in the body of your comment. Also include this contact information on the outside of any disk

or CD ROM you submit, and in any cover letter accompanying the disk or CD ROM. This ensures that you can be identified as the submitter of the comment and allows EPA to contact you in case EPA cannot read your comment due to technical difficulties or needs further information on the substance of your comment. EPA's policy is that EPA will not edit your comment, and any identifying or contact information provided in the body of a comment will be included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic copies must be submitted as an ASCII, WP5.1, WP6.1 or WP8 file avoiding the use of special characters and form of encryption. Electronic comments must be identified by the docket number W-01-09-II. Comments will also be accepted on disks in WP 5.1 or higher, or ASCII file format. Electronic comments on this notice may be filed online at many Federal Depository Libraries.

a. *EPA Dockets.* Your use of EPA's electronic public docket to submit comments to EPA electronically is EPA's preferred method for receiving comments. Go directly to EPA Dockets at <http://www.epa.gov/edocket>, and follow the online instructions for submitting comments. Once in the system, select "search," and then key in Docket ID No. W-01-09-II. The system is an "anonymous access" system, which means EPA will not know your identity, e-mail address, or other contact information unless you provide it in the body of your comment.

b. *E-mail.* Comments may be sent by electronic mail (e-mail) to OW-Docket@epa.gov, Attention Docket ID No. W-01-09-II. In contrast to EPA's electronic public docket, EPA's e-mail system is not an "anonymous access" system. If you send an e-mail comment directly to the Docket without going through EPA's electronic public docket, EPA's e-mail system automatically captures your e-mail address. E-mail addresses that are automatically captured by EPA's e-mail system are included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket.

c. *Disk or CD ROM.* You may submit comments on a disk or CD ROM that you mail to the mailing address identified in section I.A.1. These electronic submissions will be accepted in WordPerfect or ASCII file format.

Avoid the use of special characters and any form of encryption.

##### 2. By Mail

Send your comments to: EPA's Water Docket, Environmental Protection Agency, Mail Code 4101, 1200 Pennsylvania Avenue, NW., Washington, DC 20460, Attention Docket ID No. W-01-09-II.

##### 3. By Hand Delivery or Courier

OW's Docket is closed for relocation from August 12 through August 26, 2002. It will re-open August 27, 2002. Deliver your comments to: Water Docket, Environmental Protection Agency, Room B135, 1301 Constitution Ave., NW., Washington, DC 20460, Attention Docket ID No. W-01-09-II, anytime after August 26, 2002. For access to docket materials, please call (202) 566-2426 to schedule an appointment. Such deliveries are only accepted during the Docket's normal hours of operation from 9 a.m. to 4 p.m., Monday through Friday, excluding legal holidays.

#### *C. What Should I Consider as I Prepare My Comments for EPA?*

You may find the following suggestions helpful for preparing your comments:

1. Explain your views as clearly as possible.
2. Describe any assumptions that you used.
3. Provide any technical information and/or data you used that support your views.
4. If you estimate potential burden or costs, explain how you arrived at your estimate.
5. Provide specific examples to illustrate your concerns.
6. Offer alternatives.
7. Make sure to submit your comments by the comment period identified.
8. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your response. It would also be helpful if you provided the name, date, and **Federal Register** citation to your comments.

## **II. Hydraulic Fracturing Study Information**

Hydraulic fracturing is a technique used to improve the flow of oil and gas to production wells. In high-permeability formations, oil and gas flows into the wellbore in response to pumping. In low-permeability formations, however, oil and gas flow rates may be low. Hydraulic fracturing can create a permeable pathway deep

into the formation, that allows hydrocarbons to move toward the well at a faster rate. Hydraulic fracturing is widely used in the oil and gas industry, and is an important tool for exploiting alternative hydrocarbon resources, such as coalbed methane, that might be unavailable through conventional drilling practices.

In order to hydraulically fracture the rock formation, water mixtures are injected into the well at high pressure for a few hours, creating a linear fracture in the formation rocks. "Proppants" such as sand or plastic beads are emplaced into the fracture to hold it open and to create a permeable pathway into the well. After the fracturing process concludes, the well is pumped for production. In most cases the resulting fracture is a flat, planar feature oriented vertically along the wellbore, extending from 70 to 500 feet from the well bore.

Prior to 1997, EPA had not considered regulating hydraulic fracturing because the Agency believed that this well production stimulation process did not fall within the Underground Injection Control (UIC) program's regulatory authority under the Safe Drinking Water Act (SDWA). In 1994, the Legal Environmental Assistance Foundation (LEAF) challenged that interpretation by petitioning EPA to withdraw Alabama's EPA-approved section 1425 (SDWA) UIC program because LEAF believed the State should regulate hydraulic fracturing for CBM development as underground injection. EPA rejected LEAF's petition. LEAF challenged EPA's decision and in 1997, the Eleventh Circuit Court of Appeals held that hydraulic fracturing of coalbeds fit within the SDWA definition of underground injection, *LEAF v. EPA*, 118 F.3d 1467, 1478 (11th Cir. 1997). In response to this decision, Alabama modified its UIC program to regulate hydraulic fracturing of coalbeds. In December 1999, EPA approved the revisions to Alabama's Class II UIC program.

Following the Court's decision, and in response to concerns voiced by individuals who may be affected by CBM development, EPA initiated a study to assess the potential for hydraulic fracturing of CBM wells to endanger USDWs. A draft report has been completed and EPA is now accepting comments on the draft report.

The hydraulic fracturing study is narrowly focused to address hydraulic fracturing of CBM wells. It does not address all hydraulic fracturing practices, because (1) CBM wells tend to be shallower and therefore, closer to USDWs than conventional oil and gas

production wells (1,000s of feet below ground surface (bgs) rather than 10,000s of feet bgs); (2) EPA has not received complaints from citizens regarding any other type of hydraulic fracturing; and (3) the Eleventh Circuit litigation concerned hydraulic fracturing in connection with CBM production. The study also does not address other potential impacts of CBM production, such as ground water removal or production water discharge.

Given the enormous variation in geology among and within coalbed basins in the U.S., any evaluation of potential impacts from hydraulic fracturing related to CBM production at a national level must necessarily be broadly focused. In order to best utilize resources in investigating this issue, EPA divided the study into three possible phases, narrowing its focus from general to more specific as findings warrant. Phase I of the study is a limited-scope assessment designed to determine if an in-depth study, including collection of new data, is needed. This draft report summarizes the study's Phase I efforts and findings. Phase I did not include a risk assessment or an evaluation of existing regulations; those steps would be conducted in Phases II and III, if EPA decides to move forward with the study.

The goal of EPA's hydraulic fracturing Phase I study is to determine if a threat to public health as a result of USDW contamination from CBM hydraulic fracturing exists, and if so, if that threat is great enough to warrant further study. The threat to public health from USDW contamination was measured by the presence or absence of documented drinking water well contamination cases caused by CBM hydraulic fracturing, or by a clear and immediate contamination threat to drinking water wells.

EPA's approach for evaluating the threat to public health was to review alleged incidents of drinking water well contamination, as well as evaluate the theoretical potential for hydraulic fracturing to impact drinking water wells. EPA reviewed over 200 peer-reviewed publications, interviewed 50 employees from industry and State or local government agencies, and communicated with approximately 40 citizens and groups who are concerned that CBM production impacted their drinking water wells. We evaluated two potential mechanisms by which hydraulic fracturing may threaten USDWs: (1) The injection of fracturing fluids directly into a USDW, and (2) the creation of a hydraulic communication through a confining layer between the target coalbed formation and adjacent USDWs located either above or below.

Based on the information collected and reviewed, EPA preliminarily believes the potential threats to public health posed by hydraulic fracturing of CBM wells appear to be small, and do not justify additional study. To EPA's knowledge, this study is the most thorough effort ever conducted to examine impacts to public health from hydraulic fracturing. If threats to USDWs from hydraulic fracturing of coalbed methane wells were significant, EPA would expect to have found confirmed instances of water well contamination from the practice. Instead, despite the fact that thousands of coalbed methane wells are fractured annually, EPA did not find persuasive evidence that any drinking water wells had been contaminated by hydraulic fracturing related to CBM production.

EPA did find that the use of diesel fuel in some CBM fracturing fluids runs the risk of introducing hazardous chemicals into USDWs. Our analysis indicates that the injection concentrations of some of these hazardous chemicals may exceed drinking water standards. However, the health risk posed by introduction of these chemicals is reduced significantly by the fact that coalbed methane production is dependent upon the removal of large quantities of ground water (and injected fracture fluids) soon after a well has been hydraulically fractured. EPA believes that this ground water production, combined with the dilution effect from natural formation ground water beyond the outer reaches of the fracture, should minimize the possibility that chemicals included in the fracturing fluids would adversely impact drinking water wells or public health.

Regarding the second potential pathway for contaminants to enter a USDW, coalbed studies to date have found no observed breach of confining (shale) layers from hydraulically-created fractures. This is consistent with the generally understood nature of fracturing behavior.

EPA invites your comment on the draft report.

Dated: August 19, 2002.

**G. Tracy Mehan, III,**

*Assistant Administrator, Office of Water.*

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