

American Water Works Association

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FOREWORD

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REGULATIONS: REACTIONS AND RESOLUTION

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INTRODUCTION

One year ago, I had the pleasure of speaking to you at your Dallas, Texas, Research Conference just a few weeks prior to the passage of the Safe Drinking Water Act. This legislation was signed by President Ford on December 17, 1974. This year I am very pleased to appear before you as the Assistant Administrator for Water and Hazardous Materials and to address the progress we have all made in implementing the requirements of the Act.

The provisions of the various regulations required by the Act will determine how numerous levels of government and the water industry can best serve the public interest for decades to come.

THE SAFE DRINKING WATER ACT: A NATIONAL PROGRAM

To assure that the objectives of the regulations are reachable, cost effective as well as legally valid we have sought out, are listening to, and working with water supply professionals as well as representatives of State and local government, and consumer interest groups. Not only is this approach consistent with statutory, legislative and administrative intent, it is essential if we are to implement the numerous statutory dates and begin to approach the goal - Safe Drinking Water for All Americans.

More specifically, the Act directs that EPA shall counsel with and develop a comprehensive series of regulations to be implemented at the State and local level. The principal programs which are now under way include:

- First - Interim Primary Drinking Water Regulations applicable to public water systems to assure safe water at the consumer's tap;
- Second - State Implementation and Grant Regulations defining supervisory efforts in support of the public water supply supervision programs;

- Third - State Supervisory Underground Injection Control Programs to control waste injection and, thereby, protect the quality of the Nation's underground sources of drinking water;
- Fourth - State Implementation and Grant Regulations defining supervisory efforts in support of the underground injection control programs;
- Fifth - A National Rural Water Survey to determine the quantity, quality and availability of rural drinking water supplied by non-public systems.

NATIONAL DRINKING WATER ADVISORY COUNCIL

Clearly, the Act does not call for a Federal centered program. It does require a new National program. Thus, it was not a coincidence that EPA's first priority was to establish the National Drinking Water Advisory Council.

The Council is composed of five members of the public, five from State and local agencies, and five members representing private organizations demonstrating an active interest in the field of water hygiene and public water supply. The function of the 15 member Council is to regularly meet with Administrator Train and EPA staff to advise, consult with and make recommendations to the Administrator on matters related to the implementation of the Safe Drinking Water Act. These matters concern activities, functions and policies of the Agency.

The Council takes its responsibility seriously and we take the Council seriously. Indeed, several Council members are here today to both attend this conference as well as to meet as Council subcommittees on Research and Development, and Manpower and Training to prepare for the next full Council Meeting in Washington on December 11, 12, 1975.

PUBLIC INVOLVEMENT

In addition to our interaction with the Council, We are required to hold statutory public hearings and to request comments from the public at large. In order to assure that we hear all the voices we have convened numerous meetings with representatives of State agencies and public interest groups, and sponsored State-wide and local workshops in conjunction with the American Water Works Association and the State Sanitary Engineers.

THE DRINKING WATER REGULATIONS

Once having established public involvement in the regulatory process, we secured the Council's advice and then met the first statutory date imposed by the Act by publishing the proposed Interim Primary Drinking Water Regulations on March 14, 1975. This provided an early opportunity for professional community and the public at large to begin debate on the appropriateness of these regulations. In addition, we augmented the seven EPA work groups, which had been formed to draft regulations and guidelines, by adding 27 State and local officials and private citizens to assist in assessing public reactions and resolving many issues as promptly as possible.

REACTIONS AND RESOLUTIONS

WATER SYSTEMS COVERED. The Safe Drinking Water Act begins by defining a "public water system" as "a system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals." The definition of "public water system" proposed in the March 14, 1975, Regulations sought to explain the meaning of the statutory reference to "regular" service. Because the proposed definition would have excluded many large campgrounds, lodges, and other public accommodations which serve large numbers of tourists but which are open for slightly less than three months each year, the definition in the final version covers systems serving an average of at least twenty-five individuals at least 60 days out of the year.

Obviously, the possible health effects of a contaminant in drinking water in many cases are quite different for a person drinking the water for a long period of time than for a person drinking the water only briefly or intermittently. This position was identified in the March 14 proposal and was sustained by the majority of public comments. As a consequence, different regulatory considerations may in some cases apply to systems which serve residents as opposed to systems which serve transients or intermittent users. Accordingly, the published regulations make it clear that all "public water systems" fall within either the category of "community water systems" or the category of "non-community water systems."

SMALL COMMUNITY WATER SYSTEMS. Many community water systems in the country are quite small. Since it is the intention of the Act to provide basically the same level of health protection to residents of small communities as to residents of large cities, and since a number of advanced water treatment techniques are made feasible only by economies of scale, the cost of compliance with

the requirements of the Act may pose a serious problem for some small communities.

Considerable public comment was received on this point. As a consequence, the regulations seek to recognize the financial problems of small communities by requiring more realistic monitoring for systems serving fewer than 1,000 persons. Moreover, variances and exemptions authorized by the Act can also assist in dealing with economic problems of small community systems in appropriate cases, at least temporarily, and EPA will provide technical assistance on effective treatment techniques which can be used by small systems. Such small systems may also have less expensive alternatives through regionalization or the development of alternative sources. EPA is commencing additional studies of the economic impact upon small community systems in meeting applicable requirements under the Act and these regulations, and if necessary, will make additional adjustments in the Interim Primary Drinking Water Regulations prior to their effective date, eighteen months after promulgation.

NON-COMMUNITY SYSTEMS. Basically, these systems serve transients. They include hotels, motels, restaurants, campgrounds, service stations, and other public accommodations which have their own water system and which have at least 15 service connections or serve water to a daily average of at least 25 persons. Some schools, factories and churches are also included in this category. It is conservatively estimated that there are over 200,000 non-community water systems in the country. However, it should be recognized that while their number is large, they normally are not the principal source of water for the people they serve.

The regulations as originally proposed would have applied all maximum contaminant levels to non-community systems as well as to community systems. This approach failed to take into account the fact that the proposed maximum contaminant levels for organic chemicals and most inorganic chemicals were based on the potential health effects of long-term exposure. Those levels are not necessary to protect transients or intermittent users. Therefore, the final regulations provide that maximum contaminant levels for organic chemicals, and for inorganic chemicals other than nitrates, are not applicable to non-community systems. An exception was made for nitrates because they can have an adverse health effect on susceptible infants in a short period of time.

These systems will not be monitored for organic chemicals or most inorganic chemicals. In the initial stages of implementation of the drinking water regulations, monitoring results from tens of thousands of non-community systems could overwhelm laboratory

capabilities and other resources. This could delay effective implementation of the regulations with respect to the community systems which provide the water which Americans drink every day. To avoid this result, non-community systems will be given two years after the effective date of the regulations to commence this limited monitoring. In the meantime, non-community systems which already monitor their water are encouraged to continue to do so, and the States are encouraged to take appropriate measures to test or require monitoring for non-community systems that serve large numbers of people. Of course, non-community systems which pose a threat to health should be dealt with as quickly as possible. The maximum contaminant levels applicable to non-community water systems therefore will take effect 18 months after promulgation, at the same time as levels applicable to community systems. Inspection and enforcement authority will apply to non-community systems at the same time as community systems.

SANITARY SURVEYS. While the importance of frequent measurements to establish the quality of water actually delivered cannot be denied, our March proposal neglected the importance of professional on-site sanitary surveys to be conducted by State or county inspectors. Numerous comments were received on this point and our final regulations not only define the term, but EPA encourages the States to conduct sanitary surveys on a systematic basis.

These on-site inspections of water systems are more effective in assuring safe water to the public than individual tests taken in the absence of sanitary surveys. The regulations provide that monitoring frequencies for coliform bacteria can be changed by those States with primary enforcement responsibility for an individual non-community system, based on the results of a sanitary survey.

MAXIMUM CONTAMINANT LEVELS. Numerous comments were received by EPA on the substances selected for the establishment of maximum contaminant levels and on the levels chosen. Congress anticipated that the initial Interim Primary Drinking Water Regulations would be based on the Public Health Service Standards of 1962, and this Congressional intent has been followed. Comments received on the various levels did not contain new data sufficient to require the establishment of levels different from those contained in the Public Health Service Standards.

WATER CONSUMPTION. The maximum contaminant levels are based, directly or indirectly, on an assumed consumption of two liters of water per day. The same assumption was used in the 1962 Standards. This assumption was challenged because of in-

stances where much higher water consumption rates occur. EPA's justification for using the two liter figure is that it already represents an above average water or water-based fluid intake. Moreover while the factor of safety may be somewhat reduced when greater quantities of water are ingested, the maximum contaminant levels based on the two-liter figure provided substantial protection to virtually all consumers.

If, as has been suggested, a water consumption rate of eight liters per day is used as the basis for maximum contaminant levels, all of the proposed MCL's would have to be divided by four, greatly increasing the monitoring difficulties, and in some cases challenging the sensitivity of accepted analytical procedures. It could be expected, in such a case, that the maximum contaminant levels would be exceeded to a significant degree, and that specialized treatment techniques would be required in order that the contaminant levels would be reduced. The economic impact of a move in this direction would be enormous. It is not technically or economically feasible to base maximum contaminant levels on unusually high consumption rates.

POINT OF MEASUREMENT. Other comments on maximum contaminant levels focused on the proposed requirements that such levels be tested at the consumer's tap. Concern was expressed over the inability of the public water system to control potential sources of contaminants which are under the control of the consumer.

The promulgated definition of "maximum contaminant level," retains the requirement that the maximum contaminant level be measured at the tap except in the case of turbidity, which should be measured at the point of entry to the distribution system. However, the definition has been expanded to make clear that contaminants added to the water by circumstances under the control of the consumer are not the responsibility of the supplier of water, unless the contaminants result from corrosion of piping and plumbing resulting from the quality of the water supplied. It should be noted, however, that this requirement should not be interpreted as to discourage local, aggressive, cross connection control measures.

SAFETY FACTORS. A question was raised about the fact that different safety factors are contained in various maximum contaminant levels. The levels are not intended to have a uniform safety factor, at least partly because the knowledge of and the nature of the health risks of the various contaminants vary widely. The levels set are the result of experience, evaluation of the available data, and professional judgement. They have withstood the test of time and of professional review. They are being subjected to further review by the National Academy of Sciences in connection with development of data for the Revised Primary Drinking Water Regulations.

MCL's BASED ON TEMPERATURE. A Question was also raised as to whether ranges of maximum contaminant levels should be established on the basis of the climate in the area served by the public water systems, as was done with fluoride. EPA believes that the use of a temperature scale for fluoride is more appropriate than for other chemicals because of the studies available on the fluoride-temperature relationship and because there is a small margin with fluoride between beneficial levels and levels that cause adverse health effects.

COLIFORM BACTERIA MCL'S. The promulgated MCL's for coliform bacteria are basically the 1962 Public Health Service Standards, with minor refinements and clarifications. However, further changes may be desirable. For example, the MCL's for the membrane filter analytical method do not resolve the question of how many coliform bacteria are assumed to be present in a single highly contaminated sample. Some laboratories assume an upper limit of 50, while others seek to continue to count individual bacteria to a level of 100 or even higher in a single sample. The upper limit assumed will affect the monthly average which is calculated to determine compliance with the MCL's. Another question relating to the coliform bacteria MCL's is the matter of possible spurious positive samples. As the regulations are written, all routine samples taken to determine compliance with the MCL's must be counted, regardless of the results of analysis of any check samples that may be taken. The reason for this is that bacterial contamination is often intermittent or transient, and as a result negative check samples taken a day or more after a positive sample cannot demonstrate that the positive result was in error. It may be possible, however, to prescribe a means of dealing with spurious positive results without compromising the integrity of the MCL's.

A third question concerning the MCL's for coliform bacteria is the relationship of monthly averages of coliform bacteria levels to monthly percentages of positive samples. For example, the monthly average MCL for the membrane filter method is violated if the monthly average exceeds one coliform bacterium per sample. However, for purposes of determining whether the monthly-percentage-of-positive-samples MCL is violated, a sample is counted as positive only if it contains more than four coliform bacteria. Thus, it is possible, particularly when a relatively small number of samples is taken, for a system to fail the monthly average MCL even when no single sample taken during the month is out of compliance with the limit.

These and other questions concerning the coliform bacteria MCL's will be reviewed further by EPA. If review indicates that changes in the MCL's are desirable, those changes will be made in time to

take effect at the same time as the initial Interim Primary Drinking Water Regulations.

MCL'S DELETED. Three proposed maximum contaminant levels have been eliminated in the final regulations because they are not justified by the available data. One of these is carbon chloroform extract (CCE), which is discussed separately below. The others are the proposed levels for the standard bacterial plate count and cyanide. In the case of the plate count, it is believed that the coliform limits contained in the regulations, combined with the turbidity maximum contaminant level, adequately deal with bacterial contamination. However, EPA continues to believe that the standard plate count is a valid indicator of bacteriological quality of drinking water, and recommends that it be used in appropriate cases in conjunction with the coliform tests as an operational tool.

The proposed maximum contaminant level for cyanide was eliminated because the possibility of cyanide contamination can be effectively addressed only by the use of emergency action, such as under Section 1431 of the Act. EPA's 1969 Community Water Supply Study did not reveal a single instance in which cyanide was present in a water system at a level greater than one one-thousandth of the level at which cyanide is toxic to humans. Available data indicate that cyanide will be present in water systems at toxic levels only in the event of an accident, such as a spill from a barge collision. Maximum contaminant levels are not the appropriate vehicle for dealing with such rare, accidental contamination.

Heptachlor, heptachlor epoxide and chlordane have also been removed from the list of maximum contaminant levels at least temporarily in view of the pending cancellation and suspension proceedings under the Federal Insecticide, Fungicide and Rodenticide Act involving those pesticides. When the results of these proceedings are available, EPA will again consider whether maximum contaminant levels should be established for those three pesticides.

FUTURE MCL'S

SODIUM AND SULFATES. A number of comments were received on the potential health effects of sodium and sulfates. The National Drinking Water Advisory Council has recommended that consideration be given to the monitoring of these constituents, but has not recommended the adoption of maximum contaminant levels because available data do not support the adoption of any specific levels. EPA has requested the National Academy of Sciences to include sodium and sulfates among the contaminants to be studied by NAS, and to include information on the health effects of sodium and sulfates in the report to be made by NAS in December 1976.

Since a number of persons suffer from diseases which are influenced by dietary sodium intake and since there are others who wish to restrict their sodium intake, it is desirable that the sodium content of drinking water be known. Those affected can, by knowing the sodium concentration in their drinking water, make adjustments to their diets or, in extreme cases, seek alternative sources of water to be used for drinking and food preparation. It is recommended that the States institute programs for regular monitoring of the sodium content of drinking water served to the public, and for informing physicians and consumers of the sodium concentration in drinking water.

A relatively high concentration of sulfate in drinking water has little or no known laxative effect on regular users of the water, but transients using such water sometimes experience a laxative effect. It is recommended that the States institute monitoring programs for sulfates, and that transients be notified if the sulfate content of the water is high. Such notification should include an assessment of the possible physiological effects of consumption of the water.

PCB'S AND ASBESTOS. Among the comments received from Federal agencies, concern for asbestos and PCB's in the environment was expressed with the suggestion that EPA introduce a monitoring requirement, for these contaminants. EPA is also concerned, but for the moment lacks sufficient evidence regarding analytical method, health effects, or occurrence in the environment to establish MCL's. The Agency is conducting research and cooperating in research projects to develop criteria for establishing needed limits as quickly as possible. A monitoring study on a number of organic chemical contaminants, including PCB's, for which MCL's are not being monitoring regulation that is being promulgated with these regulations. Regarding asbestos, HEW and EPA are sponsoring a number of studies this year at an approximate cost of \$16 million to establish health effects, analytical methods and occurrence.

ORGANIC CHEMICALS. The proposed maximum contaminant levels for organic pesticides, other than the three which are the subject of cancellation and suspension proceedings, have been retained. It is anticipated that additional organic pesticides will be added to the regulations if surveys of pesticides in drinking water being conducted by EPA indicated that this is needed.

The proposed regulations also contained a maximum contaminant level for organic chemicals obtained by the carbon chloroform extract (CCE) method. It was anticipated by Congress that organic chemicals would be dealt with primarily in the Revised Primary Drinking Water Regulations because of the paucity of accurate data on the health effects of various organic chemicals, the large

number of such chemicals, uncertainties over appropriate treatment techniques, and the need for additional information on the incidence of specific organic chemicals in drinking water supplies. EPA proposed the CCE standard with the thought that it might provide an appropriate means of dealing with organic chemicals as a class pending action on the Revised Primary Regulations. The CCE standard was originally developed as a test for undesirable tastes and odors in drinking water. As concern developed over the health effects of organic chemicals, the possibility of using CCE as a health standard rather than an esthetic standard was considered.

As pointed out by numerous comments, CCE has many failings as an indicator of health effects of organic chemicals. To begin with, the test obtains information on only a fraction of the total amount of organic chemicals in the water sampled. Furthermore, there is serious question as to the reliability of CCE in identifying those organic chemicals which are most suspected of adverse health effects. In addition, there are no existing data on which a specific level for CCE can be established on a rational basis. To establish a maximum contaminant level under these circumstances would almost certainly do more harm than good. It could give a false sense of security to persons served by systems which are within the established level and a false sense of alarm to persons served by systems which exceed the level. It also would divert resources from efforts to find more effective ways of dealing with the organic chemicals problem.

EPA believes that the intelligent approach to the organic chemicals question is to move ahead as rapidly as possible along two fronts. First, EPA will expand its organic chemical monitoring program. Approximately 100 public water systems will be requested to collect samples of raw and treated water for submission to EPA for organics analysis. EPA will analyze the samples for a number of broad organic parameters, including carbon chloroform extract (CCE), volatile and non-volatile total organic carbon (VTOC and NTOC), total organic chlorine (TOCl), ultraviolet absorbancy, and fluorescence. In addition, analyses will be performed for about 20 specific organic compounds. Selection of the specific compounds has been based on the occurrence or likelihood of occurrence in treated water, toxicity data and availability of practical analytical methods. Laboratory analyses will be used to evaluate the extent and nature of organic chemical contamination of drinking water, to evaluate the validity of the general organic parameters as surrogates for measures of harmful organic chemicals, and to determine whether there is an adequate basis for establishing maximum contaminant levels for specific organics or groups of organics.

Second, EPA is embarking on an intensive research program to find answers to the following four questions: