

GAO

Report to the Chairman, Subcommittee
on Superfund, Ocean, and Water
Protection, Committee on Environment
and Public Works, U.S. Senate

June 1992

DRINKING WATER

Consumers Often Not Well-informed of Potentially Serious Violations



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June 25, 1992

**The Honorable Frank R. Lautenberg
Chairman, Subcommittee on Superfund,
Ocean, and Water Protection
Committee on Environment and Public Works
United States Senate**

Dear Mr. Chairman:

As requested in your November 19, 1990, letter, we examined the Safe Drinking Water Act's and the Environmental Protection Agency's (EPA) requirements for the public to be notified about violations of drinking water standards. Specifically, we reviewed (1) water systems' compliance with and EPA's and the states' enforcement of the requirements and (2) the effectiveness of the requirements themselves in ensuring that the public receives adequate and timely information. Our report includes several recommendations to the Administrator, EPA, that are aimed at improving the public notification process.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to appropriate congressional committees; the Administrator, EPA; and the Director, Office of Management and Budget. We will also make copies available to others upon request.

This work was performed under the direction of Richard L. Hembra, Director, Environmental Protection Issues, who can be reached at (202) 275-6111. Other major contributors to this report are listed in appendix I.

Sincerely yours,

**J. Dexter Peach
Assistant Comptroller General**

Executive Summary

Purpose

In recent years, public awareness and concern about the quality and safety of drinking water supplied by the nation's public water systems have increased. Health and environmental officials have become increasingly concerned over the potential long-term health effects associated with a variety of man-made chemical contaminants found in drinking water. Many of the contaminants have been linked to cancer, birth defects, and other serious health problems. In addition, concern has been expressed over whether people are being notified promptly, as required, when their water contains such contaminants.

As requested by the Chairman of the Subcommittee on Superfund, Ocean, and Water Protection, Senate Committee on Environment and Public Works, GAO reviewed (1) public water system operators' compliance with and the Environmental Protection Agency's (EPA) and the states' enforcement of the Safe Drinking Water Act's and EPA's requirements for notifying the public of drinking water violations and (2) the effectiveness of the requirements themselves in enabling the public to receive timely and adequate information about violations, without placing an unnecessary burden on water system operators.

Background

To ensure that the public is aware of problems facing water systems, the Safe Drinking Water Act of 1974 requires water system operators to notify their customers each time the system fails to meet one of the drinking water standards for regulated contaminants or to test its supplies as required by the regulations. According to a 1973 House Committee report, these requirements were intended to inform the public of any actual or potential drinking water hazards, as well as to educate the public in order to increase public support for the expenditure of funds necessary to correct drinking water violations.

The Congress revised the public notification requirements in the 1986 amendments to the act. Under EPA's subsequent regulations, which took effect in April 1989, water systems with a violation that can cause immediate illness ("Tier I acute" violations) must furnish public notice to television and radio stations, to be followed by a notice in the newspaper within 14 days and a hand-delivered or mailed notice within 45 days if the violation is not corrected. Water systems with a violation that can cause illness after prolonged periods of drinking contaminated water ("Tier I nonacute" violations) must follow the same schedule beginning with the newspaper notice. Less serious violations concerning monitoring or testing procedures (Tier II violations) require that notice be given within 3

months by newspaper. Follow-up notices for any violations—Tier I and II—that persist must be given every 3 months by hand delivery or mail. Operators must give notice for all minor violations no less frequently than annually. EPA's regulations also require water systems to use certain specified language when issuing the notice for 12 of the regulated contaminants.

As provided by the Safe Drinking Water Act, EPA allows states that have public notice regulations as stringent as the agency's to implement and enforce the act, including the public notification requirements. EPA oversees a state's actions by reviewing the state's regulations and by tracking violations through its Federal Reporting Data System. EPA also has the right to bring an enforcement action against a water system if a state fails to do so. As of May 1992, 46 states had the 1986 public notice requirements in effect.

Results in Brief

On the basis of its review of 28 water systems in 6 states, GAO found that a variety of factors have contributed to high rates of noncompliance with the public notification requirement. Together, the water systems issued timely notice for only 17 of 157 violations. Of the 140 violations in which timely notice was not given, 103 violations involved serious long-term health risks. Part of the problem can be explained by limited enforcement by states against noncomplying water systems and by limited oversight by EPA. A major cause of noncompliance, however, involves the public notification regulations themselves, which have been difficult to understand and implement for many operators—particularly those operating small systems.

Even if total compliance could be achieved, other problems make the notification process less effective than it should be at informing the public of problems with their drinking water. For example, the notices often do not clearly convey appropriate information to the public concerning the health risks associated with a violation and the preventive actions to be taken. GAO also concluded that the public notification process would be more effective in informing the public—and easier to implement by the water systems—if it focused more on serious violations.

Principal Findings

Compliance Low and Enforcement Limited

GAO found that public water system operators often do not issue public notice, even in cases when contamination may pose a serious potential health risk. The operators issued notice for only 58 of the 157 violations requiring it, and in 41 of the 58 instances, the notice came after the required time.

EPA's and the states' efforts to track noncompliance and enforce the notification requirements are limited. Although EPA's data base for the drinking water program contains a category for compliance information, EPA obtains the information only when a state voluntarily chooses to submit it—and few states do so. Additionally, none of the six states GAO reviewed enforces the public notice requirements, beyond sending water systems a routine reminder, unless the water systems' violations of the public notice requirements are addressed as part of a broader enforcement action involving other program requirements.

Regulations Difficult to Implement

The unusually high rates of noncompliance with the public notification requirements cannot simply be explained by lax oversight and enforcement by EPA and the states. Faced with a large and growing burden of other responsibilities in the drinking water program, states and water systems have had difficulty adequately implementing and enforcing the public notification requirements. In particular, they have decided that correcting water contamination and taking enforcement actions against water systems that are classified as "significant noncompliers" should take precedence over ensuring that public notice is issued.

However, GAO found that certain burdensome aspects of the act may also be complicating efforts to ensure compliance with the public notification requirements. GAO found that the number of regulated contaminants and the complexity of the regulations make it difficult for some state officials and system operators to understand and implement the requirements. The regulations pose particular problems for operators of small systems. These operators often do not know all that is required concerning public notification, lack facilities for testing samples, and have trouble drafting notices. Seventeen of the 26 operators expressing an opinion strongly favored additional technical assistance, such as training classes or mailed information on public notice.

Regulations Do Not Ensure That the Public Is Effectively Informed

In addition to posing challenges in implementation, certain aspects of the public notification regulations make it difficult to communicate important information to consumers concerning the quality of their drinking water. For example, EPA's public notification language sometimes confuses customers with technical language and provides little guidance on key matters, such as preventive measures, to take in response to the violations. Using a computer program to provide an indication of notices' readability, GAO found a sample of notices to be written at the college level; EPA intends them to be read by people with an eighth-grade education.

In addition, GAO's contacts with both regulators and the water system operators revealed a strong consensus that the public notification process would be more effective in informing the public—and easier to implement by the water systems—if it focused more on serious violations. Allowing operators to consolidate notices for less serious violations (Tier II) and for educational matters into a semiannual or annual report would differentiate more clearly between public notification for serious or potentially serious violations (Tier I) and for lesser violations and other educational matters.

Recommendations

Among GAO's recommendations to improve the public notification process are that the Administrator, EPA, (1) revise the agency's public notification language so that it highlights the risks posed by violations and uses less technical language and (2) focus notification more on serious violations by allowing water systems to consolidate notices for Tier II violations and educational matters into a semiannual or annual report.

GAO also recommends that the Administrator (1) require states to submit to EPA information on water systems' compliance with the public notification requirements so that the information can be included in the agency's data base for the drinking water program and (2) emphasize to regional and state drinking water officials that violations of the public notification requirements should be considered for enforcement actions, other than a routine letter, even when the actions would not be included in a broader enforcement action involving other program requirements.

Agency Comments

GAO discussed its findings with officials in EPA's Office of Ground Water and Drinking Water, who generally agreed with the information presented. Their comments were included where appropriate. However, as agreed, GAO did not obtain written agency comments.

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Abbreviations

EPA	Environmental Protection Agency
GAO	General Accounting Office
MCL	maximum contaminant level
SNC	significant noncomplier

Introduction

The Congress enacted the Safe Drinking Water Act of 1974, as amended, to ensure that all citizens served by public water systems have high-quality drinking water.¹ Before the act's passage, the federal authority to regulate water systems was limited to those on interstate highways. But the detection of harmful synthetic and organic chemicals in the water supplies of a number of cities in the early 1970s helped demonstrate the need for broader federal protection. A study of 969 public water systems, conducted by the Department of Health, Education, and Welfare in 1970, found additional problems, including bacterial hazards, water systems with archaic equipment, poorly qualified system operators, and inadequate state inspection.² According to the study, a major reason for these problems was that the public was not made adequately aware of the potential danger of drinking contaminated or inadequately treated water.

Safe Drinking Water Act of 1974 Included Public Notification Requirements

The Safe Drinking Water Act of 1974 focused on removing contaminants in water supplies as a preventive health measure. The act directed the Administrator of the Environmental Protection Agency (EPA) to develop national drinking water standards and required public water systems to test their supplies to ensure that they met the standards. In addition, the act established the requirement that water systems notify their customers when one of these standards is exceeded or when water supplies are not tested as required. Under the act, states can have the primary responsibility, or primacy, for enforcing drinking water standards.

As stated in a report of the House Interstate and Foreign Commerce Committee accompanying the act, the purpose of the public notification requirement was to warn the public of potential or actual health hazards and to educate the public about public water systems' performance in maintaining safe drinking water.³

The report added that public education was essential in developing awareness about the problems facing public water systems. This awareness, in turn, could increase the public's willingness to support greater spending to solve these problems.

¹As defined in the act, a public water system has at least 15 service connections or regularly serves at least 25 individuals.

²Cited in H.R. Rep. No. 1185, 93rd Cong., 2d Session, reprinted in U.S. Code Cong. & Ad. p. 6457.

³Id. at 6476-6477.

Following the act's directive, EPA issued regulations in December 1975, setting drinking water standards for a number of contaminants and prescribing the frequency of testing drinking water for each contaminant. In addition, the regulations specified the steps that water system officials were required to take in order to notify the state and the public when a standard was exceeded or when a required testing procedure was violated. Upon learning of a violation, community water systems had to provide a notice to local radio and television stations within 7 days and then publish the notice in local newspapers within 14 days.⁴ Within 3 months, the water systems had to include a notice in customers' water bills. This last means of notification had to be repeated every 3 months for as long as the violation existed.

1986 Amendments to the Safe Drinking Water Act Revised Public Notification Requirements

In 1986, the Congress passed amendments to rectify a number of deficiencies in the implementation of programs under the 1974 act. It was felt that EPA was slow in regulating contaminants, states were slow enforcing the law, small communities were burdened by the act, and groundwater was not adequately protected. The amendments strengthened EPA's enforcement authority and significantly increased the number of contaminants to be regulated. The amendments also revised the public notification requirements to consider the type and severity of the violation committed.

Amendments Changed the Basis of Public Notification

The new public notification requirements generally base the type of public notice needed on the type of violation that the water system has committed. In particular, the amendments distinguish between serious and less serious violations on the basis of their likelihood to cause an adverse health effect.

For violations posing a serious potential adverse health effect, the amendments specify that the public be notified within 14 days. For instance, if a water system exceeds EPA's drinking water standard for mercury, .002 parts per million, the system is required to issue public notice within 14 days of the violation. Under the amendments, notice of continuous violations (for example, monitoring/reporting violations) that do not pose a serious potential health effect shall be given no less frequently than every 3 months. Any notice of violations judged to be less

⁴Community water systems primarily serve year-round residents. EPA's regulations for noncommunity systems—which operate at sites such as campgrounds and other public accommodations and which serve transient or intermittent users at least 60 days of the year—required the posting of notices.

serious, such as missing an occasional sample in a series of samples, shall be given no less frequently than annually.

The act stipulates that all notices must clearly and understandably explain the violation; any potential adverse health effects associated with it; the steps that the water system is taking to correct it; and, if applicable, the necessity for seeking alternative water supplies.

EPA's Public Notification Regulations Add Specificity

According to the Deputy Director of the Enforcement and Program Implementation Division, Office of Ground Water and Drinking Water, the amendments were meant to tailor the notices to the severity of the problem. In drafting the regulations to carry out the 1986 amendments, EPA specified very precise requirements for the content, method, and frequency of public notification. Concerning the content, EPA specified mandatory statements to be used in notices when "maximum contaminant level" health standards are exceeded for certain contaminants. Concerning the method and frequency of notifying the public, EPA added to the amendments' requirements:

1. EPA categorizes violations that pose an immediate adverse health effect, such as violations of the nitrate standard, as Tier I acute violations. The agency specifies that notice for such a violation be given as follows:

- The notice must be furnished within 72 hours to radio and television stations serving the area.
- The initial notice is to be followed with a notice using a daily or weekly newspaper within 14 days of the violation.⁵
- When such a violation continues, the notice must be issued again via mail or hand delivery within 45 days of the violation.⁶
- The notice must be repeated using mail or hand delivery every 3 months for the duration of the violation.

2. EPA categorizes violations that pose a serious potential health effect, such as those involving long-term cancer risks, as Tier I nonacute violations. EPA specifies that notice for these violations be issued as follows:

⁵If no newspaper of general circulation is available, posting or hand delivery is required.

⁶The state may waive the requirement for notice via mail or hand delivery if it determines that the owner or operator of the water system in violation has corrected the violation within the 45-day period.

- The notice must be given using a daily or weekly newspaper within 14 days of the violation.
- If the violation is not corrected, a second notice is to be issued using either the mail or hand delivery within 45 days of the violation.
- The notice must be repeated using mail or hand delivery every 3 months for the duration of the violation.

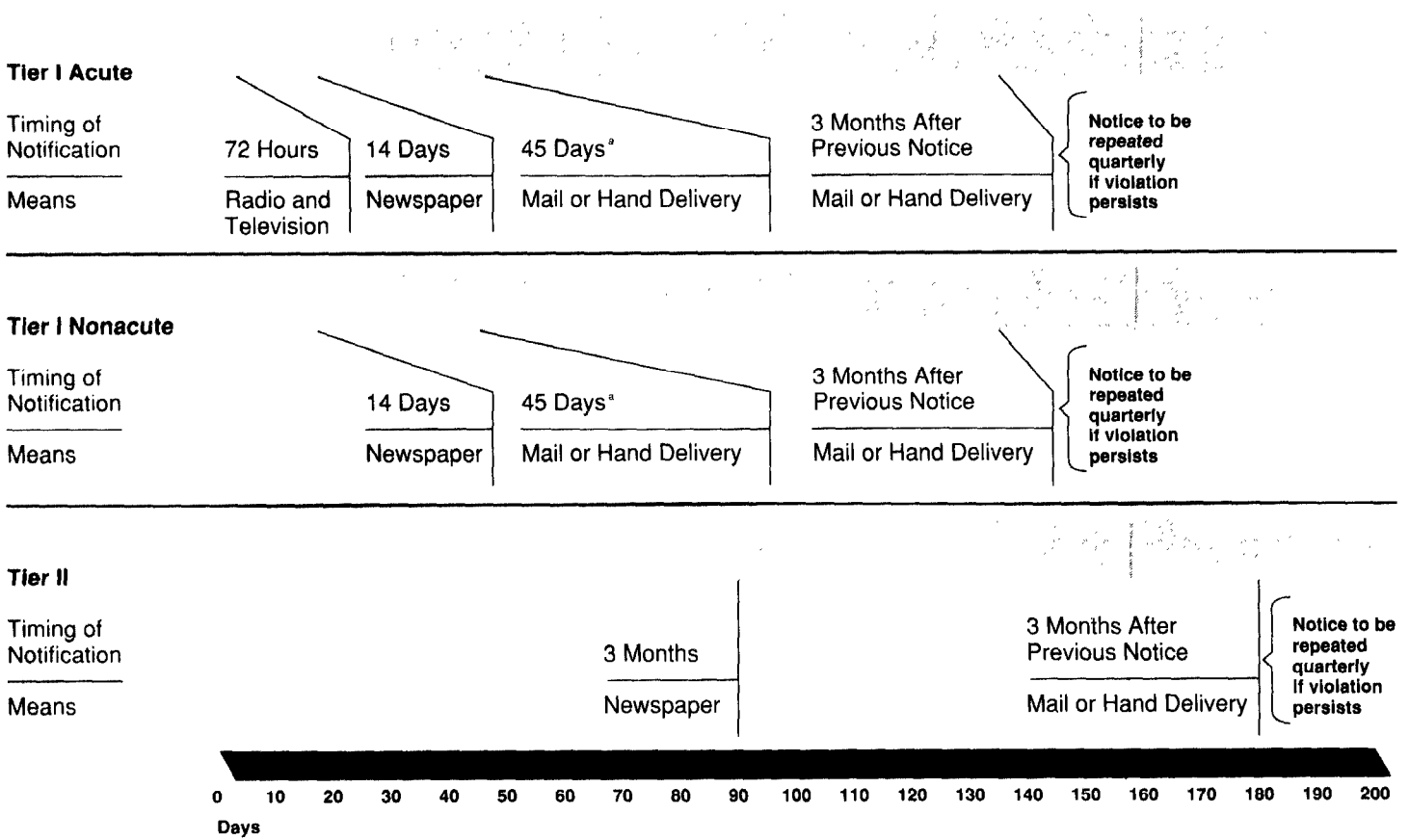
3. EPA categorizes violations that in general have a less direct effect on public health as Tier II violations. These violations occur when the owner or operator of a public water system fails to perform required monitoring or to comply with a testing procedure. EPA requires that the public be notified when these violations occur, or when a water system has been granted a variance or exemption,⁷ as follows:

- The notice must be issued using a daily or weekly newspaper within 3 months of the violation or granting of the variance or exemption.
- The notice must be repeated using mail or hand delivery every 3 months for the duration of the violation or variance or exemption.

Community water systems must also provide new customers notice of any existing Tier I acute or nonacute violations. A copy of the most recent public notice must be given to all new units or hookups before or at the time service begins. Figure 1.1 summarizes EPA's requirements concerning the method and timing of notification.

⁷A variance may be a waiver granted by EPA or the state in cases in which a water system cannot, even using the best treatment technique, achieve a drinking water standard because the quality of the water source is too poor. An exemption may be a waiver granted by EPA or the state to a system unable to comply with a standard because of "compelling factors," including economic constraints. Before issuing either a variance or exemption, EPA or the state must find that the measure will not result in an unreasonable risk to health. Public water systems granted variances or exemptions are placed on a schedule for compliance.

Figure 1.1: Frequency and Method of Notifying the Public



Additionally, the state has the option of requiring notices for certain less serious Tier II violations annually rather than quarterly, as illustrated in the following example. Certain water systems are required to sample for coliform bacteria 40 times each month. If such a system does not take one or two of the required samples, the state has the option of extending the time frame for notifying the public of that violation from 3 months to within 1 year of its occurrence. EPA regulations allow several of these types of minor violations to be consolidated into one annual report, thus potentially reducing the number of times that the system must issue public notification. For a state to reduce the required time frame for public notification from quarterly to annually, the state must submit to EPA the

criteria for judging which violations are less serious and the methods of public notification to be required for these violations. EPA must approve these criteria before they are adopted. As discussed in chapter 2, many states have not used this option.

EPA has also stipulated that public water systems must monitor for contaminants for which EPA has not established maximum contaminant levels. Public water systems are required to inform their customers about the availability of these test results. The results of the monitoring may be used to assist EPA in determining the maximum contaminant levels for unregulated contaminants.

EPA's revised public notification regulations became effective on April 28, 1989.

Compliance and Enforcement Procedures Have Been Established

In order to comply with the act, public water systems in most states are required to collect samples of their drinking water and have the samples analyzed for contaminants by approved laboratories.⁸ Water system officials are required to issue public notice for all violations of the drinking water regulations, including monitoring violations. When samples exceed the maximum contaminant level, a public water system is required to report the results to state officials within 48 hours of detecting the violation. The state then reviews whether the system complied with monitoring requirements and drinking water standards for the violation. Although the public water system should issue public notice without being prompted by the state, we found that the state, upon confirming that a violation occurred, often informs the water system that public notice is required. Additionally, the state is required to report the violation to EPA.

A state cannot pursue enforcement actions unless it has regulations in effect that are at least as stringent as EPA's and provide for adequate enforcement. Once EPA determines that these requirements are satisfied, enforcement responsibility for the act, including violations of public notification requirements, transfers from EPA to the state. Thus, the state has primacy in administering the requirements.⁹

⁸Seven of the states and territories that have implemented their public notice program perform all water monitoring activities for their water systems. In these states, it is unlikely that the sampling for a water system would be late because the state and its labs are involved in the entire process.

⁹As of May 1992, 46 states had the 1986 public notice amendments in effect.

When public water systems fail to comply with the federal public notification regulations, they are subject to enforcement action to compel compliance, including federal authority to assess a civil penalty of up to \$25,000 per day of the violation—as is the case with other drinking water violations. If EPA finds that a public water system in a state with primacy does not comply with the regulations, EPA shall notify the state and the water system. If after 30 days, the state has not commenced appropriate enforcement, EPA may issue an administrative order or commence civil action against the system in violation.

Objectives, Scope, and Methodology

Citing the importance of safe drinking water to public health, the Chairman, Subcommittee on Superfund, Ocean, and Water Protection, Senate Committee on Environment and Public Works, asked us to determine whether public water systems are complying with the public notification requirements of the Safe Drinking Water Act. On the basis of the Chairman's request and subsequent discussions with his office, we agreed to address the following questions:

- Are public water system officials complying with and are state and EPA officials enforcing the Safe Drinking Water Act's requirement to notify consumers of drinking water violations?
- Are the public notification requirements themselves effective in enabling the public to receive timely and adequate information about violations of drinking water standards, without placing an unnecessary burden on water system operators?

To answer these questions, we relied primarily on information gathered from a review of 6 state drinking water offices and 28 public water systems in those states. We selected the six states (Arizona, New Jersey, Ohio, Tennessee, Texas, and Washington) on the basis of two criteria. First, in order to examine systems that were required to comply with the regulations implementing the 1986 amendments, we chose states that implemented their public notification regulations by December 31, 1989—EPA's regulations took effect on April 28, 1989. Second, we selected states that placed responsibility for sampling drinking water on their public water systems. This enabled us to examine water systems' performance in issuing public notice not only for drinking water violations but also for requirements to monitor the water. Our compliance review looked at violations from April 28, 1989, to March 31, 1991.

We selected between five and seven public water systems from each state we visited, using two additional criteria. Using EPA's tracking system for each state, the Federal Reporting Data System (FRDS), we chose at least one public water system from each of EPA's three size categories on the basis of the number of customers served: small, medium, and large. Our review focused on community water systems, which are the primary source of drinking water for most Americans. Currently, there are 58,000 community water systems in the United States. Of this total, 60 percent serve 500 people or fewer. In addition, small water systems account for 90 percent of all violations. To address the issues facing small water systems, where possible, we visited two very small systems (serving fewer than 500 people) and two small systems (serving between 500 and 3,299) in each state. We also visited, where possible, one medium sized (serving 3,300 to 9,999) and one large (serving 10,000 or greater) water system in each state. With one exception, we picked water systems that, according to EPA's data base, had between two and six violations of maximum contaminant levels or monitoring requirements—a range covering the typical number of violations for all public water systems that committed violations during the time of our review, according to EPA. One large system we picked had 24 turbidity violations listed in FRDS. We visited this system to obtain the views of a large system on multiple public notices.

To determine states' and EPA's enforcement of the public notification requirements, we first interviewed headquarters officials to understand how EPA and the states track system operators' compliance with public notification requirements. In each state visited, we also examined files concerning systems' violations and issued notices. In addition, we surveyed state and public water system officials about their tracking procedures.

Once we gained an understanding of EPA's and states' oversight, we examined water systems' compliance with public notification requirements by tracking individual violations from the federal level to the state and local levels. First, using FRDS we compiled information concerning systems' violations and subsequent issuances of public notification for the 28 public water systems. Second, we tracked the information gathered from EPA to the state and water system levels, where we gathered actual copies of public notices to prove their issuance. To review the process and procedures for issuing public notice, we also obtained all documentation of correspondence between the state and the public water systems as it pertained to public notice.

To determine the effectiveness of the public notification requirements, we conducted surveys of officials in 9 states and of 36 water systems about (1) the resources they devote to adopting and implementing the public notice rule, (2) the public's reaction to receiving public notice, and (3) their opinions regarding the effectiveness of the current public notification requirements. The interviews were conducted from March 1991 to October 1991. Twenty four of the 36 interviews were conducted in person; the remaining 12 interviews were conducted by telephone. Our survey also asked these officials' opinions about alternative methods of providing public notice. The 36 public water systems that we reviewed are not intended to be a representative sample of the 58,000 community water systems in the country. We also obtained the views of officials from the American Water Works Association, the National Association of Water Companies, the National Wildlife Federation, and the National Rural Water Association, as well as officials from the Circuit Rider Program, given their extensive exposure to the issues faced by smaller water systems.¹⁰

Our analysis of the effectiveness of public notice included interviews with officials from three additional state drinking water offices (in Maryland, Delaware, and Pennsylvania). We omitted these three states and their associated public water systems from the compliance review because they did not meet all the criteria for the review.

In order to obtain an idea of the reading level necessary to comprehend public notices, we analyzed EPA's (1) mandatory and recommended statements on potential health risks and (2) actual examples of issued notices with a software package that measures readability.

Our work was conducted between February 1991 and March 1992 in accordance with generally accepted government auditing standards. During our review, we discussed our findings with EPA officials from the Office of Ground Water and Drinking Water responsible for implementing and enforcing the public notification requirements and incorporated their comments where appropriate. In general, they agreed with our findings. As requested, however, we did not obtain written agency comments on a draft of this report.

¹⁰The Circuit Rider Program is funded by the Farmers Home Administration. "Circuit Riders," who usually have experience operating water systems, are contracted by the state to give technical assistance to public water systems serving fewer than 10,000 people. These officials do not have any enforcement authority.

Public Water Systems' Compliance Low; EPA's and States' Enforcement Limited

In our review of 28 water systems in six states, we found that for 157 violations requiring public notification, timely notice was given in only 17 cases. None of the 157 violations were for Tier I acute violations, which may pose immediate health risks, such as an outbreak of illness. Of the 140 violations for which timely notice was not given, 103 could have posed serious long-term health risks. Thus, even when violations posed serious potential health risks, the public typically either was not informed or was informed late. Water systems' low compliance with the requirements can partially be attributed to states' and EPA's limited involvement with the public notification process. State drinking water officials in all six states indicated that violations of public notification requirements alone never trigger enforcement action, beyond a routine reminder to the water system. At the federal level, EPA's tracking of noncompliance with and enforcement of the public notification regulations are also limited.

According to EPA and state officials, a major contributor to the problem of noncompliance is a serious shortage of resources in the drinking water program. Faced with a large and growing burden of other program responsibilities, officials have chosen to emphasize correcting water contamination and taking enforcement actions against systems that are classified as "significant noncompliers."¹ We acknowledge, as we have in the past, that the shortage of resources in the drinking water program is a serious concern.² In this particular case, however, we found that the problem is compounded by requirements in the public notice regulations—discussed in chapter 3—that are complex and difficult to implement and that reduce the effectiveness of notification.

Noncompliance With Public Notification Requirements Common; Issuances Normally Past EPA's Time Frames

In our review, we found that the 28 water systems often did not issue public notices, even when violations had the potential for resulting in serious long-term health effects. When the water systems did issue notices, they were usually past the time frames stipulated by EPA's regulations implementing the act. Compliance problems will probably increase as additional requirements of the Safe Drinking Water Act, as amended, take effect. One example is the increased monitoring for drinking water contaminants scheduled to become subject to regulation.

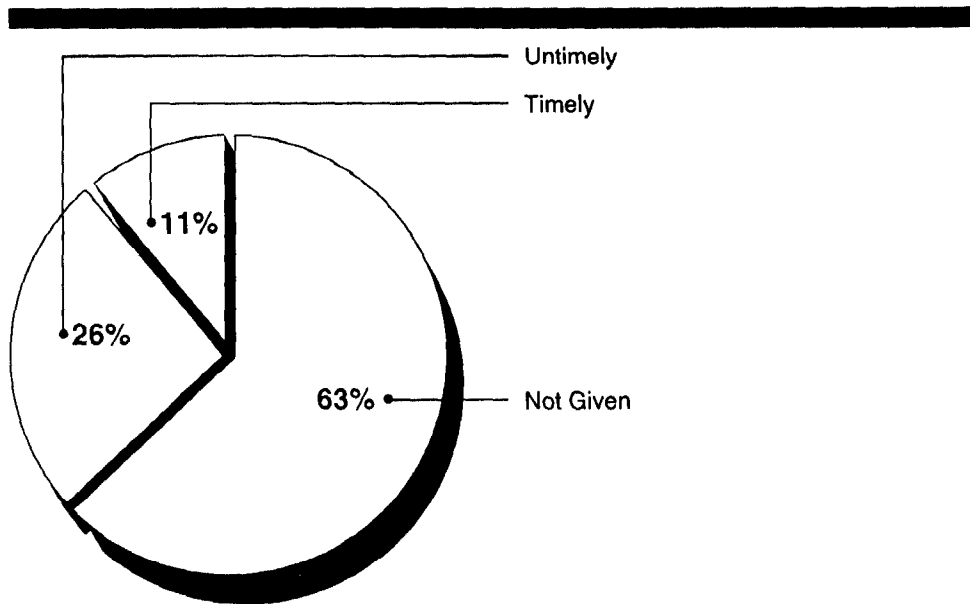
¹Community water system may be classified as significant noncompliers depending on either (1) the frequency with which they violate program requirements or (2) the severity of their violations (e.g., the extent to which they exceed a contaminant level). Under EPA's enforcement policy, enforcement actions are targeted largely on significant noncompliers, according to EPA program managers.

²Drinking Water: Compliance Problems Undermine EPA Program as New Challenges Emerge (GAO/RCED-90-127, June 8, 1990).

Compliance With Public Notification Requirements Sporadic

The 28 public water systems in our review committed a total of 157 violations of the amended Safe Drinking Water Act's requirements from April 28, 1989, to March 31, 1991. While water system officials issued notices for 58 of these violations, only 17 of the notices were issued within EPA's specified time frames. Of the 140 violations for which timely notice was not issued, 103 were Tier I nonacute violations, which may pose serious long-term health risks. Late notices ranged from being a few days to 4 months past EPA's deadlines. However, we found no evidence of outbreaks of illness stemming from the drinking water violations and noncompliance with public notice requirements. (See fig. 2.1.)

Figure 2.1: Water Systems' Performance in Issuing Notices for All Types of Violations



Note: The total number of violations was 157.

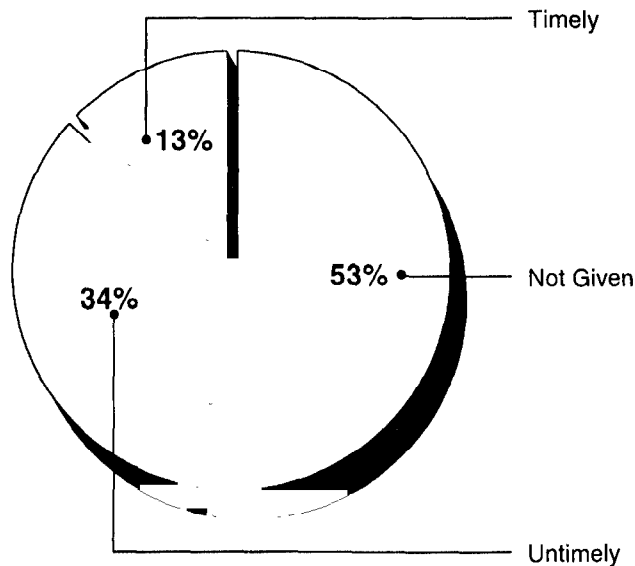
Source: GAO's survey of 28 public water systems.

Out of the 157 violations, none were Tier I acute violations, which pose an immediate adverse health risk; however, 118 were Tier I nonacute violations, which pose serious potential long-term health risks. Such violations generally do not affect people drinking the water in the short term. For example, low levels of benzene, a carcinogen, in drinking water

may increase the risk of cancer for people consuming the water for an extended period of time.

For the 118 Tier I nonacute violations, public notice was issued in only 55 cases. In all but 15 of these cases, the initial notice was issued past the 2-week deadline. In 18 of the 55 cases, the initial notice was issued more than 1 month past EPA's deadline. (See fig. 2.2.)

Figure 2.2: Water Systems' Performance in Issuing Notice for Tier I Nonacute Violations



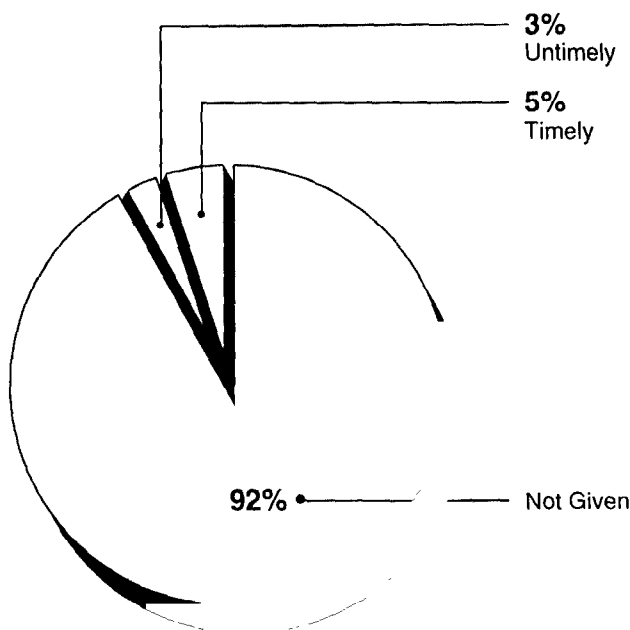
Note: The total number of Tier I nonacute violations was 118.

Source: GAO's survey of 28 public water systems.

Most of the public water systems we reviewed did not comply with EPA's requirements for informing the public about monitoring or testing violations (Tier II violations). Also, most of the systems did not inform the public about the availability of test results for unregulated contaminants or notify new customers of past violations. For the 39 Tier II violations that we reviewed, public notice was issued in only three cases. In one of the three cases, the initial notice was issued past the required 3-month time frame. In the remaining two cases, notice was timely in informing the public about monitoring violations. (See fig. 2.3.) Three of the 28 public

water systems we reviewed issued the required public notification informing the public about the availability of test results for unregulated contaminants. Furthermore, only 1 of the 28 water systems in our review stated that it met the requirement to notify new customers of past violations. The system operator did not provide us with a copy of the notice.

Figure 2.3: Water Systems' Performance in Issuing Notice for Tier II Violations



Note: The total number of Tier II violations was 39.

Source: GAO's survey of 28 public water systems.

Compliance Probably Will Become More Difficult for Water Systems

Many EPA, state, and public water system officials anticipate that complying with the public notice regulations will become more difficult for water systems as states continue to implement the changes dictated by the 1986 amendments to the Safe Drinking Water Act. Eventually, these amendments will require water systems to monitor for 83 contaminants and issue notice when standards for any of the 83 are exceeded.³ Public water system officials expressed particular concern about their ability to

³As of April 20, 1992, regulations are in effect for 31 of the 83 contaminants.

issue timely public notice for violations of the New Total Coliform Rule, which recently took effect.

According to EPA and state officials, total coliform bacteria are common in the environment. Some strains are harmless to humans, while others can have immediate health implications. Two such strains are E. Coli and fecal coliform. These strains are not, generally, harmful in and of themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. Human consumption of these strains of coliform bacteria therefore can result in diarrhea, cramps, nausea, possibly jaundice, and associated headache and fatigue.

Consequently, EPA officials agree that prompt notification for contamination by E. Coli and fecal coliform can be crucial in order to reduce potential adverse health effects. The New Total Coliform Rule reduces the amount of time allowed for public notification when violations involve E. Coli and fecal. Instead of requiring public notification using the newspaper within 14 days of the detection, as the old rule did, the new rule requires that notice of violations involving E. Coli and fecal coliform be furnished to the electronic media within 72 hours of the detection.⁴ Under the New Total Coliform Rule, the sampling and testing procedures are more complex because of the need to isolate particular organisms and strains of the bacteria. Any initial detection of the total coliform bacteria must be confirmed within 24 hours, with another sample checking for the presence of E. Coli or fecal coliform. Some officials believe the time necessary to take and test the confirmatory sample will make it more difficult for public water systems with acute violations to issue public notification in a timely manner.

Violations of the standard for total coliform were prevalent during our review; in fact, 69 of the 118 serious violations involved the detection of total coliform. Had the New Total Coliform Rule been in effect throughout our compliance review, all 69 total coliform violations would have required the repeat testing necessary to check for E. Coli and fecal coliform. Any of the confirmatory tests showing the presence of E. Coli or fecal coliform would have resulted in Tier I acute violations and warranted public notice within 72 hours of the detection.

⁴During most of our compliance review, EPA's regulations did not distinguish between different strains of coliform bacteria with regard to public notification. Prior to December 31, 1990, all coliform violations were classified by EPA as Tier 1 nonacute violations, requiring public notice within 14 days of their detection. However, as of December 31, 1990, EPA changed its public notification regulations to distinguish between violations based on the amount of total coliform present and violations involving E. Coli and fecal coliform. Violations involving these two strains of coliform became Tier I acute violations, requiring that notice be given within 72 hours.

Limited Oversight and Enforcement by States and EPA

Despite high levels of noncompliance, states' and EPA's efforts to oversee and enforce the notification requirements are limited. A principal reason is the lack of resources, according to state drinking water officials. States track a limited number of violations and frequently do not report to EPA the information obtained. For its part, EPA does not specifically require public notification compliance information from states. Accordingly, states' reporting of noncompliance with the public notification requirements has been sporadic. Additionally, neither EPA nor any of the states we reviewed take enforcement action for violations of public notice requirements—beyond a routine reminder to the water system—unless the action is part of a broader enforcement action involving other drinking water program requirements. Officials from one state told us that they never enforce the public notification regulations even in conjunction with other enforcement actions.

States and EPA Do Not Systematically Track Compliance With Public Notification Regulations

Tracking of violations of drinking water standards and oversight of water systems' performance in subsequently issuing public notice varies in the six states reviewed. Generally, however, states' oversight is limited. A drinking water official from Arizona stated that when the state learns of violations, it generally does little to encourage the water systems to issue public notice. An official for Texas, however, said the state sends letters to the water systems, follows up with phone calls, and eventually, if need be, issues public notice for the systems. When water systems issue public notices, the states we reviewed generally require water systems to forward copies to the state offices. However, some of the states we reviewed do not forward the public notice compliance information submitted by the water systems to EPA. Subsequently, public notice for these violations may not be tracked at the federal level.

At the federal level, we found that EPA tracks very little data on public water systems' compliance with the public notification regulations. EPA's primary method of tracking compliance is through its FRDS. Although this data base has a category for information on compliance with public notification requirements, EPA does not require states to submit the information. An EPA official explained that while the agency has a generic requirement for states to submit information on drinking water violations, the guidance does not specifically require information on compliance with public notification regulations. In the absence of a requirement to submit specific information, states often simply have chosen not to do so.

The lack of information pertaining to systems' compliance with public notification requirements affects EPA's ability to know whether or not the public is being informed about violations. Without accurate data on issuances of public notice, EPA cannot perform enforcement duties when states do not inform EPA of water systems' failure to comply with regulations.

States' and EPA's
Enforcement of Public
Notification Requirements
Has Been Limited

Despite high levels of noncompliance with public notification requirements during the period covered by our compliance review (December 31, 1989, to March 31, 1991), neither the states nor EPA had taken any enforcement action against a public water system—beyond sending a reminder to the water system—solely for a failure to issue public notice. Their lack of enforcement activity may be one of the catalysts behind the low levels of compliance with the public notification requirements. In Arizona, for instance, the six water systems reviewed had 35 violations, yet only once was public notice issued. The state drinking water agency did not take enforcement action in any of the 34 instances in which water systems did not issue public notice, according to an official from Arizona's Department of Environmental Quality.

While no state in our review had taken action against any public water system solely for the failure to issue notice, beyond sending the routine reminder, three states reported having taken action for failure to issue public notice when they pursued a broader enforcement action against a system that was a significant noncomplier.

Officials indicated that not having adequate funding and staff time is one primary reason for states' and EPA's limited enforcement of the public notification regulations. The officials explained that given the limited funding for the entire agenda of the drinking water program, there is little money or staff time left to adequately implement and enforce all of the public notification requirements, which officials consider a low priority. They believe that correcting water contamination, taking enforcement actions against systems significantly out of compliance with other drinking water regulations, and meeting increasing responsibilities for protecting drinking water take precedence over ensuring that public notice gets issued.

Nationwide, enforcement may also have been hindered by states' slowness in adopting public notice regulations, which enable the states to take enforcement action. While EPA's regulations implementing 1986 public

notification amendments to the Safe Drinking Water Act became effective on April 28, 1989, all but 11 states were late in adopting them.⁵

In addition, in our review we found a discrepancy between EPA's requirements and those that are adopted at the state level. One of the states adopted public notification regulations that allow longer time frames to issue public notices than the EPA regulations allow. In this case, Delaware allows 144 hours for a public water system to issue public notice for acute violations, rather than the designated 72 hours.

As discussed in greater detail in chapter 3, another explanation for EPA's and the states' limited enforcement may be that some requirements are not always achievable. According to EPA and state officials, certain requirements listed in the regulations cannot be enforced by the current staff devoted to such activities. Specifically, according to an EPA official, when water systems are required to furnish notice of a Tier I acute violation to the electronic media within 72 hours, it would be almost impossible for the states and EPA to intervene to inform the public in a timely manner. He explained that neither EPA nor the states have the time or staff necessary to monitor and enforce the requirement within 72 hours of the detection of the contaminant. He further stated that because of these constraints, the enforcement of the requirement is negligible.

Most states in our review, even after adopting public notification regulations similar to those required by EPA, in actuality, do not request their water systems to issue public notice for all of the situations specified. States' varying from EPA's required enforcement practices is especially prevalent for violations not posing immediate health concerns (Tier II). For example, in our review only three of the states always reminded their public water systems to issue notice for monitoring violations. In addition, four of the six states that we reviewed did not always request public water systems to notify the public about the availability of test results for unregulated contaminants. None of the states always informed operators to issue public notice for violations that have been corrected.

Conclusions

Compliance with EPA's public notification regulations, in the 28 water systems that we reviewed, has been very low. For the 157 violations requiring public notification, timely notice was given in only 17 cases. Many of the 157 violations involved elevated levels of contaminants that may pose a serious long-term health risk.

⁵As of May 1992, 46 states had their version of the amended public notice regulations in effect.

To some extent, the problem can be attributed to limited efforts by EPA and the states to track violations of the notification requirements and to enforce the requirements. This lack of information affects EPA's ability to know whether or not the public is being informed about violations. Additionally, neither EPA nor any of the states we reviewed enforces public notification requirements—beyond sending a routine reminder—unless the violations are the subject of a broader enforcement action involving other program requirements.

Such low compliance by water systems reflects the low priority given at the water system, state, and federal levels to public notification. Faced with a large and growing burden of other responsibilities within the drinking water program, states and water systems have had difficulty in adequately implementing and enforcing the public notification requirements. In particular, the states and water systems—along with EPA—have decided that correcting water contamination and taking enforcement actions against significant noncompliers should take precedence over ensuring that public notice is issued.

As discussed in chapter 3, however, certain burdensome aspects of the regulations may also be complicating efforts to ensure compliance with the public notification requirements. Therefore, we believe that any efforts to strengthen oversight and enforcement would be most effective accompanied by efforts to make the regulations themselves more workable and effective in notifying the public of serious drinking water problems.

Recommendations

We recommend that the Administrator, EPA, take the following steps:

- Require states to submit to EPA information on water systems' compliance with the public notification requirement for inclusion in the FRDS.
- Emphasize to regional and state drinking water officials that violations of the public notification requirements should be considered for enforcement action (beyond a routine reminder) pursuant to the agency's enforcement policy, even when the action would not be included in a broader enforcement action involving other program requirements.

Change to Regulations Could Improve Public Notification Process

The unusually high rate of water systems' noncompliance with the public notification requirements—89 percent for the 157 violations we reviewed—cannot simply be explained by lax oversight and enforcement by EPA and the states. We found that a large part of the problem lies with the regulations themselves, which many operators—particularly those of small systems—have found difficult to understand and implement. It is particularly important that the public notification regulations be easy to implement in light of the wide range of other responsibilities required by 1986 amendments to the Safe Drinking Water Act.

In addition to posing challenges in implementation, the public notification regulations include aspects that make it difficult to communicate important information to consumers concerning the quality of their drinking water. For example, (1) public notices sometimes confuse customers with technical language and omit key matters, such as the preventive measures that should be taken in response to a violation, and (2) the regulations sometimes encourage or require the use of methods of public notification that are ineffective in some situations. We also found that the public notification process could be more effective in informing the public—and easier to implement by the water systems—if the process focused more on serious violations.

Regulations Are Difficult to Implement

According to state and water system officials and representatives of the Circuit Rider Program and other organizations we contacted, key reasons why the public notice requirements are difficult to implement include the following: (1) The public water systems (particularly small ones) lack the resources and expertise to implement the act, in general, so the systems are unlikely to properly issue public notice. (2) Even system operators who understand other aspects of the act have trouble understanding all that is required to avoid having to issue public notice or to issue public notice correctly when required.

Operators Confused and Burdened by Many Drinking Water Regulations

Public water system operators are often confused by other portions of the Safe Drinking Water Act regulations that they must follow in order to avoid issuing public notification. Many state and water system officials expressed frustration with the complexity of the act and EPA's and the states' regulations implementing it. As new regulatory requirements under the 1986 amendments to the act take effect, an already complex program becomes more difficult for EPA, the states, and water systems to implement. The prescribed water sampling, for instance, requires water

system operators to test their water for 31 contaminants, abiding by the method and frequency required for each. The nature of the sampling is becoming increasingly technical, and the amount of required sampling is increasing as additional contaminants become subject to regulations. For small systems in particular, where operators—who are often part-time—are more likely to be independently trained or inexperienced, such requirements are difficult to meet.¹

Public water system operators in all but seven states are responsible for understanding the testing requirements for the 31 contaminants currently monitored by EPA. (Seven states perform all monitoring and testing for the public water systems.) In order to know if a standard for a contaminant has been exceeded, water systems must be able to perform the required testing. When the operators do not perform all required tests, they are required to notify the public of this violation.

The small systems face the greatest technical and financial challenges in complying with the 1986 amendments to the act. According to EPA, 45,000 of the 58,000 community systems will need improved facilities, equipment, and training to meet the new requirements, particularly for monitoring. Much of the existing equipment is old and incapable of meeting new testing requirements. These improvements for all systems are estimated to cost billions of dollars, yet, as we pointed out in our June 1990 report, the revenue supplied by small systems' ratepayers is typically inadequate to finance the needed improvements. Currently, small systems account for 90 percent of all drinking water violations.

Operators Find Public Notification Regulations Difficult to Follow

System operators who can understand and perform other requirements still find the public notification requirements confusing. Though state offices generally provide public water system operators a copy of the public notice regulations, many operators, particularly those for small systems, stated that they do not understand what is needed concerning public notification and have trouble drafting notices. During our review, some public water system officials told us that they were unaware of certain public notification requirements, such as notifying new customers about preexisting Tier I violations.

¹According to a National Rural Water Association official, 90 percent of all water systems are small (serving fewer than 3,300 people); these systems serve 8 percent of the population. Ten percent of all water systems are medium-sized to large (serving 3,300 people or more); these systems serve 92 percent of the population.

Intended for public water systems, EPA's guidance document on public notice is a four-page summary providing an overview of the public notice requirements. The document does not provide any details for the different contaminants.² Yet in order to issue public notice correctly, water systems must know the method of notice required for each type of violation, the date regulations for the various contaminants became effective, and the contaminants that require the use of specific language in the notice. Some of the contaminants have different phase-in periods for testing that are determined by the size of the system. EPA's regulations informing the operators of the schedule governing testing for these contaminants may be issued separately from other schedules.

Currently, EPA's principal method of conveying the updated information on contaminants to operators is through the Federal Register. However, this document is not made readily available to the operators even though their prompt receipt of rule changes and new requirements helps to ensure compliance. Responsibility for obtaining this information rests with the operators.

When an operator violates a regulation, the operator frequently must sort through different portions of the regulations and the Federal Register to find the health language and the sampling schedule that is needed to issue public notice correctly. The operator must also decide whether the violation is Tier I acute, Tier I nonacute, or Tier II. Once this is established, the operator must next consider the timing, method, content, and format for the notice. These decisions appear to be especially difficult at the small public water systems, where operators are uninformed about many drinking water regulations, the time frames for implementing new requirements, and subsequent public notification requirements. When operators do not have all the regulations in one place, the decisions concerning public notice may be even more difficult. Consequently, some operators, particularly those for small systems, rely on the state drinking water officials to help them issue public notification correctly. Seventeen out of 26 operators interviewed supported additional technical assistance to help them understand the public notification regulations.

One particular point of confusion concerns EPA's regulation to furnish notices for Tier I acute violation to the electronic media within 72 hours of the violation. The usual procedures to sample for contaminants involve an

²EPA has published two other documents that discuss public notice. The first document, General Public Notification for Public Water Systems, is intended primarily for the states' use, according to an EPA official. The second document, a yellow pamphlet entitled "Public Notification: Reporting of Violations of Drinking Water Standards," is intended primarily for the public.

operator's collecting a sample and sending it to a commercial lab for testing. The lab, in turn, either (1) mails the results to the operator and the state; (2) mails the results to the operator, who forwards them to the state; or (3) mails the results to the state office, which forwards the information to the water system. Currently, there is some confusion concerning when "the 72-hour clock" starts.³ Several EPA drinking water officials and two state drinking water officials consider the 72-hour time frame to start after the lab informs the operator of the violation. In contrast, four states start their 72-hour clock after the state informs the operator of the violation. Many state officials expressed concern over the 72-hour requirement and said it will be a burden for the public water systems to meet. Additionally, some operators said EPA's time frames are too strict. These concerns could result in frustration and lower compliance.

State Officials Agree That
Public Notice Regulations
Are Difficult to Understand

Several state officials acknowledged that the public notice regulations are difficult for operators to understand and follow. The officials indicated that if they had more time and resources, they would tailor EPA's regulations to make the procedures for issuing notices understood by a higher percentage of water system operators.

Some states, such as New Jersey, address the problem of limited resources by adopting EPA's regulations by reference. This procedure refers the operator directly to EPA's regulations and does not require the state to provide any additional interpretation of what the regulations mean. Rather, the state regulations are a duplicate of the federal ones. Other states deal with the complexity of the regulations by waiting until the problem areas are corrected before making the public notice regulations effective. Pennsylvania is attempting to address the complexity of the regulations by spelling out for each of EPA's three water system size categories the effect that the public notice rule changes will have on them. Writing state regulations in this detail, however, requires more time than is currently allowed for adopting the public notice rule, according to one Pennsylvania official.

Some state officials have devised methods to make public notification easier. Specifically, officials from three of the state drinking water offices that we contacted issue "blank" copies of public notification to public water systems so that the operators need to fill in only the items particular to their violation. Those states not using this practice agreed that it could

³EPA intended that the time frame for issuing public notice for acute violations start when the system has sufficient data from the lab or other sources to make a compliance determination, according to agency officials.

help water systems in their efforts to comply with the public notice requirements.

**Operators Concerned
About False Positives
Appear Hesitant to Issue
Notice**

Concern over false positive test results is another reason that some operators gave to explain the noncompliance with notification requirements. Two operators said that they wait until they confirm that their water is contaminated before they issue public notification. Some persons commenting on EPA's New Coliform Rule fear that false positive test results will become more prevalent because the new criterion for exceeding the maximum contaminant level is based on the presence or absence of total coliform, rather than the old standard of exceeding a specified coliform density. In some public water system operators' opinions, some commercial lab technicians may not be adequately trained in sampling procedures for total coliform and may contaminate the samples with dirty hands. This leads to false positives. We were told by two public water system operators of cases in which operators postponed issuing public notice because of concern about false positives.

The issue of false positive test results is not limited to coliform violations, however. For certain contaminants, such as volatile organic chemicals, one false positive test result can require repeat testing for up to 3 years. Some state officials stated that this has the potential to create an incentive for the labs to find unsubstantiated violations and thereby "generate business." One state official acknowledged the potential for this abuse by labs and said his state recently saw a number of high results for these chemicals. When the state tried to verify the lab's data, it did not get as many high readings.

**Content of Public
Notification Could
Better Inform the
Public**

According to EPA's regulations, public notice should clearly explain (1) the violation; (2) any potential adverse health effects associated with it; (3) the steps the water system is taking to correct it; (4) who is at risk and, if applicable; (5) the necessity for taking preventive measures or seeking alternative water supplies. For violations involving certain contaminants, EPA provides recommended language that describes the potential adverse health effects. For violations involving 12 contaminants, EPA's statements on health effects are mandatory. EPA's recommended passages will eventually become mandatory as the agency finalizes the text and passes relevant regulations. A number of the state and water system officials we interviewed stated that EPA's recommended and mandatory language often

confuses consumers because the statements are technical and provide little indication on how to react to the violation.⁴

EPA's Recommended and Mandatory Language on Risks Is Too Technical

In drafting its recommended and mandatory statements, EPA stated that public notices should be readable by people with an eighth-grade education. However, officials from EPA headquarters, the Circuit Rider Program, several states, and some public water systems agreed that the agency's recommended and mandatory statements are often too technical for the average consumer to comprehend. Officials from EPA headquarters also acknowledged that the language is technical, but stated that there is a shortage of staff and resources to devote to making the statements more understandable, given other higher-priority problems.

The following mandatory passage for a violation of the standard for benzene is typical of EPA's recommended and mandatory passages:

The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and a degreaser of metals. It is also a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has also been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals were exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set enforceable drinking water standards for benzene at 0.005 parts per million (ppm) to reduce the risks of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

We entered this passage and other examples of EPA's recommended and mandatory language into a computer software program that judges readability. The program classified the language as "difficult" to comprehend and determined that it was written at the college level.

⁴Only three of the 157 violations that we reviewed required the use of EPA's mandatory language.

According to EPA and state officials, simplified language would reduce potential public apprehension and increase public understanding. A related problem is that the recommended and mandatory language on health risks is often presented in a way that does not highlight critical information. As the preceding example indicates, background information is presented before the most specific information on health risks. A number of drinking water officials emphasize the importance of placing the critical information on health risks in the first few sentences because many consumers may not read the entire notice.

Little Guidance Provided on Key Aspects of Public Notice

While EPA's regulations require that public notices clearly explain important matters, such as the nature of the violation and preventive measures consumers can take, the regulations provide little guidance on the order, content, and presentation of the actual notice. Agency officials told us that some discretion has to be left to the operator in order to reflect the unique circumstances of any given situation. However, we found that system operators—particularly in states that do not provide templates of notices—generally favored more guidance on how notices should convey such matters and that in the absence of guidance, these matters were often omitted.

Some notices even failed to properly inform the customer concerning which violation the system had. For example, a public water system in New Jersey issued the following incorrect notice on September 6, 1990, for a coliform violation:

Dear Tenant:

This is to inform you that the water tests for June of 1990 showed no chlorine residual for several locations. We then increased the chlorine into the water supply until the required residual was present. All tests since then have been to the required level. The law requires us to report this to you.

EPA's regulations also require the notice to explain any potential adverse health effects, the steps the water system is taking to correct the problem, who is at risk, and, if applicable, the necessity for seeking alternative water supplies. However, system operators often do not include this information. Explaining why some information was not included, some operators told us they did not realize what information should be included or understand how to draft the language correctly.

While we acknowledge the need for flexibility, some additional guidance on how to reflect these key issues would be useful. Several state and one Circuit Rider Program official mentioned that the fill-in-the-blank format offered by some states can be helpful for this purpose.

Alternative Methods of Notification Could Reach More Consumers

The 1986 amendments to the Safe Drinking Water Act and EPA's regulations implementing the amendments are very specific in requiring particular methods of public notification. A community water system with a Tier I acute violation, for instance, is required to (1) furnish a copy of the public notice to a local radio and television station within 72 hours of the violation, (2) take space for the notice in a local paper within 14 days of the violation, (3) mail or hand deliver a notice to consumers within 45 days, and (4) repeat the notice via mail or hand delivery every 3 months as long as the violation continues. But problems that can occur in using the first two specified methods decrease the extent to which the public is informed about and understands the violation. Alternative methods of public notice may be more effective, as discussed below.

Furnishing Notices to the Electronic Media Can Be Ineffective

Furnishing public notices to the electronic media, more than any other form of public notification, takes the control of the notification away from the public water system operator and places it in the hands of the media employee, according to several drinking water officials. The media employee is the one to decide whether the station will broadcast the notice, what the content of the aired notice will be, and when the notice will be broadcast. Consequently, furnishing notices to the electronic media has proved to be the most unreliable method of public notification, according to one Texas state official.

Because the radio or television stations are not required by law to air public notice information, they sometimes do not do so. According to National Rural Water Association officials, it is especially common for stations not to air a public notice from a small- or medium-sized water system because the population served by the system is unlikely to make up a significant share of the stations' audience. Even when stations elect to air a public notice, the officials pointed out that the public may not be effectively notified for several reasons. First, segments of a water system's population may not be in the audience of the stations that broadcast the notice. This is especially likely in view of the increasing number of stations available. Second, station officials may sensationalize the content of the notice. Third, because scheduled programs and advertisements may

dominate prime time, stations may relegate the broadcast of the notice to time slots when most people are not watching television or listening to the radio, such as late at night.

According to several state and water system officials and representatives of organizations we contacted, because of the problems associated with furnishing notices to the electronic media, alternative methods of notification would sometimes be more effective in making the public aware of serious health risks. Yet EPA's regulations do not allow water systems the flexibility to choose another method of notification in place of notices to the electronic media—even if the other method would better inform the affected public.

If a newspaper does not serve a water system's population, the regulations allow two other methods of giving notice about violations posing serious health risks: hand delivery and posting. Some officials believe that even when the electronic media are available, using these alternative methods could increase the extent to which consumers learn about the violations. For example, if a water system serves a limited number of people, furnishing the electronic media with notices could be less effective than using these alternative methods.

Officials from five of the six states we reviewed thought that if small systems would hand deliver notices for Tier I acute violations, more people would be made aware of them. Furthermore, when we asked officials of water systems serving fewer than 500 people about the effectiveness of posting notices, six of the eight officials who responded said that the practice is very helpful in increasing the number of people informed of violations.

Under the existing regulations, operators who favor using alternative methods to notify customers of Tier I acute violations are allowed to employ these methods in conjunction with furnishing a notice to the electronic media. However, operators reported few instances in which this occurred. The operators noted that they often rely on the electronic media alone because they are required to use this method of notification—even if they judge it to be ineffective—and do not have the resources to use multiple methods.

**Legal Notices Frequently
Used but Ineffective**

Issuing public notification through the legal notice section of the newspaper is the most commonly used method, yet is very ineffective,

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according to several state officials and many public water system officials interviewed. Public water system operators can use legal notices as follow-up notices for Tier I acute violations and as initial notices for Tier I nonacute and Tier II violations. In the words of one public water system official, "Public notice is a waste of time and is only necessary for acute violations. Public water systems comply with the law by making the ad as small as possible so no one will read [it]." Because much of the public may not read this section of the paper in detail on a daily basis, many could be at risk of failing to take the necessary precautions to avoid drinking contaminated water. Figure 3.1 shows the size and placement of a typical legal notice.

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Figure 3.1: Example of Legal Notice

LEGAL NOTICE

In order to keep our customers informed, and to comply with State and Federal Drinking Water Regulations, Eastside Utility District would like to inform you of a recent violation concerning turbidity levels.

Turbidity is a measure of the amount of very fine suspended particles in the water that may give it a cloudy appearance and interfere with proper disinfection. During the period of June 20 - June 30, 1990, Eastside Utility District's water exceeded the maximum allowable limit for turbidity and also the monthly average of 1.0 turbidity units. This violation was caused by an undetermined disturbance in the underground water table which is beyond our control. We are actively pursuing plans for a filtration system which will eliminate this problem. For further information, please contact Eastside Utility District at 892-2890.

Eliminating the use of legal notices and requiring operators to use prominent ad space could improve the effectiveness of the newspaper notice. Twelve of 19 water system officials who expressed an opinion on this subject acknowledged that this alternative would help to increase the number of people reached by notices. All of the state officials we interviewed said that using prominent ad space would enable public notification to reach more people than does the current practice of issuing notice in the legal section. Operators are not prohibited from using prominent ad space now, but placing the notice in the legal section complies with the law and is cheaper.

Focusing on Serious Violations Could Improve Public Notification Process

Besides bringing to light the need to improve the content of public notices and the method in which they are delivered, our contacts with both regulators and the water system operators revealed a strong consensus that the public notification process would be more effective in informing the public—and easier to implement by the water systems—if it focused more on serious violations. Representatives from five of the six states we visited, all of the Circuit Riders we interviewed, and the large majority of water system operators we interviewed agreed that notice is currently required too often, resulting in too much attention for minor infractions and too little attention for more serious problems.

Greater Focus on Serious Violations Could Help Operators Deal With Increased Regulatory Responsibilities

As we reported in our June 1990 report, states and water systems have experienced significant problems in implementing the drinking water program—problems that will only become more and more acute as new standards and additional requirements take effect under the 1986 amendments to the Safe Drinking Water Act. Nationwide, EPA estimates that implementing these amendments will translate into more than one hundred million dollars in additional annual compliance costs for water systems, with the greatest burden falling on small water systems. Already faced with funding shortages of their own, states will also see their own regulatory costs increase by hundreds of millions of dollars annually, according to officials of EPA and the Association of State Drinking Water Administrators. States' new responsibilities include determining (1) the amount of monitoring water systems must conduct for regulated and unregulated contaminants, (2) which water systems must install filtration equipment, (3) the vulnerability that water systems have to certain types of contamination, and (4) when to issue variances or exemptions to the new requirements.

It is within this context that water systems must comply with EPA's regulations for public notification. As discussed earlier, notices must be provided when water systems (1) have violations posing immediate or potential health risks, (2) fail to test water supplies as required for any of 31 contaminants, and (3) have received a variance or exemption from complying with drinking water standards. Notice must also be provided to inform the public about the availability of test results for unregulated contaminants, to inform new customers about certain preexisting violations, and to educate the public about drinking water problems in order to encourage the support of additional funds needed to fix them.

Typically, water systems, especially the small ones, may have multiple violations over the course of a year. The systems' violations may include ones posing potentially serious health risks but may also include minor ones, such as a single missed sample out of a large number of required samples. In the case of turbidity, for example, operators are required to take daily water samples and test them. One missed turbidity sample requires the operator to issue public notice. In cases requiring a complex or long-term solution (such as an expensive treatment technique or a filtration system that the system cannot afford), public notice must be repeated quarterly—perhaps for years—until the water system can obtain the resources needed and correct the violation.

It is the combination of extensive public notification regulations and the financial burdens under which water systems are operating that helps to explain the widespread noncompliance by operators (particularly those of small systems) with the public notification requirements. Even with renewed strenuous enforcement by state and EPA regulators, it is doubtful that full compliance with public notification requirements (both for serious and minor infractions) could be achieved. Reducing the public notice required for less serious violations could ease some of the burden on systems.

**Focusing Public
Notification on Serious
Violations Could Also
Inform Consumers Better**

In addition to helping operators and regulators deal with their resource constraints, a greater emphasis on serious violations would make public notification more effective in informing water system customers, according to operators and regulators. State and water system officials note that under the present system, public notification for lesser violations (such as for minor monitoring violations like missing a single daily turbidity sample) or solely for educational purposes, such as promoting

water conservation, sometimes diverts the public's attention away from notification about serious violations.

Twenty of the 26 system operators expressing an opinion on the subject favored only issuing public notice for violations that pose an immediate risk to public health. However, such a change would need to be authorized by legislation because the 1986 amendments to the Safe Drinking Water Act require that notice be issued for all violations.

As another alternative, the majority of state officials and operators that we interviewed recommended extending the time frame of public notification for lesser violations (Tier II) that are not persistent and pose no immediate health risks. One method suggested to accomplish this would be to consolidate public notification for lesser violations into either a semiannual or annual report.

According to EPA, state, and public water system officials, such a strategy could have several benefits. Besides saving water operators time and money by reducing the number of notices required, this strategy would highlight the difference between notices for violations posing serious or potentially serious health risks (Tier I) and notices for violations raising less immediate health concerns (Tier II). A consolidated report could also be a more effective way to educate consumers about the quality of their drinking water and the problems facing their water system. Consumers might then be more willing to pay the cost of corrective actions. Currently, EPA recommends that operators issue an annual report to their customers—not as a substitute for some notices—but in addition to the notices required.

Conclusions

The high noncompliance rate with the public notification requirements—89 percent for the 157 violations we examined in detail—cannot simply be explained by carelessness of water systems and lax oversight and enforcement by the states and EPA. Such a high rate suggests that the process itself contributes to the problem. Our review suggests that modifications to the public notification regulations could go a long way toward improving compliance by water systems and toward making public notification a more effective means of informing the public about the quality of its drinking water. Public water system operators (particularly those for small systems) have had difficulty understanding all of the requirements. The operators are unsure about how notice should be issued and under what circumstances it is required. The substantial

difficulties these systems are experiencing with other aspects of the drinking water program only compound the problem further. State officials acknowledged that the public notification regulations are difficult for operators to understand and follow but explained that competing demands leave them neither the time nor resources to help operators understand the process.

In addition to posing challenges in implementation, the public notice regulations sometimes make it difficult to communicate important information to consumers concerning the quality of their drinking water. For example, EPA's passages explaining health risks sometimes confuse customers with technical language and provide little guidance on key matters, such as preventive measures, to take in response to the violation. Altering both the format and content of the passages could help to make them easier to understand. Furthermore, reordering the information to highlight health risks could also help.

In addition, the regulations sometimes encourage or require the use of less effective methods of public notification. We believe that more flexibility would encourage more effective public notification. Specifically, instead of requiring the use of the electronic media for acute violations, allowing public water systems to use the means of public notification most effective for their individual circumstances could increase the number of consumers reached. Also, eliminating the option of providing notice in the legal section of the newspaper and requiring the use of prominent ad space will go far to improve the effect of the notice.

Finally, our contacts with both regulators and the water system operators revealed a strong consensus that the public notification process would be more effective in informing the public—and easier to implement by the water systems—if it focused more on serious violations. In particular, the notification regulations would be more effective if they differentiated between public notification for serious violations and for lesser violations and educational matters. Allowing operators to choose the most effective method of public notification for serious violations (electronic media, prominent ad space, mail, hand delivery, or posting) and to place all other notices in a semiannual or annual report would highlight the violations posing serious health risks, while consolidating all other information. In addition, simplifying the public notification regulations could increase public water systems' compliance with them and simplify the oversight duties of state and EPA officials because their efforts could be focused on fewer separate notices.

Recommendations

In order to inform the public about the violations of drinking water standards in a timely and effective manner, we recommend that the Administrator, EPA, do the following:

- Work with states to identify methods that states could use to help operators, particularly of small water systems, understand when public notification is required and what types of notice are required under different circumstances.
- Improve the agency's recommended and mandatory passages for notices by simplifying the language and presenting the passages in a way that highlights the health risks posed by violations.
- Improve the effectiveness of notification by (1) allowing water systems the flexibility to choose, with the state's concurrence, the method most appropriate for their consumers; (2) requiring the use of more prominent space when newspaper notice is used; and (3) allowing water systems to consolidate notices for Tier II violations into a semiannual or annual report, thus focusing notification on more serious violations.

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