

**BEFORE THE
DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING**

IN THE MATTER OF CHAPTER 1,)
QUALITY STANDARDS FOR)
WYOMING SURFACE WATERS,)
WATER QUALITY RULES AND)
REGULATIONS)

STATEMENT OF PRINCIPAL REASONS

The Department of Environmental Quality (DEQ), Water Quality Division, pursuant to the authority vested in it by the Act, Wyoming Statutes 35-11-101 to 1507 *et seq.*, proposes to amend and revise Chapter 1 of the Wyoming Water Quality Rules and Regulations. Chapter 1 contains the quality standards for surface waters in the state including water classifications and designation of protected uses.

The department began a comprehensive revision (*Triennial Review*) of the Chapter 1, Surface Water Quality standards in March, 1998. This process is currently ongoing and has included an initial outreach and scoping process, numerous statewide public meetings, and the publication of four draft iterations. All aspects of the surface water standards are under consideration in that rule making process. However, this rulemaking process is not anticipated to be complete before late calendar year 2000.

Presently there is a large interest in Wyoming, primarily in the northeastern counties, to develop and produce methane from coal formations found in the area. In the triennial review draft documents, the department has recognized a need to revise various components of the standards in response to coal bed methane development issues. The DEQ has also recognized that the administrative rule making processes associated with the triennial review may not be completed as quickly as is needed to avoid unnecessary permitting delays to the gas production industries. The purpose of today's rule making is to expedite the adoption of several key elements of *the standards to be responsive to immediate needs of the coal bed methane industry while the remainder of the triennial review runs its course.*

This proposal does not include extensive consideration of the standards and water classifications, but is limited to a revision of the numeric criteria for arsenic, barium, iron and manganese, and the creation of a new appendix for the listing of site-specific criteria. This proposal only consists of a limited revision to Appendix B and Appendix F of the Chapter 1 Water Quality Rules and Regulations. Appendix B contains numeric aquatic life and human health values for a wide range of priority and non-priority pollutants which may be found naturally or discharged into waters of the state. Appendix F contains equations for calculating numeric aquatic life values for a number of metals where toxicity is related to water hardness.

Proposed Revisions to Chapter 1, Appendix B

Arsenic

Arsenic is a priority pollutant which can be found in Wyoming waters in either naturally occurring concentrations or as a result of industrial and agricultural discharges. It is known to exhibit toxic effects on aquatic life and is listed by the U.S. Environmental Protection Agency (EPA) as a human carcinogen. The current Wyoming standards in Chapter 1, Appendix B provide both aquatic life and human health values for arsenic. The human health values are based on two routes of exposure, drinking water and consumption of aquatic organisms, and refer to the total amount of arsenic present (dissolved plus suspended) while the aquatic life values represent the acid-soluble fraction.

We are not proposing to change the aquatic life numeric values, however, we are proposing that the values refer to the dissolved fraction rather than the acid-soluble fraction. This modification is based on the EPA's current national water quality criteria recommendation.

The current Wyoming human health criterion is 0.018 parts per billion (ppb) and is intended to maintain an in-stream level of water quality that will support drinking water supplies and fish consumption from the associated waters. This value was based on the nationally recommended criteria in 1990 during the last triennial review. The Federal Safe Drinking Water Act, however, establishes the Maximum Contaminant Level (MCL) for arsenic in public water supplies at 50 ppb. The department recognizes that these two values cannot be reconciled since the in-stream value is more than 2700 times more stringent than the value needed at a drinking water tap. EPA has also recognized the inconsistency in these values and is currently revising the drinking water MCL and proposing an equivalent in-stream water quality criterion. A final federal MCL is not expected to be adopted until 2001.

Though a final MCL has not yet been adopted, EPA anticipates a value in the range between 2 and 20 ppb. The Council adopted a Wyoming standard at 7 ppb with the intention of revisiting the standard once EPA adopts a final MCL. We are proposing that the 7 ppb value apply for human exposure from drinking water plus fish consumption. This value for arsenic represents the total recoverable amount.

Barium

Barium is a non-priority pollutant which occurs in Wyoming waters from either natural or human-caused sources. There are adverse human health effects associated with elevated concentrations of barium, however, it is not believed to be a significant threat to aquatic life at concentrations that can potentially be achieved in surface water systems. Therefore, an aquatic life value for barium has not been developed.

The current Wyoming human health criterion of 1000 parts per billion (ppb) is based on EPA's nationally recommended water quality criteria and is intended to protect in-stream water quality to the extent that it will support public drinking water uses without additional treatment. The Federal Safe Drinking Water Act, however, establishes the Maximum Contaminant Level (MCL) for barium in public water supplies at 2000 ppb. In this rule making, the human health value for barium has been raised to 2000 ppb to be consistent with the Safe Drinking Water Act MCL. The proposed 2000 ppb value represents the total recoverable amount and is applicable on waters that are designated for drinking water protection.

Iron

Iron is a ubiquitous substance which may be found at some concentration in most surface waters. It is an essential element required by both plants and animals. In the presence of dissolved oxygen, however, iron in water may precipitate as a hydroxide or ferric oxide which can be detrimental to resident aquatic communities. Currently, Chapter 1 provides a chronic aquatic life criterion of 1000 parts per billion measured as the acid-soluble fraction. In this rule making, we are maintaining the 1000 ppb numeric value, however, we are proposing that the value refers to the dissolved fraction rather than the acid-soluble fraction. This modification is based on the EPA's current national water quality criteria recommendation.

The current Wyoming standards also provide a 300 ppb human health criterion, expressed as the total recoverable amount applicable to the protection of drinking water supplies. Though listed as a human health value, the allowable iron concentration is based on aesthetic considerations rather than health concerns. Concentrations greater than 300 ppb may impart an objectionable taste to the water along with staining laundry and plumbing fixtures, making it unusable for water supplies or industrial uses. We are proposing to maintain the 300 ppb drinking water value but to base it on the dissolved fraction rather than the total recoverable amount.

Manganese

Like iron, manganese is an essential trace element required by both plants and animals. It is also listed as a human health value, though the allowable concentration is based on aesthetic considerations rather than health concerns. Unlike iron, however, numeric aquatic life criteria are not currently provided in the Wyoming Surface Water Standards.

The current Wyoming standards provide a human health criterion of 50 ppb expressed as the total recoverable amount on waters designated for drinking water protection. This level is based on the nationally recommended criteria and is believed to be sufficient to eliminate objectionable taste and discoloration effects in drinking water or industrial supplies. We are proposing to maintain the 50 ppb drinking water value but to base it on the dissolved fraction rather than the total recoverable amount.

As mentioned above, Chapter 1 does not currently contain aquatic life criteria for manganese. In this rule making, acute and chronic values have been added and are applicable in those watersheds where the 50 ppb human health criterion has been eliminated (*see Site Specific Criteria below*). This action was taken to fill the gap that results when the human health criterion is removed. On waters designated for both aquatic life and drinking water protection, the human health value assures adequate protection for aquatic life. Less stringent values for manganese have been developed specifically for the protection of aquatic life where the drinking water value does not apply. These values are hardness dependant and must be calculated based on the ambient concentration of calcium carbonate ($CaCO_3$).

Site Specific Criteria

We are also proposing to eliminate the human health criterion for iron and manganese in selected watersheds where it has been demonstrated that there are no current drinking water supplies dependant upon or influenced by surface water sources, and where there is no reasonable potential for future public water supply development, or drinking water sources are sufficiently downstream or isolated from the stream as to have little or no effect on the drinking water source. These areas are listed in a new section in Appendix B entitled "*Site Specific Criteria*". The rationale for the watersheds selected is based on information contained in a December 1999

report, prepared by Camp, Dresser & McKee, entitled *Technical Support for Removal of Secondary Standards for Iron and Manganese for Drinking Water from Specific Watersheds' Stream Water Quality Criteria*. If in the future these watersheds become the source of drinking water supplies, the Council will revisit this waiver of the manganese and iron criteria.

Appendix F - Equations for Parameters with Hardness Dependence

The equations used to calculate the 4-Day Average Concentration (*chronic value*) and the 1-Hour Average Concentration (*acute value*) for aquatic life protection for manganese have been added to Appendix F.

Purpose and Intent of this Proposed Revision

The purpose for this revision is to update selected water quality criteria to meet the most current national recommendations and to provide reasonable effluent limits for coal bed methane development in watersheds where there are no existing or potential public drinking water supplies. The proposed revisions are intended to protect and maintain the designated uses of waters of the state and to achieve the goals of the federal Clean Water Act. This will be accomplished by setting appropriate water quality criteria for selected pollutants and by tailoring the application of these criteria to waters that may support the intended uses.

Compliance with Federal Regulations (WS 16-3-103(a)(i)(F))

These rule revisions are proposed to comply with the federal regulations regarding the adoption of state water quality standards, specifically 40 CFR Part 131.11 which requires the establishment of numeric and narrative water quality criteria sufficient to protect the water's designated uses. These proposed rule changes meet the minimum federal requirements provided in that section.

The Principle Reasons for These New and Revised Rules Include:

The triennial review of the state's surface water standards is required under federal law. The proposed revisions are a part of that review, however, the expedited adoption of these portions is necessary to provide an efficient administrative structure for regulating coal bed methane development and discharges to surface waters of the state.

The revision to the arsenic criterion is necessary because the current standard of 0.018 ppb is far below the level believed to be safe for drinking water supplies. Furthermore, the 0.018 ppb criterion creates an unachievable goal because many surface waters in the state have naturally occurring levels of arsenic greater than 1 ppb. Maintaining the current standard will result in technical impairments and subsequent 303(d)¹ listings even though there is no real risk to human health. The proposed 7 ppb standard is well below the current drinking water MCL (50 ppb) and is within the expected range of the revised MCL currently under consideration by EPA. This change is being made with the intention of further revising the standard (if necessary) when the new drinking water MCL is finalized.

¹ Section 303(d) of the Clean Water Act requires the listing and development of Total Maximum Daily Loads (TMDLs) for all substances in excess of the adopted criteria applicable to the associated waterbody.

As with arsenic, the Clean Water Act recommended human health criterion for barium is significantly more stringent than the Safe Drinking Water Act Maximum Contaminant Level. Because the purpose of the standard is to protect drinking water supplies, it is appropriate to revise the Wyoming value to be consistent with the Safe Drinking Water Act limit.

The revision of the iron and manganese standards from the total recoverable amount to the dissolved fraction is appropriate. The purpose for the values is to ensure the availability of high quality drinking water supplies that are free from objectionable taste and discoloration effects. It is the dissolved amount of these substances that is relevant to that purpose. Suspended amounts of these substances would be removed through conventional drinking water treatment processes.

The requirement to meet the iron and manganese standards has been removed from selected watersheds where there is no current use of surface waters for public drinking water supplies and where there is not a reasonable potential for that use or adverse effect to existing downstream uses. These standards are specifically intended to protect drinking water and it is unnecessary to require compliance in the absence of that use.

The addition of new aquatic life standards for manganese is necessary to maintain an adequate level of protection for fish and other aquatic species on those waters where the human health value for manganese has been removed.

Effect of the Rule Revision

The Council anticipates that the result of these proposed revisions will provide a level of protection sufficient to address public health and environmental concerns. The revised standards will provide an improved permitting process for coal bed methane related discharges by setting scientifically defensible numeric standards and tailoring the application of these criteria to address site-specific realities.

Public Participation

On March 2, 1998, a public notice announcing the department's intention to revise the Chapter 1 surface water regulations was released for the purpose of soliciting comment relating to the proposal. A public meeting was held via the Wyoming Video Conference System on April 6, 1998 during which the department accepted both oral and written comments. Comments received as a result of this public outreach were considered in the drafting of the proposed revisions.

In addition to the original outreach document, four draft iterations of proposed regulations have been developed and public comments were solicited on three of the four drafts. The Water and Waste Advisory Board held public meetings on September 25, 1998 and June 22, 1999 to receive oral and written comment on the first two drafts respectively. The department did not seek public comment on the third draft which was discussed at the Advisory Board's regular meeting on October 21, 1999. At this meeting the board made further recommendations and revisions resulting in the development of a fourth draft which was made available for public review and comment. Written comments only were solicited and were accepted by the board on January 14, 2000.

In early December 1999, the department segregated the specific portions of the proposed Chapter 1 revisions addressed in today's rule making for expedited adoption. A separate notice of this proposed action was published on December 6, 1999 and the Water and Waste Advisory Board accepted oral and written comments at a specially-scheduled meeting on January 7, 2000.

All of the comments received and the Advisory Board's recommendations have been considered and addressed in this rule revision. The Advisory Board recommended this rule to the Council at their meeting on January 7, 2000.

Finally, the Council held a public hearing via the Wyoming Video Conference System on March 2, 2000. All public comments were considered during the adoption of these rules.

Conclusion. The Council has determined that the adoption of these rules is necessary to update the numeric water quality criteria to be consistent with the current national recommendations and to address immediate coal bed methane permitting issues with reasonable protective standards.

EXECUTED THIS 7th DAY OF March, 2000.

FOR THE ENVIRONMENTAL QUALITY COUNCIL


Chairperson