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BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Administrator Environmental Protection Agency

States' Compliance Lacking In Meeting Safe Drinking Water Regulations

The Safe Drinking Water Act of 1974 represents the first national commitment to provide safe drinking water. Yet, during fiscal year 1980, over 146,000 violations of the drinking water regulations were recorded against community water systems. Furthermore, EPA estimates that 13,600 community water systems cannot, without improving their facilities, meet the Federal drinking water quality standards.

The lack of full-time and properly trained water system operators, operator apathy toward the Federal requirements, and insufficient State resources--both funding and personnel--are reasons for the significant noncompliance.

To more effectively use limited State resources and provide for consistent enforcement against noncomplying water systems, GAO recommends that EPA establish specific guidelines the States can use when developing their enforcement strategies.

CED-82-43
MARCH 3, 1982

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

B-206389

The Honorable Anne M. Gorsuch
Administrator
Environmental Protection Agency

Dear Ms. Gorsuch:

We reviewed the Safe Drinking Water Program to determine whether the Environmental Protection Agency (EPA) and primacy States--those States granted authority by the Administrator, EPA, to operate the Federal drinking water program--have effectively implemented the provisions of the act. Our review showed that

--many small community public water system supplies are not meeting the drinking water quality standards and are not being tested as required by Federal regulations and

--as defined in the act, the effectiveness of the public notification process in informing drinking water users of violations is questionable.

During fiscal year 1980, over 146,000 violations of the drinking water regulations were recorded against 28,000 of the 65,000 community water systems. EPA estimates 13,600 community water systems cannot, without improving their facilities, meet one or more of the drinking water quality standards.

We believe that a combination of factors including the lack of full-time and properly trained water system operators, water system operator apathy, failure of States to perform water sampling activities, and insufficient State resources--funds and personnel--are the primary factors causing these problems.

This report contains a recommendation to you on page 12. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are providing copies of this report to the Chairmen, House Committee on Energy and Commerce and the Senate Committee on Environment and Public Works; other congressional committees and individual Members of Congress; the Director, Office of Management and Budget; and your Director, Office of Drinking Water.

Sincerely yours,

Henry Eschwege

Henry Eschwege
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE ADMINISTRATOR,
ENVIRONMENTAL PROTECTION
AGENCY

STATES' COMPLIANCE LACKING IN MEETING SAFE DRINKING WATER REGULATIONS

D I G E S T

The National Interim Primary Drinking Water Regulations established drinking water quality standards and water testing requirements to ensure the quality of drinking water provided by the Nation's 215,000 public water systems. However, compliance with these regulations by the Nation's public water systems, in literally thousands of cases, appears to be the exception rather than the norm. Environmental Protection Agency (EPA) statistics for fiscal year 1980, show that over 146,000 violations for either failing to test or for not meeting the drinking water quality standards were recorded against 28,000 of the 65,000 community water systems in this country. (EPA does not compile statistics for the 150,000 noncommunity water systems.) GAO's detailed review of 140 community and 70 noncommunity water systems support the national statistics.

GAO reviewed the Safe Drinking Water Program to determine how effectively EPA and primacy States--those granted authority by the Administrator, EPA, to operate the program--have implemented the provisions of the act.

NATIONAL COMMITMENT TO PROTECT DRINKING WATER

Since the early 1950's, the number of reported waterborne disease outbreaks has increased gradually. The latest statistics available indicate that from 1961 through 1978 drinking water caused 407 outbreaks of disease or poisoning resulting in 101,243 recorded illnesses and at least 22 deaths. Some water supply experts believe that 10 times as many outbreaks actually occur but go unreported.

In December 1974, the Congress passed the Safe Drinking Water Act to insure that public water supply systems throughout the Nation meet minimum national standards for the protection of public health. The act directed the Administrator, EPA, to establish primary drinking water

regulations, setting national health standards for drinking water, and gave the States primary responsibility for enforcing the regulations and supervising the approximately 215,000 public water systems in this country. (See p. 1.)

EPA, in December 1975, issued the National Interim Primary Drinking Water Regulations, setting drinking water standards for coliform bacteria, turbidity (cloudiness), and inorganic and organic chemicals. In July 1976, the regulations were amended to establish a standard for radionuclides. The regulations also prescribed how often drinking water supplies must be tested for each contaminant and steps water owners and/or operators must take to notify EPA or the States and water users each time a standard is exceeded or required testing is not performed. (See p. 2.)

USERS NOTIFIED OF FEW VIOLATIONS

Of the 146,000 nationwide recorded violations, evidence indicates that public notification--required for each violation--was made in only 16,000 cases. Of the 701 violations GAO identified, public notification took place in only 63 cases. (See p. 6.)

GAO's review did not identify any instances where either the violation of a contaminant standard or the failure to test a water source has resulted in a waterborne disease outbreak, a serious illness, or death to any of the water systems' users. However, the potential for such occurrences does exist.

LIMITED RESOURCES IMPACT ON ENFORCEMENT ACTIONS

EPA and State drinking water program officials cited several reasons for the significant number of violations. These reasons included the lack of full-time and properly trained operators, operator apathy toward the Federal requirements, and insufficient resources--both funding and personnel--to meet the Federal requirements. GAO's findings generally support these reasons. (See pp. 6 to 8.)

While the act provided an enforcement mechanism to ensure compliance, it was the intent of the Congress that such compliance would be the primary responsibility of the States, the localities, and the Nation's water systems. However, this has not occurred. Again, EPA's own statistics project that 13,600 public water systems cannot, without improving their facilities, meet one or more of the water quality standards. Thousands of other systems are also not complying by failing to (1) submit required monitoring reports, (2) properly test their water sources, and (3) notify the public.

GAO found that the enforcement actions in the three EPA regional offices and the seven States included in its review to bring water systems into compliance ranged from none to minimal, followed no particular pattern, and were not as timely as they could or should have been. (See p. 9.)

EPA's first concerted effort to deal with the mounting noncompliance problem was in June 1980, when it issued its policy for compliance of small public drinking water supply systems. The small system compliance strategy required that, beginning in fiscal year 1981, each State receiving a Federal grant under the drinking water program would include in its annual program plan, which accompanies the grant application, an enforcement criteria that would guide the State's use of its enforcement resources. According to the strategy, the States are responsible for consistently applying their enforcement resources to identify priority violators. (See p. 10.)

The program was not fully implemented at the time of GAO's review and therefore, its effectiveness was not evaluated. However, GAO analyzed program plans approved by EPA for the five primacy States included in the review and found several inconsistencies. While the strategy is a step in the right direction, GAO believes that EPA needs to further define those specific factors that the States must consider when ranking water systems for enforcement action.

In addition to implementing the small water system compliance strategy, EPA published an issue paper in December 1981, requesting public comment on the act's public notification requirements and several other aspects of the drinking water program. EPA anticipates that the input it receives will help it formulate proposed amendments to the act or, as a minimum, to the Federal drinking water regulations on the public notification system. EPA held public hearings on the issue paper in February 1982, and a summary of the comments along with recommendations are to be forwarded to the National Drinking Water Advisory Council in March 1982. Following the Council's review, the recommendations are to be forwarded to the Administrator, EPA, for action. (See p. 17.)

GAO believes that EPA's current action in studying the program--both its pros and cons--is a step in the right direction. If properly and effectively carried forward, this effort should result in actions designed to improve the program.

RECOMMENDATION

GAO recommends that the Administrator, EPA, direct the Office of Drinking Water to develop and implement specific guidelines the States can use when developing the enforcement strategy sections of their State plans which accompany the annual drinking water program grant application. These guidelines will help States to more effectively use their limited resources and provide for consistent application of enforcement actions. (See p. 12.)

AGENCY COMMENTS

Although written comments were not obtained, GAO discussed the report with the Director, Office of Drinking Water and, where appropriate, the Director's comments were included. The Director generally agreed with GAO's conclusions and stated that action would be taken to implement the recommendation. (See p. 12.)

Contents

ABBREVIATIONS

EPA	Environmental Protection Agency
GAO	General Accounting Office

GLOSSARY

Coliform bacteria	Bacteria present in the digestive tract of humans and warmblooded animals which indicates that fecal matter is present in drinking water.
Exemption	Waiver granted by EPA or a State to a water system unable to comply with a water quality standard for such reasons as economic constraints. The act requires systems receiving exemptions to comply with the water quality standards by January 1, 1984 (or January 1, 1986, for systems forming a regional water works.)
Inorganic chemicals	Elements of mineral origin or resulting from human activities, such as the lead used in soldering copper water pipes. Inorganic chemicals subject to the drinking water regulations are arsenic, barium, cadmium, chromium, fluoride, lead, mercury, nitrate, selenium, and silver.
Organic chemicals	Man-made compounds used to manufacture pesticides and herbicides--Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, and 2,4,5-TP (Silvex). Also includes trihalomethanes--carcinogenic by-products formed when chlorine, added to the water as a disinfectant, interacts with natural organic matter in the water.
Radionuclides	Man-made and natural radioactive materials. Natural radioactive materials are Gross Alpha Particles, Radium 226, and Radium 228. The man-made materials include Tritium, Strontium 89 and 90, Iodine-131, Cessium 134, Gross Beta Particles, and several hundred other isotopes resulting from nuclear activities.
Turbidity	Cloudiness in water caused by minute suspended particles in the water.

Variance	Waiver granted by EPA or a State in cases where a water system cannot, even using the latest treatment technique, achieve a drinking water quality standard because the quality of the water source is too poor. Variances have no statutory compliance dates.

CHAPTER 1

INTRODUCTION

Americans generally assume that their drinking water is safe. In many respects this is a valid assumption; however, recent indications are that the quality of our drinking water may be deteriorating. Since the early 1950's, the number of reported waterborne disease outbreaks has been increasing gradually. The latest statistics available indicate that from 1961 through 1978 drinking water caused 407 outbreaks of disease or poisoning, resulting in 101,243 recorded illnesses and at least 22 deaths. Some water supply experts believe that 10 times as many outbreaks actually occur but go unreported.

Thousands of toxic chemical compounds are used today in industry, homes, and on farms, and hundreds of new compounds are being developed each year. The careless use and disposal of many of these chemicals is contaminating our drinking water. In 1974, the Environmental Protection Agency (EPA) reported that the drinking water in New Orleans, Louisiana, contained trace amounts of 66 organic chemicals. In 1975, an EPA survey of public water supplies in 80 cities found small amounts of organic chemicals present in each of these systems. While little is known about the health effects of most chemicals, the public is concerned that many cause cancer, birth defects, and other related health problems.

THE FEDERAL PROGRAM TO INSURE SAFE DRINKING WATER

In December 1974, the Congress passed the Safe Drinking Water Act (42 U.S.C. 300f et seq.) to insure that public water supply systems throughout the Nation meet minimum national standards for the protection of public health. The act represents the first national commitment to safeguard public drinking water supplies. Prior to 1974, Federal authority to regulate drinking water was limited to water provided on interstate carriers.

The act established a joint Federal-State program to insure safe drinking water. It directed the Administrator, EPA, to establish primary drinking water regulations, setting national health standards for drinking water. It also gave the Administrator authority to delegate to the States 1/ primary responsibility, commonly referred to as primacy, for enforcing the

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1/The term "State" as defined in the Safe Drinking Water Act and used in this report includes the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, the Trust Territory of the Pacific Islands, and the Northern Mariana Islands.

regulations and supervising the approximately 215,000 public water systems in the country. A public water system is one which has at least 15 service connections or regularly serves a minimum of 25 people, and according to the regulations, at least 60 days a year.

The act also requires that water system operators notify their users each time the system fails to meet one of the drinking water quality standards or to test its supplies as required by the regulations. The Congress anticipated that such notification would develop public awareness of the problems facing water systems, increase support for expenditures to solve these problems, and inform the public of any potential or actual drinking water health hazards.

THE DRINKING WATER REGULATIONS

EPA issued the national interim primary drinking water regulations in December 1975, setting drinking water quality standards for coliform bacteria, turbidity (cloudiness), and inorganic and organic chemicals. The regulations were amended in July 1976 to establish a standard for radionuclides. The regulations also prescribe how often drinking water supplies must be tested for each contaminant and steps water owners or operators must take to notify EPA or the primacy State and water users when a standard is exceeded or required testing is not performed.

The interim primary drinking water regulations define two types of public water systems--community and noncommunity. Community systems serve year-round residents whereas noncommunity systems serve transient, nonresident populations. Noncommunity systems include motels, hotels, campgrounds, restaurants, hospitals, and any other public accommodation with its own water supply. Some schools, factories, and churches are considered noncommunity systems. EPA data shows that as of December 1981, there were about 65,000 community and 150,000 noncommunity systems in this country. The drinking water regulations became effective for community systems on June 24, 1977, and for noncommunity systems on June 24, 1979.

HOW A STATE ASSUMES PRIMACY

The Safe Drinking Water Act requires that for a State to assume primacy it must (1) adopt drinking water regulations as stringent as the national regulations, (2) have adequate procedures for enforcing the State regulations, (3) meet EPA recordkeeping and reporting requirements, (4) issue variances and exemptions (if the State elects to do so) under conditions as stringent as those in the act, and (5) have a plan for providing emergency water supplies. EPA has set out in detail what is considered to be an adequate enforcement program. (See app. I for primacy requirements.)

To assist States in developing and implementing their drinking water programs, the act authorizes EPA to award annual public

water system supervision grants. The grants, which are based on population, land area, and the number of public water systems, may cover up to 75 percent of a State's total program cost. From fiscal year 1976 through 1982, EPA will have awarded about $160 million in Federal grants to the States.

As of December 31, 1981, 48 States had established drinking water programs and were granted primacy by EPA. The remaining nine nonprimacy States--the District of Columbia, Indiana, Iowa, Oregon, Pennsylvania, South Dakota, Wyoming, American Samoa, and the Northern Mariana Islands--have either declined or were not granted primacy. Iowa, originally granted primacy in September 1977, withdrew from the program July 1, 1981, because of insufficient State funding to operate the program.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our review concentrated on evaluating the implementation of the Safe Drinking Water Program in three EPA regions--Region III (Philadelphia), Region VI (Dallas), Region VIII (Denver), covering Colorado, Oklahoma, Pennsylvania, South Dakota, Texas, Virginia, and West Virginia. Five of the States (Colorado, Oklahoma, Texas, Virginia, and West Virginia) are primacy States, while Pennsylvania and South Dakota are nonprimacy States.

Our work locations were not selected on a scientific or statistical basis. Pennsylvania was included because, with approximately 2,500 community water systems, it is the largest of the nonprimacy States and has one of the Nation's largest number of community water systems. South Dakota, in contrast, has a relatively small number of rural community water systems--approximately 460--scattered over a large area. The five primacy States selected had their programs in operation for at least 2 years. The Director, State Programs Division, EPA Office of Drinking Water, told us that he believed that the three EPA regions included in our review were representative of the program.

In performing our review, we examined various documents and interviewed drinking water program officials at each of the five primacy States, the three EPA regional offices, and EPA headquarters. We reviewed the Safe Drinking Water Act, its legislative history, subsequent congressional hearings on its implementation, Federal and State drinking water regulations, and other EPA policies and guidelines. We interviewed officials involved in developing, implementing, enforcing, and evaluating the drinking water program, including officials of EPA's Office of Drinking Water, Enforcement Division, the Office of General Counsel, and the Office of Legislation.

We held interviews with officials of Colorado's Water Quality Control Division, Oklahoma's Division of Environmental Health Services, Pennsylvania's Department of Environmental Resources, Virginia's Bureaus of Water Supply Engineering and Community

Health Services, South Dakota's Department of Water and Natural Resources, Texas' Water Hygiene Division, and West Virginia's Office of Environmental Health Services. In addition, we also reviewed available monitoring activity files for 140 randomly selected community water systems and 70 randomly selected non-community water systems in the seven States included in the review.

We performed our review in accordance with the General Accounting Office's current "Standards for Audits of Governmental Organzations, Programs, Activities, and Functions."

CHAPTER 2

WATER SYSTEM SUPPLIERS NOT MEETING FEDERAL TESTING REQUIREMENTS

EPA's national interim primary drinking water regulations require that the water supplies of public systems be tested periodically to guard against contamination. Yet, in fiscal year 1980, EPA statistics show that over 146,000 violations were recorded against 28,000 of the Nation's 65,000 community systems. (EPA does not compile statistics on noncommunity systems.) Our detailed review of the testing activities of 140 community and 70 noncommunity water systems supports the national statistics. For example, of the 140 community systems reviewed, we identified 701 violations by 93 of the systems.

EPA and State drinking water program officials cited several reasons for the significant number of testing violations. These reasons included the lack of full-time and properly trained operators, operator apathy toward the Federal testing requirement, and insufficient resources--both funding and personnel--to meet the Federal testing requirements.

The inability to properly test these water supplies has not, to our knowledge, resulted in either a waterborne disease outbreak, serious illness, or death. But, the absence of such tests has negated a congressional intent that water provided to the general public is tested and is safe to drink.

WATER TESTING REQUIREMENTS

To insure the quality of the Nation's drinking water supply, EPA established, in its implementing regulations, specific testing requirements for all community and noncommunity systems. For example, coliform bacteria testing is required for all community and noncommunity systems. The number of test samples to be taken per month for community systems ranges from 1 to 500, depending on the number of persons served by the system. 1/ Noncommunity systems are required to take test samples at least once during each calendar quarter the system is operating. Daily turbidity testing is required for all systems using a surface water source, but such tests are not required for those systems using ground water as the supply base.

1/For example, a system serving 1,000 people is required to take only 1 sample per month, whereas a system serving 25,000 is required to take 29 samples per month. Systems serving 4.69 million or more people are required to take 500 samples per month.

The regulations require community systems using surface or ground water supplies to test for inorganic chemicals. Initial testing of these supplies was to be completed by June 1978 and June 1979 for surface and ground water, respectively. The systems must then monitor their supplies annually for surface water and every 3 years for ground water. Noncommunity systems, however, are only required to test for the inorganic chemical nitrate and had until December 1980 to complete initial testing. The States determine when subsequent nitrate tests are due.

The regulations require that only community systems using surface water need to test for organic chemicals. The initial testing was to be completed by June 1978, with subsequent tests being done once every 3 years. For radionuclides, initial testing for community systems using surface or ground water supplies was to be completed by June 1980. Subsequent tests are required once every 4 years. Noncommunity systems are not required to test for either organic chemicals or radionuclides.

RESULTS OF TESTING ACTIVITIES

In fiscal year 1980, 90 of the 140 community systems and 48 of the 70 noncommunity systems included in our sample failed to comply with the Federal testing requirements for one or more of the contaminant groups. Noncompliance ranged from missing a single monthly coliform bacteria sample to not testing an entire system for any contaminants during the 12-month period. Coliform bacteria constituted the greatest area of noncompliance, with 53 of the 90 community systems failing to perform the required tests. Radionuclide and inorganic chemical testing was not completed for 44 and 34 community systems, respectively. Appendix II contains tables showing, by contaminant and State, the number of sampled community systems that failed to comply with the Federal testing requirements.

WHY WATER SYSTEMS ARE NOT COMPLYING WITH EPA TESTING REQUIREMENTS

EPA and State drinking water program officials gave several reasons as to why systems are not complying with the testing requirements. For example, the Chief, Pennsylvania Section, Water Supply Branch, EPA's Philadelphia Regional Office, stated that small systems, which often lack full-time and properly trained operators, were responsible for the majority of testing violations.

The Fredericksburg Water Association in Martinsburg, Pennsylvania, demonstrates this point. This association operates a small community water system serving about 200 customers. During fiscal year 1980, the system failed to test its water supply for coliform bacteria in 10 of the 12 months such tests were required. In 1 of the 2 months during which water samples were taken, the water contained levels of coliform bacteria in excess of the standard. The association president told us that the water system's

operator is a full-time truck driver and only works on the system part time. Since he is away much of the time, the necessary tests are often not taken.

Another reason EPA regional and State officials gave for systems not complying with the testing requirements was operator apathy. For example, in discussions with the Director, Water Facilities Engineering Service, Oklahoma Department of Health, we were told that operator apathy was considered a significant problem associated primarily with small water systems. The Bradley, Oklahoma, system amply demonstrates this point. This small community system serves about 150 customers. In our tour of Bradley, we found this water system to consist of a water tank and two 80-foot deep wells. At the the time of our visit, one of the wells was being repaired. The two wells appeared to be sealed in concrete and were enclosed in concrete block buildings. One building contained a separate chlorinator room, but the chlorination equipment was not in use.

The system operator said that he is responsible for taking care of the system and obtaining the required water samples. In the case of coliform bacteria, two samples are to be taken each month. The operator stated, however, that he does not have the time to take the required samples; consequently, the samples are only taken when he gets around to it. The operator manages a service station and said that he is generally too busy to devote much time to the water system. He further stated that he serves on the water board only to help the town. He receives no compensation for his work with the water system.

A series of seminars conducted in 1980 by the Conference of State Sanitary Engineers, which was funded under an EPA grant, confirmed that the lack of technical expertise and system operator apathy are major causes of small water systems failing to comply with Federal testing requirements. The final report on the seminars states it was the consensus of opinion that

> "* * *small system violations and failings come across as multiple and frequent and the weight of their causality falls upon the human factor. Owner and 'operator' apathy, lack of technical know-how, ignorance of State standards and regulations--these seem to underlie the poor performance of the small systems."

SOME STATES ARE NOT DOING THE REQUIRED TESTING

Another factor contributing to noncompliance with the drinking water program requirements is the failure of the States to perform the tests they agreed to do. For example, the five primacy States in our review are responsible for collecting the initial and subsequent radionuclide and/or inorganic and organic chemical samples for community water systems in their States.

However, two of the five States--Colorado and West Virginia--did not collect the required samples for 35 of the 40 systems included in our review.

Again, officials gave several reasons for not doing the required tests. The principal reasons were lack of State resources--funds and personnel. For example, in West Virginia, the State is responsible for collecting the required samples from 504 of its 618 community water systems. (The 114 remaining systems purchase their water from the other systems and, according to the section chief of the West Virginia Drinking Water Division's Northern Districts, are not tested for chemicals and radionuclides because the water sold to these systems should already be tested.) Of the 504 systems, 336 are ground water systems and 168 are surface water systems. As of June 1980, the 336 ground systems should have been tested for inorganic chemical and radionuclide contamination and the 168 surface systems for inorganic and organic chemicals and radionuclides. Yet, we found that during fiscal years 1978 through 1980, only 78 surface and 5 ground water systems had had the required initial testing done. Our review also showed that although the drinking water regulations require that community surface systems be tested annually for inorganic chemicals, only 52 of the 168 surface systems had been tested during fiscal year 1980.

The section chief, West Virginia Drinking Water Division's Southern Districts, attributed the State's failure to comply with the Federal testing requirements to the lack of personnel and travel funds. Only one district engineer is responsible, in addition to other duties, for collecting all organic, inorganic, and radionuclide samples in the State. He also stated that whether the required tests would be completed depended upon the future level of Federal and State funding for the program.

The section chief, West Virginia Drinking Water Division's Northern Districts, said that although the State has a need for 28 professional personnel in the drinking water program, only 16 positions were funded in fiscal year 1980. If the State were able to fill the other 12 positions, 8 would be used in the field to do the necessary testing, investigation, and site visits required under the Safe Drinking Water program.

The chief stated that reduced State funding, inflation, and minimal increases in Federal funding have seriously affected West Virginia's efforts to adequately maintain a viable drinking water program. In fiscal years 1980 and 1981, the Federal funding was $330,000 and $339,000, respectively. At this level of funding, the State cannot compete with the salaries private industry offers. Young engineers stay with the State long enough to obtain experience and then move on.

LIMITED ACTIONS TAKEN BY EPA AND THE STATES TO ENSURE COMPLIANCE WITH FEDERAL REQUIREMENTS

The Safe Drinking Water Act provides the Administrator, EPA, with a mechanism to enforce compliance with the act's requirements. The Congress intended that compliance would be the primary responsibility of the States, localities, and the Nation's water systems. This has not occurred in all cases. EPA statistics project that 13,600 public water systems cannot, without improving their facilities, meet one or more of the drinking water quality standards. Thousands of other systems are also not complying because they failed to (1) submit required monitoring reports, (2) properly test their water sources, (3) follow schedules specified in their variance or exemption authorization to construct new or upgrade their existing facilities, or (4) comply with the act's public notification requirements.

The enforcement actions in the three EPA regional offices and the seven States included in our review to bring water systems into compliance ranged from none to minimal, followed no particular pattern, and were not as timely as they could or should have been. For example, we reviewed fiscal year 1980 compliance reporting data on each of West Virginia's 618 community water systems. Our analyses showed that 196 of the 618 systems (32 percent) had been in violation of Federal regulations pertaining to coliform bacteria and/or turbidity for 4 or more months. The analyses also showed that 51 of these 196 systems were in a noncompliance status for the entire 12-month period.

We randomly selected 10 of the 51 systems for further detailed analyses to determine what enforcement actions the State took to bring these persistent violators into compliance. Our review of available files and discussions with State officials showed that while all 10 systems had been sent notices of violation for two consecutive quarters during fiscal year 1980, no further action had been taken on 9 of the 10 systems. One system received a threat of legal proceedings. The system owner/operator agreed to take corrective measures, and with this agreement, enforcement action ceased. The files did not contain any information to indicate that the system took corrective action.

The chief, West Virginia Drinking Water Division's, Southern Districts, told us that the State had made no attempt to identify persistent violators until December 1980. He further stated that even though an informal identification system has now been established, the lack of staff and funding available will mean that any action taken on these violating systems could take up to 2 years to accomplish.

EPA's West Virginia program manager told us that he was unaware of the extent of noncompliance problems in the State. He said that EPA does not identify persistent violators and that as

a program manager he is only interested in the State enforcement program's overall administration, not its specifics.

According to EPA's chief, Drinking Water Branch, State Programs Division, following the act's passage in December 1974, EPA concentrated for several years on formulating a program. This effort included developing and publishing the national interim primary drinking water regulations, assisting the States in meeting the requirements for primacy, reviewing and approving State implementation plans, establishing an inventory of water systems, and developing a management information system. Enforcement actions during this period were generally limited to emergency situations.

EPA'S EFFORT TO DEAL WITH NONCOMPLIANCE

EPA's first concerted effort to deal with noncompliance problems was in June 1980, when EPA issued its small system compliance strategy. EPA developed the strategy because an Office of Drinking Water financial study 1/ documented that small water systems accounted for the majority of the noncompliance problems. Further, the financial study indicated that many of these small systems cannot comply with the drinking water standards because of serious financing and/or operating problems.

The small system compliance strategy required that beginning in fiscal year 1981, each primacy State would include in its program plan, which accompanies the State grant application, a set of enforcement criteria that would guide the State's use of its enforcement resources. EPA and the State would negotiate the types of violations requiring priority enforcement. According to the strategy, the State would be responsible for consistently applying its enforcement resources to the identified priority violators.

Since the program was not fully implemented at the time of our review, we were unable to evaluate its effectiveness. However, our analyses of fiscal year 1981 EPA-approved State program plans for the five primacy States included in our review disclosed several inconsistencies. For example, Texas' plan specified that enforcement would be prioritized on the basis of contaminant violation. On the other hand, West Virginia's plan specified that overall enforcement priority would be given to systems that violated the drinking water quality standards, with surface systems receiving top priority. In contrast, Oklahoma's plan merely explained its enforcement procedures and specified factors that would be considered in initiating enforcement, such as degree of health hazard, frequency of violation, and system efforts to comply with the regulations.

1/"Community Water Systems: Financial Aspects of Compliance with Interim Primary Drinking Water Regulations," June 16, 1980.

CONCLUSIONS

The Congress intended that the drinking water supplies of public water systems be periodically tested to guard against contamination of the supply and to protect the public health. Yet, EPA statistics show that for fiscal year 1980, over 146,000 violations were recorded against 28,000 of the 65,000 community water systems in the country.

The act provided an enforcement mechanism for the Administrator, EPA, to use to force compliance with the act. However, it was the Congress' intent that such compliance would be the primary responsibility of the States, localities, and the Nation's water systems. This has not, in many cases, occurred. EPA's own statistics project that 13,600 public water systems in the Nation cannot, without improving their facilities, meet one or more of the drinking water quality standards. Thousands of other systems are also in noncompliance because of their failure to submit required monitoring reports, properly test their water sources, follow schedules specified in their variance or exemption authorization to construct new or upgrade existing facilities, and finally, to comply with the act's public notification requirements.

We found that the enforcement actions in the three EPA regional offices and the seven States included in our review to bring water systems into compliance ranged from none to minimal, followed no particular pattern, and was not as timely as it could or should have been.

In recognition of widespread noncompliance with the drinking water regulations, EPA, in June 1980, issued its small system compliance strategy, which became effective in fiscal year 1981. The strategy was directed at obtaining compliance with the drinking water standards as quickly as feasible, starting with the more immediate and serious risks to public health. The strategy, however, was not specific and gave the States discretion to allocate their resources and to follow-up on the instances of noncompliance. This has resulted in an inconsistent application of the strategy.

While the strategy is a step in the right direction, EPA needs to further define those specific factors that the States must consider in ranking noncomplying water systems for enforcement action. Specific guidelines to be used by the States in conjunction with the compliance strategy would provide EPA with a consistent and effective plan of action to begin dealing with the significant noncompliance problems facing implementation of the act.

RECOMMENDATION

We recommend that the Administrator, EPA, direct the Office of Drinking Water to develop and implement specific guidelines that the States can use when developing the enforcement strategy section of their State plans. The guidelines should include a model for ranking water systems for enforcement action, including, as a minimum, such factors as (1) the type of violation (exceeding water quality standard or failure to test), (2) the degree of violation (extent to which the drinking water quality standard is exceeded or the number of months the water supplier failed to test), and (3) the size of population affected by the violation. The guidelines should also identify the various types of enforcement actions available to the States and the order in which each action should be taken. Finally, the guidelines should clearly define the terms "serious violators" and "less serious violators." The guidelines will help States to more effectively use their limited resources and provide for consistent application of enforcement actions.

AGENCY COMMENTS

In commenting on our report, EPA officials generally agreed with our conclusions and recommendation. EPA plans to issue a public water system compliance strategy for the States' use in developing their own enforcement strategies. EPA hopes that the strategy, which will contain factors for States to use in ranking noncompliant systems, will result in compliance with the drinking water regulations by all public water systems.

CHAPTER 3

THE PUBLIC NOTIFICATION SYSTEM'S EFFECTIVENESS IS QUESTIONABLE

Failure to notify water system users when a violation occurs appears to be the norm rather than the exception. EPA statistics show that over 146,000 community water system violations were reported during fiscal year 1980. The systems notified the public for only 16,000 of these violations. Our review of 140 community systems supports these statistics. We identified 701 violations, and in only 63 cases was the public notified. Our review, however, did not identify any instances where either the violation of a water quality standard or the failure to test a water source has resulted in a waterborne disease outbreak, a serious illness, or death. Yet, the fact remains that the Congress, when it passed the Safe Drinking Water Act, had a purpose for requiring that public notification be made on each violation.

CONGRESSIONAL INTENT FOR PUBLIC NOTIFICATION

The Congress intended that including the public notification requirement in the Safe Drinking Water Act would

--inform and educate the public about problems and shortcomings in their water systems and mobilize public support for the expenditures associated with needed improvements and

--alert the public to precautions they must take whenever their drinking water contains certain contaminants in concentrations that might be harmful to their health.

The House Report which accompanied the act more fully described the reasons for public notification:

> "The purpose of this notice requirement is to educate the public as to the extent to which public water systems serving them are performing inadequately in light of the objectives and requirements of this bill. Such public education is deemed essential by the Committee in order to develop public awareness of the problems facing public water systems, to encourage a willingness to support greater expenditure at all levels of government to assist in solving these problems, and to advise the public of potential or actual health hazards." 1/

1/ Page 24 of H. Rept. 93-1185.

EPA'S IMPLEMENTING REGULATIONS TO CARRYOUT THE PUBLIC NOTIFICATION SYSTEM

In its implementation regulations, EPA requires community water system owners or operators to provide written notification to users, via water bills or other direct mailing, each time a system's water supply fails to meet any of the water quality standards contained in the regulations or is not tested in accordance with the regulations. Notification must occur within 3 months of the violation and be repeated at least once each quarter for as long as the violation continues. In instances where a standard is exceeded, the system must also publish a notice in a newspaper serving the area within 14 days of learning of the violation and provide copies to radio and television stations within 7 days. This requirement may be waived by EPA or the primacy State if the violation is promptly corrected, its cause eliminated, or a public health risk is no longer present.

The drinking water regulations also require that public notices be clearly written and fully inform the public. According to EPA, a public notice should include the system's name, the contaminant (e.g. coliform bacteria, chemical, or radionuclide), type of violation, precautionary steps the users should take, and actions the system has planned or is taking to correct the problem.

WHY ISN'T THE PUBLIC NOTIFICATION SYSTEM WORKING?

Opinions differ among EPA and State drinking water program officials as to whether the public notification system is working. Yet, the statistics clearly indicate that the system is not working. In fiscal year 1980, there were 146,000 violations and only 16,000 public notifications. Our sampled 140 systems had 701 violations and only 63 notifications. However, these statistics only address a part of the problem. The other part is whether public notification, when it does take place, achieves the two objectives intended by the Congress.

The Congress' first objective--notification of potential or actual health hazards--is of primary importance. While little information is available regarding this area, it does appear that when employed, public notification is extremely effective. For example, in March 1980, a major oil pipeline ruptured contaminating the Rappahannock River, which is the major drinking water supply source for Fredericksburg, Virginia. Contamination of the Rappahannock posed an imminent health hazard to Fredericksburg water system users. Public notification was made immediately through the news media--radio, television, and newspapers--contingencies for alternate drinking water supply sources were established, an effective clean-up effort was initiated, and a serious imminent threat to the public health was averted.

The effectiveness of alerting water system users of a potential health hazard--not an emergency--is questionable because of the time lag between the occurrence of the potential health hazard and notification to the users.

For example, excessive coliform bacteria levels in drinking water pose a potential health threat. However, EPA regional offices and primacy States often wait until the end of the month (or quarter for systems serving 3,300 or less) in which the samples are taken before determining whether the system exceeded the bacteria standard. Consequently, by the time the system learns of the violation and of the need for public notification, it is too late to effectively warn water users of any potential health threat.

An example of long lag time follows. In July 1980, the New Berlin, Pennsylvania, community water system, which serves 850 customers, violated the coliform bacteria standard. EPA's Philadelphia regional office identified the violation on August 19, 1980, and notified the system of the violation and the need for public notification on September 11, 1980. The system in turn notified its users of the violation by letter on September 15, 1980--2 months after the violation occurred. Although we are unaware of any sickness or illness resulting from this incident, the point remains that public notification was not made in sufficient time to adequately warn the users of a potential health threat.

With regard to the Congress' second objective--to inform and educate the public about problems and shortcomings in their water systems and mobilize public support for the expenditures associated with needed improvements--we also question the effectiveness of the program.

Again, little information is available regarding either the program's effectiveness or the costs associated with public notification. However, two published studies--the first entitled "Evaluation of the Cost and Effectiveness of Public Notification Requirements" by Applied Science Associates, Inc., under contract with EPA and the second entitled "Public Notification: Pain or Panacea" by W. Bruvold and J. Gaston published in the "Journal of the American Water Works Association," March 1980--revealed the following information.

Data for the Applied Science Associates, Inc., study was collected from 14 States identified by EPA. Ten of the States had primacy, and EPA administered the program in the other 4 States. The rate of issuance of public notification in these States had been high.

A questionnaire was mailed to 190 water systems identified by the States. Completed questionnaires were obtained from 176 water systems (93 percent). Data for 164 water systems were analyzed. Researchers interviewed 1,400 customers from 28 of the water systems.

Sixty-two of 144 water systems indicated that they did not design their notification to elicit public support. (Twenty of the 164 water systems analyzed did not respond to the question of system notification design.) For the 82 water systems that did, 61 percent said they felt it was not effective, 23 percent said it was somewhat effective, and only 16 percent said it was very effective. All of those saying it was very effective were small water systems. Two-thirds of the large water systems did not use public notification in this way, and three out of four who did said it was not effective.

Thirty-seven percent of the water systems felt their customers were willing to spend additional money for improvements in their water services, 31 percent felt their customers were only willing to spend additional money to correct problems as they arose, and 7 percent felt their customers were only willing to spend money to build new facilities or modernize existing ones. Twenty-four percent of the systems thought the customers would be willing to spend additional funds for both. No relationship existed between the effectiveness of public notification and the willingness to spend money.

Over 50 percent of the systems took the time to write comments about the public notification requirements. The most common complaints dealt with the requirement of notifying for one bad sample, the delay between the violation and the notification, and the requirement to use both direct and indirect notification. Generally, the systems did not find the consumer reaction to be worth the cost of notification. The water systems were in agreement that public notification does little to educate or inform the public, and some systems felt notices alarm customers. While some systems feel that consumers are generally indifferent to water problems, others express the feeling that it is unreasonable to expect customer support, given the delay between the violation and notification.

The Bruvold and Gaston study consisted of ascertaining public awareness of public notification in eight California communities. Surveys were conducted approximately 1 month after the most recent notifications were distributed to the communities. About one-half of the respondents clearly recalled receiving the notification, 10 percent were not sure, and about 40 percent had never seen it. When asked about the nature of the problem, 7 percent of the respondents clearly understood the problem requiring notification, 46 percent partially understood the problem, 9 percent did not understand the problem, and 38 percent were unaware that the problem existed.

While we recognize that these two limited studies are not in themselves conclusive evidence of either program success or failure, they do agree with information we obtained through discussions with both EPA and State drinking water officials on the system's effectiveness. For example:

--The section chief, West Virginia Drinking Water Division's Southern Districts, told us that public notification is untimely and not effective for alerting users to immediate health hazards. This official viewed it as a type of punishment. The section chief, Northern Districts, felt that public notification is ineffective because it is untimely, water users do not understand the notices, and users are apathetic toward public notification.

--The water supply program integrator, Oklahoma Environmental Health Services, told us that constantly requiring public notification has diluted the effectiveness of the program and resulted in user apathy toward the process. He said that some water quality problems will take 5 or 6 years to correct and requiring public notice while the problem continues is ridiculous.

--The EPA Denver regional office South Dakota section chief told us that public notification is not effective because it usually occurs 1 to 1-1/2 months after the violation--too late to be effective in warning users of potential health hazards. Also, this official told us the notices generally appear in the newpaper's legal section, which in his opinion, is not read.

ACTIONS EPA IS TAKING ON PUBLIC NOTIFICATION SYSTEM

In December 1981, EPA responded to the Applied Science Associates, Inc., report on the cost and effectiveness of public notification by publishing an issue paper requesting public comment on the public notification requirements and several other aspects of the drinking water program. EPA anticipated that the public and private input would help formulate proposed amendments to the act or, as a minimum, to the Federal drinking water regulation.

The EPA Office of Drinking Water held two public hearings on the issue paper in early February 1982 and plans to provide the National Drinking Water Advisory Council with a summary of the comments and proposed recommendations late in March 1982. The Office of Drinking Water anticipates that shortly thereafter the council will forward the recommendations on to the Administrator, EPA.

In a January 1982 meeting, the Director, Office of Drinking Water, told us that EPA's thinking regarding public notification is not to abandon the process but to make it more flexible--requiring it for water systems that continually fail to test their water or meet the water quality standards and reducing or possibly eliminating the requirements for public notification for systems which only occasionally violate the regulations.

CONCLUSIONS

While the Congress' intent in establishing the public notification requirements in the Safe Drinking Water Act is clear, implementation of the program and its overall effectiveness appears questionable. Literally thousands of violations each year--both for failure to test the water supplies and for exceeding the drinking water quality standards--go unreported to the systems' users. Apathy appears to reign supreme on the part of both the users and Federal, State, and local government officials on the need for, as well as the effectiveness of, the program. No evidence exists in our review to show that the failure to notify system users has resulted in waterborne disease outbreaks, illness, or death.

Yet, in an emergency situation, the program appears to be effective and, in fact, necessary to ensure the protection of system users.

EPA's current action in studying the program--both its pros and cons--is a step in the right direction. If properly and effectively carried forward, this effort should result in actions designed to improve the program.

STATE PRIMACY REQUIREMENTS

State primacy requirements are set forth in 40 C.F.R. 142.10 of the National Interim Primary Drinking Water Regulations. To receive primacy the States must:

--Adopt drinking water regulations that are at least as stringent as the national interim primary drinking water regulations.

--Adopt adequate procedures for maintaining a public water system inventory.

--Establish a systematic program for conducting sanitary surveys of public water systems, with priority given to systems not in compliance with the State drinking water regulations.

--Establish and maintain an adequate program for certifying the laboratories that conduct the drinking water tests.

--Assure that laboratory facilities are certified by EPA and capable of performing analytical measurements specified in the drinking water regulations.

--Establish and maintain procedures for recordkeeping and reporting its activities.

--Establish a plan to supply drinking water during emergencies.

--Establish and maintain an activity to review the design and construction of new or modified water facilities to insure that the systems are capable of providing water which meets the State drinking water standards.

--Issue variances and exemptions (if it elects to do so) under conditions as stringent as those in the act.

--Have the authority to apply the State drinking water regulations to all public water systems under the State jurisdiction.

--Have the authority to assess civil and criminal penalties for violations of the State drinking water regulations by public water systems.

--Have the authority to require public water systems to give public notice of violations of the State primary drinking water regulations.

--Have the authority to sue in courts to enjoin any threatened or continuing violation of the State drinking water regulations.

--Have the authority to require public water systems to keep appropriate records and make appropriate reports to the State.

--Have the right to enter and inspect public water systems, including the right to take water samples.

SAMPLED COMMUNITY SYSTEMS FAILING TO COMPLY WITH FEDERAL MONITORING REQUIREMENTS, BY STATE AND CONTAMINANT

Coliform Bacteria

State	Systems sampled	Systems with violations
Pennsylvania	20	6
Virginia	20	4
West Virginia	20	11
Texas	20	1
Oklahoma	20	13
Colorado	20	10
South Dakota	20	8
Total	140	53

Turbidity

Pennsylvania	5	1
Virginia	2	-
West Virginia	8	1
Texas	9	2
Oklahoma (note a)	12	7
Colorado	2	-
South Dakota	2	-
Total	40	11

Inorganic Chemicals

Pennsylvania	20	1
Virginia	20	-
West Virginia	20	19
Texas	20	-
Oklahoma	20	-
Colorado	20	12
South Dakota	20	2
Total	140	34