



## Standard Operating Procedure Water Quality Assessment Process and Methods

(APPENDIX A to 303(d) 2000 – 2004)

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## Table of Contents

<b>Table of Contents .....</b>	<b>2</b>
<b>1.0 Introduction.....</b>	<b>3</b>
1.1 Montana Water-Use Classification .....	4
1.2 Water Quality Standards.....	5
1.2.1 Numeric Standards.....	5
1.2.2 Narrative Standards.....	5
1.2.3 Reference Condition .....	6
1.2.3.1 Primary Approach.....	7
1.2.3.2 Secondary Approach.....	7
<b>2.0 Assessment Process Overview.....</b>	<b>7</b>
2.1 Legal Requirement.....	7
2.2 Data Quality Objectives.....	8
2.3 Documentation - Assessment Record (datarev7.xls).....	9
2.4 Identification of Available Water Quality Data.....	9
<b>3.0 Sufficient Credible Data Assessment .....</b>	<b>9</b>
3.1 Sufficient Credible Data Decision Tables .....	10
3.2 Overwhelming Evidence.....	11
3.3 Aquatic Life/Fisheries SCD.....	12
3.4 Drinking Water, and Recreation and Aesthetics SCD .....	13
3.5 Agricultural and Industrial Water Supply SCD .....	13
3.6 Ephemeral Streams and Wetlands .....	13
<b>4.0 Beneficial Use Support Determinations.....</b>	<b>13</b>
4.1 Threatened Uses.....	15
4.2 Aquatic Life and Fisheries Beneficial Use Determination .....	15
4.2.1 Weight of Evidence Test.....	15
4.2.2 Independent Evidence.....	16
4.3 Beneficial Use Determination - Other Uses .....	16
4.4 Petitions .....	16
4.6 Technical Review .....	17
<b>5.0 Literature Cited .....</b>	<b>17</b>

### Attachments:

- 1. SCD Decision Tables (Tables 1 –8)**
- 2. BUD Tables (Tables 9-14)**
- 3. Numeric Water Quality Standards (WQB-7 and DEQ-7)**

**Note: Numeric WQ Standards are updated in triennial review and, upon adoption of these changes by the Board of Environmental Review (BER), are the standards as of the assessment date. The majority of the reassessments were based upon Montana Numeric Water Quality Standards (Department Circular WQB-7) and the Administrative Rules of Montana (ARM) up to February 2006. After February 2006, reassessments reflect Montana's numeric standards updated in Department Circular DEQ-7 and revisions to ARM adopted by the Board (BER). Both WQB-7 and DEQ-7 are included as attachments to this SOP to reflect the decision rules applied during the reassessment period. References to WQB-7 in this SOP should be understood to mean DEQ-7 for reassessment performed after February, 2006.**

## 1.0 Introduction

The water quality assessment of streams, lakes and wetlands to identify “impaired” waters is an important step in a process intended to ensure that all waterbodies in the state will have water quality adequate to support all of their intended beneficial uses. The process was developed and shaped by legal mandates, water quality standards, the tools and techniques of water quality monitoring, the availability of information, and the resources that can be devoted to assessment efforts.

In overview, the main steps of this process in Montana are:

1. State waters are classified under a system that identifies the beneficial uses that each waterbody will be expected to support. State waters in Montana initially were classified in 1955 and the system has been substantially modified over the years.
2. State water quality standards identify the water quality conditions that must be met for a waterbody to support each beneficial use.
3. Many entities and organizations collect data (for many different reasons) that indicate the quality of waters. These data may be useful for determining compliance with the applicable water quality standards and the compilation of a database of “sufficient credible data” for performing a water quality assessment.
4. The Department of Environmental Quality (DEQ) solicits all available data from these organizations and identifies waterbodies for which "sufficient credible data" is available to make valid and reliable determinations of beneficial use support.
5. For waterbodies that lack sufficient credible data from external data sources to perform an assessment, DEQ performs a field data collection effort to obtain sufficient credible data.
6. When sufficient data are available for a waterbody, DEQ compares the data with water quality criteria and guidelines to make "beneficial use-support determinations." Waterbodies that do not fully support all applicable uses are considered to be “threatened” or “impaired”.
7. Impaired and threatened waters are prioritized and scheduled for the development of plans to correct their impaired condition. (Additional data may be collected before planning starts to verify existing conditions or to further identify the causes and sources of impairment).
8. Plans are developed identifying actions that will be taken to improve water quality so that the waterbody can fully support the applicable beneficial uses.
9. Planned actions are implemented and monitoring is done to ensure that water quality improves at least as much as necessary for the waterbody to fully support its beneficial uses.

This appendix will focus on steps 4 and 6 from the above list, discussing in detail the process used by Montana DEQ to accomplish these two steps. To provide background information for this detailed discussion of Steps 4 and 6, an overview will first be provided of steps 1-3.

## 1.1 Montana Water-Use Classification

Montana waterbodies are classified according to the present and future beneficial uses that they should be capable of supporting (75-5-301 MCA). The state Water-Use Classification System (ARM 17.30.604-629) identifies the following beneficial uses:

- Drinking, culinary use, and food processing
- Aquatic life support for fishes and associated aquatic life, waterfowl, and furbearers
- Bathing, swimming, recreation and aesthetics
- Agriculture water supply
- Industrial water supply

The current use classification of each waterbody in Montana was assigned on the basis of its actual or anticipated uses in the early 1970s. Waterbodies are classified primarily by: 1) the level of protection that they require; 2) the type of fisheries that they support (warm water or cold water) or; 3) their natural ability to support use for drinking water, agriculture etc. The use classification was designed for streams, so some of the uses designated by the classification system are not always applicable to lakes and wetlands. The designated beneficial uses for each class in the system are as follows:

**A-CLOSED** – Waters are suitable for drinking, culinary and food processing purposes after simple disinfection and are also suitable for swimming, recreation, and growth and propagation of fishes and associated aquatic life (although access restrictions to protect public health may limit actual use).

**A-1** – Waters are suitable for drinking, culinary, and food processing purposes after conventional treatment for removal of naturally present impurities. Water quality must be suitable for bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

**B-1** – Waters are suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

**B-2** – Waters are suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

**B-3** – Waters are suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

**C-1** – Waters are suitable for bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

**C-2** – Waters are suitable for bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

**C-3** – Waters are suitable for bathing, swimming, and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers. Naturally marginal for drinking, culinary, and food processing purposes, agriculture and industrial water supply.

**I** – (Impaired) The State of Montana has a goal to improve these waters to fully support the following uses: drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

A waterbody is considered to support its beneficial uses when it meets the water quality standards established to protect those uses. A waterbody is considered to be impaired when there is a violation of the water quality standards established to protect any of the applicable beneficial uses. In some cases the violation of a standard will result in the impairment of only a single use; in other situations the violation of one or more standards may result in the impairment of all uses for the applicable classification.

## 1.2 Water Quality Standards

Montana water quality standards include both use-specific components (ARM 17.30.621 - 629) and general provisions (ARM 17.30.635 - 646). Standards may be either numerical or narrative. The use-specific standards vary depending on the water-use classification, whereas the general provisions apply to all state waters. Narrative standards provide a minimum level of protection to state waters and may be used to limit the discharge of pollutants, or the concentration of pollutants in waters not covered under numerical standards (F.R. 36765).

### 1.2.1 Numeric Standards

Some water quality standards are specified in absolute, numerical terms, such as "acute aquatic life standards," or "chronic aquatic life standards" which limit the average concentration of a toxic over a period of time. Montana has established *numerical* water quality standards relating to:

- Chronic and acute factors affecting aquatic life (Circular WQB-7)
- Human health (Circular WQB-7)
- Fecal coliform levels (ARM 17.30.620-629).
- Changes in pH, turbidity, color, and temperature (ARM 17.30.620-637).

Department circular WQB-7 is provided as Attachment 2 to this SOP. Numeric water quality standards including temporary standards can be obtained from a representative of the Water Quality Standards section of the Water Quality Planning Bureau or by to the Administrative Rules of Montana (ARM).

### 1.2.2 Narrative Standards

Narrative standards are defined in terms of change from what would naturally exist, such as "no increase above naturally occurring condition" or "Induced variation of hydrogen ion concentration (pH) within the range of 6.5 to 8.5 must be less than 0.5 pH units."

Montana *narrative* water quality standards encompass two basic concepts:

- Activities which would result in nuisance aquatic life are prohibited (ARM 17.30.637)
- No increases are allowed above naturally occurring conditions of sediment, settleable solids, oils or floating solids, which are harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife (ARM 17.30.620-629).

DEQ interprets nuisance aquatic life as excessive biomass (e.g., alga growth) or the dominance of an undesirable species. "Naturally occurring" refers to conditions or materials present from events over which man has no control, or from developed land where "reasonable" land, soil, and water conservation practices have been applied. Conditions resulting from reasonable operation of dams in existence July 1, 1971, are considered natural (75-5-306 MCA).

Section 17.30.602 (21) of the Montana Surface Water Quality Standards and Procedures defines "reasonable" land, soil, and water conservation practices as follows:

Reasonable land, soil, and water conservation practices" means methods, measures, or practices that protect present and reasonably anticipated beneficial uses. These practices include but are not limited to structural and nonstructural controls and operation and maintenance procedures. Appropriate practices may be applied before, during, or after pollution-producing activities.

DEQ interprets "reasonably anticipated beneficial uses" to be all the uses designated for the stream's classification.

Reasonable land, soil, and water conservation practices are not always accomplished by using best management practices (BMP's). BMP's are land management practices that provide a degree of protection for water quality, but they may not be sufficient to achieve compliance with water quality standards and protect beneficial uses. Therefore, reasonable land, soil, and water conservation practices generally include BMPs, but additional measures may be required to achieve compliance with water quality standards and restore beneficial uses.

### 1.2.3 Reference Condition

DEQ uses reference condition to determine if narrative water quality standards are being achieved. The term "Reference condition" is defined as the condition of a waterbody capable of supporting its present and future beneficial uses when all reasonable land, soil, and water conservation practices have been applied. In other words, reference condition reflects a waterbody's greatest potential for water quality given historic land use activities.

DEQ applies the reference condition approach for making beneficial use-support determinations for certain pollutants (such as sediment) that have specific narrative standards. All classes of waters are subject to the provision that there can be no increase above naturally occurring concentrations of sediment and settleable solids, oils, or floating solids sufficient to create a nuisance or render the water harmful, detrimental or injurious. These levels depend on site-specific factors, so the reference condition approach is used.

Also, Montana water quality standards do not contain specific provisions addressing nutrients (nitrogen and phosphorus), or detrimental modification of habitat or flow. However, these factors are known to adversely affect beneficial uses under certain conditions or combination of conditions. The reference condition approach is used to determine if beneficial uses are supported when nutrients and flow or habitat modifications are present.

Waterbodies used to determine reference conditions are not necessarily pristine or perfectly suited to giving the best possible support to all possible beneficial uses. Reference condition also does not reflect an effort to turn the clock back to conditions that may have existed before human settlement, but is intended to accommodate natural variations in biological communities, water chemistry, etc. due to climate, bedrock, soils, hydrology and other natural physiochemical differences. The intention is to

differentiate between natural conditions and widespread or significant alterations of biology, chemistry or hydrogeomorphology due to human activity. Therefore, reference condition should reflect minimum impacts from human activities. It attempts to identify the potential condition that could be attained (given historical land use) by the application of reasonable land, soil and water conservation practices. DEQ realizes that presettlement water quality conditions usually are not attainable.

Comparisons of conditions in a waterbody to reference waterbody conditions must be made during similar season and/or hydrologic conditions for both waters. For example, the TSS of a stream at base flow during the summer should not be compared to the TSS of reference condition that would occur during a runoff event in the spring. In addition, a comparison should not be made to the lowest or highest TSS values of a reference site, which represent the outer boundaries of reference condition. The following methods may be used to determine reference conditions:

#### **1.2.3.1 Primary Approach**

- Comparing data and conditions in a waterbody to baseline data and conditions from minimally impaired waterbodies that are in a nearby watershed or in the same region having similar geology, hydrology, morphology, and/or riparian habitat (External reference).
- Comparing data and conditions from one segment of a waterbody to data and conditions in another segment of the same waterbody (Internal reference).
- Evaluating historical data and conditions to present data and conditions for the waterbody (Historical reference).

#### **1.2.3.2 Secondary Approach**

- Reviewing literature (e.g., a review of studies of fish populations, etc. that were conducted on similar waterbodies that are least impaired).
- Seeking expert opinion (e.g., expert opinion from a regional fisheries biologist who has a good understanding of the waterbody's fisheries health or potential).
- Applying quantitative modeling (e.g., applying sediment transport models to determine how much sediment is entering a stream based on land use information, etc.).

DEQ uses the primary approach for determining reference condition if adequate regional, internal and historical reference data are available. DEQ uses the secondary approach to estimate reference condition when this data is sparse or non-existent. DEQ may use a combination of the two approaches to determine reference conditions when partial regional, internal, and historical data is available.

## **2.0 Assessment Process Overview**

### **2.1 Legal Requirement**

Montana law requires DEQ to use sufficient credible data (SCD) to make beneficial use-support determinations. The law defines SCD as "chemical physical or biological monitoring data alone or in combination with narrative information that supports a finding as to whether a waterbody is achieving compliance with applicable water quality standards" (75-5-103(30) MCA). Impaired state waters that do not fully support their beneficial uses are identified primarily during the biennial development of the state's Integrated Water Quality Report. The 1997 Legislature amended state water quality law to require that impairment determinations must be supported by sufficient credible data to ensure that such determinations are justified (75-5-702 MCA).

Based on this legislation and the applicable sections of the federal Water Quality Act, DEQ adopted the following principles for water quality assessments:

- DEQ shall consider all currently available data, including information or data obtained from federal, state, and local agencies, private entities, or individuals with an interest in water quality protection.
- DEQ shall use explicit “sufficient credible data” guidelines to assess the validity and reliability of the data available for making beneficial use-support determinations. A data management system will be used to track and document data sufficiency and beneficial use support determinations (datarev7.xls).
- DEQ shall use the “sufficient credible data” guidelines in making any changes to beneficial use support determinations. The data and information used will be available for public review.

As part of its 2000 list update, DEQ developed and documented a methodology for making sufficient credible data and beneficial use determinations. First, DEQ reviewed general EPA guidelines for making beneficial use determinations and refined them into a beneficial use-support assessment process applicable to Montana. Next, DEQ identified the data required for this assessment process and drafted guidelines for evaluating data validity and reliability. These initial guidelines for sufficient credible data and beneficial use determination were then subjected to an intensive, iterative process of review and refinement to produce and adopt a final methodology, which is described in the following pages.

## **2.2 Data Quality Objectives**

DEQ has developed data quality objectives (DQOs) to ensure that data are sufficient and credible for evaluating whether beneficial uses are fully supported. These DQOs apply only to beneficial use-support decisions. The DQOs for assessment are not intended or designed for use in determining compliance with permits for enforcement purposes or for the development of TMDL plans. Those activities often require a higher level of overall data quality that is scientifically valid, can produce statistically valid confidence intervals for their decisions, values or limits, and are legally defensible.

The assessment DQOs were developed to ensure that the basis (sufficient credible data) for beneficial use-support determinations would result in a reasonable level of confidence that the impairment decision is correct. The DQOs further recognize that water quality assessments are often extremely complex but must be completed expeditiously and economically due to provisions in state law, court mandated schedules for TMDL development, and with available funding.

Complicating DQOs for water quality assessments are the facts that methods of assessment change over time, that state water quality standards may be revised to match changes in national water quality standards, and that the factors affecting the quality of particular waterbodies may change. Constraints on access to remote sites and private property often limit the ability of field crews to develop a monitoring design that provides a complete synoptic survey of a waterbody.

In any water quality assessment process there is always a risk of concluding that a waterbody is impaired when it truly is not or concluding that a waterbody is fully supporting all uses when it is not. Either of these errors involves a cost. Concluding that a waterbody is impaired when it is not results in a cost in resources and dollars for collecting additional information, preparing a water quality restoration plan and/or TMDL plan, and perhaps implementing unnecessary corrective measures. Concluding that a waterbody is fully supporting all uses when it is not means that existing human health threats and environmental degradation will not be addressed.

Recognizing these factors and risks, DEQ developed the following objectives in designing and revising its guidance for determining the availability of sufficient credible data:

- Assess as few waterbodies as possible as “impaired” when in fact they are not.
- Assess as few waterbodies as possible as “fully supporting” when in fact they are not.
- If a SCD decision is uncertain, then consultation with technically qualified peers and supervisors will be used to evaluate whether the available data is sufficient and credible.

A decision placing a waterbody on the 303(d) list generally means that it will receive additional monitoring and assessment to collect additional information needed to confirm the sources and causes of impairment prior to the development Water Quality Restoration Plans and TMDLs. Therefore, DEQ should be able to determine if a waterbody was incorrectly listed as impaired before resources are expended to develop and implement a TMDL plan.

### **2.3 Documentation - Assessment Record (datarev7.xls)**

For each waterbody, an assessment record is developed in a standardized Excel spreadsheet (datarev7.xls) that contains tables for identifying and summarizing information available, guides users through the determination of sufficient credible data, and contains tables prompting the assessor to consider how available data compares to state numeric water quality standards, narrative criteria, or in comparison to reference condition for making a beneficial use support determinations. The rationale for use-support determinations is summarized along with the impairment determination for each beneficial use for the waterbody class. Finally, the methods that the data considered in the assessment was collected by are recorded and probable causes and sources of impairment are identified for follow-up investigation.

### **2.4 Identification of Available Water Quality Data**

DEQ’s water quality monitoring data along with information from other sources have been incorporated into DEQ’s water quality reference library and computerized water quality databases. These records are updated as new monitoring data is collected by DEQ or obtained from others sources. At the beginning of each reassessment cycle, DEQ sends out requests for information to several hundred individuals, organizations, and agencies involved in water quality monitoring and management. Responses to these requests provide useful information as well as references to additional materials available from other sources. The data and information obtained from outside sources are combined with the results of DEQ’s ongoing monitoring efforts to provide the *basis* for water quality assessments.

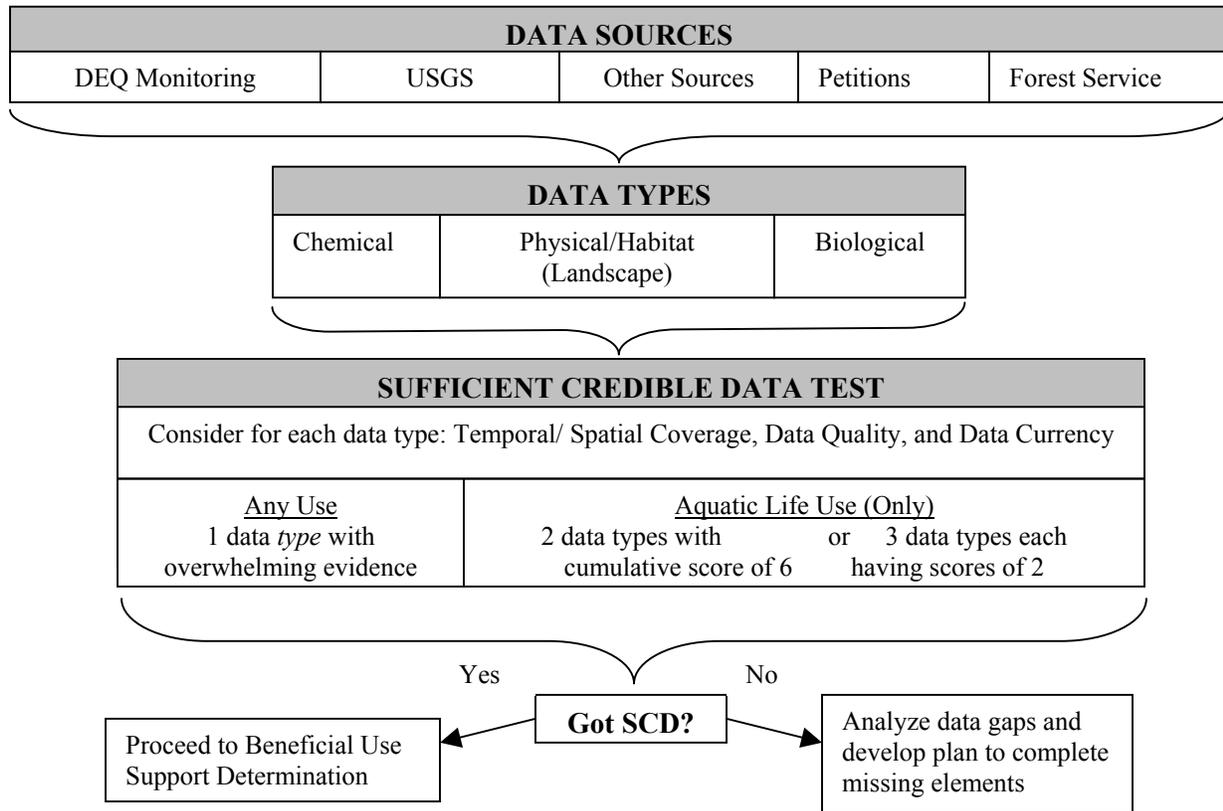
The majority of data obtained from external sources are valuable for assessments however some are not. Information that cannot be reliably interpreted because there is inadequate documentation of such basic elements as the specific location, time, and methods used to collect the data will rate lower in the determination of sufficient credible data or may be rejected outright by the assessor. In cases where large amounts of raw data have been collected but not yet processed or analyzed by an external agency, DEQ cannot assume the costs and responsibility of processing the data for the other agency. Such raw data are usually considered “not readily available” for the beneficial use assessment until the agency responsible for collecting it has processed it into a useable dataset or report. In some cases, old data are not used for the assessment when newer data are available and provide a better indicator of current water quality conditions. Older data may provide indicators of historical (internal) reference conditions or changes in water quality resulting from land use change and can indirectly become a part of the assessment of current conditions.

## **3.0 Sufficient Credible Data Assessment**

The process DEQ uses to determine if data are sufficient and credible for making beneficial use-support decisions is summarized in Figure 3.0. The concepts underlying this process came from an EPA model

for assessing the beneficial uses of streams using a combination of physical (habitat), biological, and chemical monitoring (U. S. EPA 1997). The model defines the relationship between parameters such as fish and benthic macroinvertebrate indices that directly measure the condition of the biotic community and its response over time to stressors, and parameters that directly measure stressors such as levels of pH, nutrients, and toxicants. EPA recommends that states incorporate a suite of parameters in their monitoring programs to evaluate attainment of beneficial uses. For example, EPA recommends that monitoring for aquatic life use support include the collection of habitat and community level biological data and the measurement of chemical parameters in water and sediment.

Figure 3.0 – Sufficient Credible Data flowchart



Once sufficient credible data is established and the decision is that the waterbody is impaired, waterbodies are included in the 303(d) list of impaired waters (or more recently, Categories 4B, 4C, or 5 of the Integrated Water Quality Report). Once listed as an impaired waterbody, it can only be removed from the list when the pollution or pollutant(s) impairing the beneficial use or uses are demonstrated to no longer be impairing all beneficial uses designated for the waterbody class or if the basis for the original listing is determined to be in error by a new assessment based on sufficient credible data.

### 3.1 Sufficient Credible Data Decision Tables

To determine if sufficient credible data exists for each beneficial use, DEQ developed tables<sup>1</sup> to assist with the sufficient credible data test. These tables assist with the determination of sufficient credible for

<sup>1</sup>Based on tables 3-1 to 3-4 in Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates: Supplement, EPA 841-B-97-002B, September 1997. These tables were modified to include lakes and wetlands and the beneficial uses of fisheries, drinking water, and recreation and aesthetics.

all the beneficial uses except industrial and agricultural uses. Since agricultural uses are only impaired by salinity or toxicants and industrial uses by salinity or turbidity, the SCD decision for those uses is based on the existence/non-existence of that specific data. The SCD decision tables are included as Attachment 1 to this SOP.

The SCD tables focus on four components that contribute to data validity and reliability for water quality assessment:

- Technical soundness of methodology
- Spatial/temporal coverage
- Data quality
- Data currency

For the Aquatic Life and Fisheries beneficial uses, these components are reviewed *for each data type*. This is done to accommodate individual datasets from other organizations and agencies that may have focused on a single data type (e.g., Habitat assessments) and provide DEQ with a second source of data or a type of data not collected by DEQ presently (e.g., fish counts from FWP).

The SCD decision tables are specifically designed to help the evaluator determine when the total package of available information is adequate. In most cases, a determination of sufficient credible data will result when several data types have been collected over a period of time, using sound technical methods, and there are no indications of recent changes to the waterbody that bring older data and information into question.

### 3.2 Overwhelming Evidence

There are situations where a single set of data is all that is needed to tell the assessor that a particular beneficial use is or is not supported. For example a single set of water chemistry data may be sufficient to establish that a waterbody is not fit for use as a source of drinking water. In such situations where a single data set irrefutably proves that impairment exists, an impairment determination may be based on this “overwhelming evidence.”

When a set of data is being reviewed for possible use as overwhelming evidence that data is evaluated directly for the factors of technical soundness of methodology, spatial/temporal coverage, data quality, and data currency. Data cannot be overwhelming evidence unless the methods used for collection and analysis meets the most stringent standards for reliability and validity. It must be certain that the data is representative of actual current waterbody conditions. It must be representative of the spatial extent of the water and of relevant temporal parameters. Data more than three or four years old are not to be used as overwhelming evidence unless there is a strong basis for concluding that conditions have not changed since the data were collected.

Data for *aquatic life uses* that meets the evaluations of validity, reliability, and relevance normally constitute overwhelming evidence when it can be documented that:

- A clearly valid, reliable, and relevant exceedence of an acute or chronic aquatic life standard of sufficient magnitude and/or duration to ensure that a “real” impairment exists.
- A 50% exceedence of a narrative standard (e.g. sediment levels in an impaired stream reach are determined to be 50% greater than sediment levels of an appropriate reference site).
- Activities that negatively impact habitat by more than 50% (e.g. less than 50% of a stream corridor has adequate riparian habitat when compared to potential or reference condition).
- Activities that negatively impact biological communities by more than 50% (e.g. a fish population reduced to less than 50% of its potential due to sedimentation; or macroinvertebrate communities less than 50% of those in reference waters).

*For fishery uses:*

- The presence of significant non-natural barriers to fish movement or migration. Note: conditions resulting from the reasonable operation of dams in existence since July 1, 1971, are considered natural (75-5-306 MCA).
- Chronic de-watering of a considerable section of the waterbody.

It should be noted that overwhelming evidence may also establish that a waterbody is fully supported (e.g. direct rigorous measurement of the biological community indicates that aquatic life use is fully supported).

### **3.3 Aquatic Life/Fisheries SCD**

The aquatic life beneficial use is a broad descriptor intended to protect fish, invertebrates, aquatic plants, and associated wildlife. All of the water classes defined under the Montana Water-Use Classification system require that the rated waters support the beneficial use of "growth and propagation of fishes and associated aquatic life waterfowl and furbearers" (ARM 17.30.604-624). The aquatic life/fisheries SCD tables (Tables 1-3 for streams and Tables 4-6 for lakes) provide a systematic but flexible approach for making decisions concerning the level of information required for aquatic life beneficial use-support determinations. It is a holistic approach entailing consideration of data from the following three data categories:

**Physical/habitat** – includes qualitative and/or quantitative riparian and aquatic vegetation information, and hydrogeomorphic characteristics and functions. For example, data may include stream reach habitat surveys with photos to document impairments, and physical measurements of the stream channel, such as pebble counts and channel cross sections.

**Biology** – includes chlorophyll *a* data; and aquatic biological assemblage data relating to fish, macroinvertebrates, and algae; and wildlife community characteristics. Measurements often include population estimates, biomass, number and relative abundance of sensitive or pollution-tolerant species, diversity, and distribution.

**Chemistry/toxicity** – includes bioassays; temperature and total suspended sediment data; and chemistry data such as concentrations of toxicants, nutrients, and dissolved oxygen.

Aquatic Life/Fisheries SCD tables for each data category assist the reviewer in evaluating and documenting whether data are sufficient and credible by using the following data components to score the data: 1) technical soundness 2) spatial/temporal coverage, 3) quality, and 4) currency. The overall score for each data category ranges from 1 to 4. Data given a higher score provide a higher level of information for making an aquatic life use-support determination. For example, the component scores for the biological data category might be: 2 for technical soundness, 3 for spatial/temporal coverage, 3 for quality and, 2 for currency. In this situation, the reviewer would usually assign the biology data category an overall score of 2 or 3 depending on his/her interpretation of how useful the data are for making an aquatic life/fisheries beneficial use-support determination.

The overall data category score usually is not just the numerical average of the component scores. For example, if the data currency component scores a 1 and the other components each score a 4, the reviewer may assign an overall score of 1, because the data do not indicate current conditions. The reviewer documents the rationale used to make the overall scoring decision for each data category at the bottom of each table.

The overall scores from the three data categories are added together (ignoring any score of "1") to obtain a SCD score for the aquatic life/fisheries data. If the total SCD score is at least 6 (all three data categories have overall scores of 2 or more, or if two data categories score 3 or more), the reviewer concludes there are sufficient credible data to make use-support determinations for the aquatic life and fisheries beneficial uses.

DEQ infers that a waterbody's associated wildlife communities are protected if no data indicate impairment to wildlife and the aquatic life and fishery beneficial uses are determined to be fully supported. However, DEQ would determine that a waterbody's aquatic life beneficial use is not fully supported if data show that the associated wildlife populations are impaired. Also, DEQ may require additional information before making an aquatic life use-support determination if sources of impairment to wildlife such as elevated metals in the food chain resulting from land use practices are probable and if information regarding probable causes of impairment are not provided in the available data set.

### **3.4 Drinking Water, and Recreation and Aesthetics SCD**

DEQ also uses decision tables to determine if data are sufficient and credible for making drinking water, and recreation/aesthetics beneficial use-support determinations (Tables 7 and 8). For these uses the evaluation of multiple data categories is not necessary and the four components of data adequacy are not numerically scored but are simply rated as sufficient or insufficient. The DEQ reviewer then decides on the overall sufficiency of the data after consideration of the component ratings, and documents the rationale used to make the decision at the bottom of each table.

### **3.5 Agricultural and Industrial Water Supply SCD**

DEQ has not developed SCD decision tables for making beneficial use-support determinations for agriculture and industry. Generally if there are sufficient credible data for making beneficial use-support determinations for aquatic life, drinking water, and recreation, then data are also sufficient to make determinations for agriculture and industry. However, the reviewer may require additional information concerning salinity and toxicity to make beneficial use-support decisions for agriculture if sources of impairment to agriculture are probable and information regarding probable causes of impairment are not provided in the available data set.

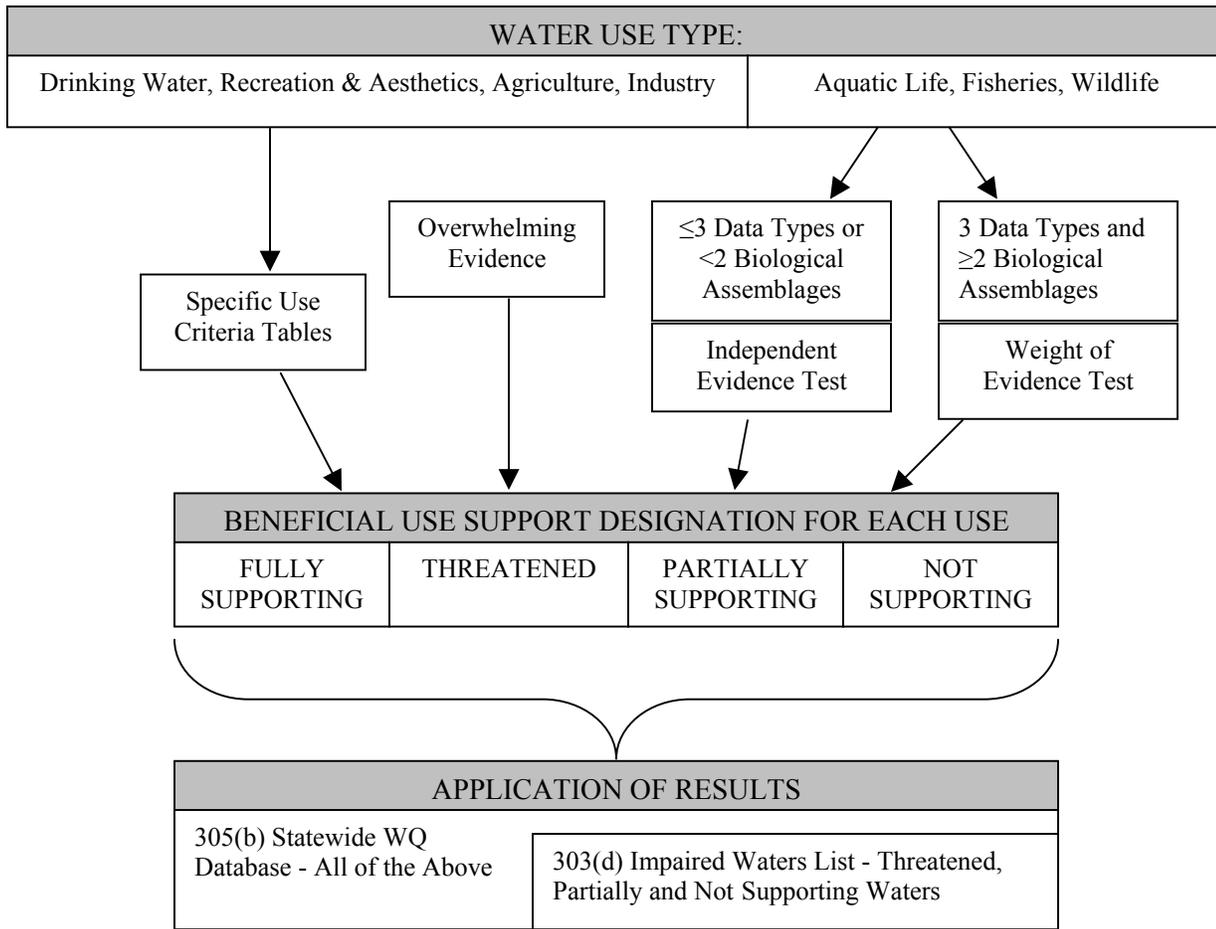
### **3.6 Ephemeral Streams and Wetlands**

DEQ regulations define ephemeral streams as waterbodies that receive water only in direct response to precipitation or snowmelt, and which are always located above the water table (ARM 17.30.602). DEQ defines ephemeral wetlands as state waterbodies that have surface water for less than 90 days per year. Only narrative water quality standards apply to ephemeral waterbodies. DEQ usually assesses only aquatic life use support for ephemeral waterbodies and requires only physical/habitat data (minimum SCD score = 3). However, DEQ recommends that chemistry/toxicity or biological data should be collected when it is practical and appropriate for evaluating aquatic life use support or the use support of other beneficial uses.

## **4.0 Beneficial Use Support Determinations**

Once it has been determined that there are sufficient credible data to evaluate a waterbody, the assessment process moves to determining the level of beneficial use support required for each use of that waterbody by the Montana Water-Use Classifications. Figure 4.0 displays a flow diagram for the beneficial use support evaluation process.

Figure 4.0 Flowchart of Beneficial Use Support Determination (BUD)



DEQ conducts beneficial use-support determinations (BUDs) in order to document which state waterbodies are impaired due to man-caused impacts to water quality. Beneficial use-support determinations are made for the following beneficial uses:

- Aquatic Life (considers all life forms which make up and depend on the aquatic ecosystem)
- Cold Water Fishery **or** Warm Water Fishery
- Drinking Water Supply (protects culinary and food-processing use)
- Recreation and Aesthetics (bathing, swimming, boating, fishing, etc.)
- Agriculture Supply
- Industry Supply

For each beneficial use a determination is made describing the status of the waterbody. These status's are:

- Full support
- Partial support
- Non-support
- Threatened

A waterbody is considered to be "fully supporting" its beneficial uses when the water quality standards established to protect those uses are met. When one or more beneficial uses are not fully supported due

to human activities the waterbody may be rated as either "not supporting" or "partially supporting" the affected use or uses. A "threatened" rating indicates that there is evidence that one or more fully supported uses may soon be impaired.

Only those categories that apply to the beneficial uses specified for each water-use classification are evaluated for the waters in that classification. For example, a waterbody classified C-1 would not be assessed for use support of drinking water supply or warm water fishery since those categories are required for C-1 class waters.

EPA considers fish consumption to be a beneficial use but Montana law does not recognize this use. Therefore, DEQ considers fish consumption when making aquatic life and fisheries, and recreation and aesthetics beneficial use-support determinations for impairment listing purposes.

#### **4.1 Threatened Uses**

Montana water quality law (75-5-103 MCA) defines the term "threatened waterbody" to mean:

A waterbody or stream segment for which sufficient credible data and calculated increases in loads show that the waterbody or stream segment is fully supporting its designated uses but threatened for a particular designated use because of:

- (a) proposed sources that are not subject to pollution prevention or control actions required by a discharge permit, the nondegradation provisions, or reasonable land, soil, and water conservation practices; or
- (b) Documented adverse pollution trends.

DEQ has not developed decision tables to determine if specific uses are threatened. Instead, DEQ considers that a beneficial use may be threatened if:

- Data show a decline in the conditions supporting the beneficial use, listed in the beneficial use support decision table or
- Activities proposed for the watershed would be sources of pollution that are not subject to pollution prevention or control actions required by a discharge permit or
- Activities for which a permit is required are occurring within the watershed without a permit or;
- Reasonable land soil and water conversation practices are not being implemented.

A DEQ reviewer assigning a determination of "threatened" to a waterbody beneficial use is required to identify the information used and rationale for making this determination.

#### **4.2 Aquatic Life and Fisheries Beneficial Use Determination**

The broad range of factors that must be considered in assessing support for the aquatic life/fisheries uses make the assessment of support for these uses more complex than the assessment of support for other uses. Depending on the type and amount of information available, DEQ has developed two distinct tests, which may be employed to make aquatic life/fisheries support decisions.

##### **4.2.1 Weight of Evidence Test**

The weight-of-evidence test is a process for making aquatic life use support decisions when there is a high level of information. DEQ uses this if there are sufficient and credible data in all three of the data categories and if two or more biological assemblages were assessed (minimum score = 3). The assemblages employed must be adequate to reflect any probable impairment. Conclusions drawn from each data category are combined using the weight-of-evidence test to produce the final aquatic life use-

support determination employing the following guidelines in combination with Beneficial Use-Support Decision Tables 9 and 10.

- **Fully Supporting** requires all data categories to indicate the waterbody is unimpaired or least impaired, or no more than one data category (i.e. physical/habitat biology or chemistry/toxicity) indicate moderate impairment; **OR** no more than one biological assemblage indicates moderate impairment (the biological community that indicates impairment must be at least 50% of reference condition).
- **Partially Supporting** requires two or more data categories indicating moderate impairment or one data category indicating severe impairment (i.e. physical/habitat biology or chemistry/toxicity) with the remaining data categories indicating that the waterbody is unimpaired or least impaired; **OR** two biological assemblages indicating moderate impairment; or one biological assemblage indicating less than 50% of reference condition.
- **Not Supporting** requires one or more data categories indicating moderate impairment in combination with a separate category indicating severe impairment; **OR** two biological assemblages indicating less than 50% of reference condition.

#### 4.2.2 Independent Evidence

The independent-evidence test is a decision process DEQ uses to make aquatic life use-support determinations if only one or two of the data categories are used (physical/habitat biology or chemical/toxicity); or if all three categories are used but only one biological assemblage (e.g. fish) was assessed or the biological data category's score was < 3.

The independent-evidence test is used when a full suite of data is not available but what is available provides a basis for making an aquatic life use-support determination. For example data indicating that a stream segment experiences frequent dewatering may be an adequate basis for determining that the aquatic life/fisheries beneficial use is impaired. The factors listed in Tables 9 and 10 are directly applied to interpret the use support of each beneficial use. If all available data indicate that a waterbody is "unimpaired/least impaired" then the beneficial use-support determination would be fully supporting. Data indicating that a beneficial use is "moderately impaired" would result in the waterbody being listed as partially supporting, while data indicating that a beneficial use is "severely impaired" would result in the waterbody being listed as not supporting the beneficial use being evaluated.

#### 4.3 Beneficial Use Determination - Other Uses

Reaching beneficial use determinations for the drinking water, recreation and aesthetics, agriculture supply and industrial supply uses is a relatively straightforward process. For these uses, criteria based on the relevant water quality standards are listed in Tables 11, 12, 13, and 14. The available data for a waterbody are evaluated using the listed criteria, and an overall use support assignment is made based on consideration of all the criteria for which relevant data are available. In some situations the overall rating will result from clear evidence of support or impairment associated with one or two criteria; other determinations may be derived from indications of water quality derived from the entire set of criteria that apply to a particular use.

#### 4.4 Petitions

Under Montana law any person can petition DEQ to change any beneficial use support decision by providing the data necessary to support the requested change (75-5-702 MCA). For example a petition to reconsider a DEQ partial support determination for aquatic life could be based on data from multiple

biological assemblages (i.e. fish, macroinvertebrates, algae) which clearly demonstrate that aquatic life is not impacted by any of the listed probable causes and sources of impairment. DEQ beneficial use-support determinations also could be appealed by providing data that clearly demonstrates that the causes of impairment are due to naturally occurring conditions.

When DEQ receives a petition it conducts a sufficient credible data assessment. All available data including both the data used to make the original determination and those provided with the petition are reviewed to ensure that there are sufficient credible data to provide a basis for a valid beneficial use determination. Then the normal tests and table criteria are used to make a beneficial use-support determination. This process must be completed within 60 days of the petition submittal. If DEQ determines that the original determination should be revised, it must provide public notice of the proposed change and allow 60 days for public comment prior to taking final action.

#### **4.6 Technical Review**

Technical review of assessments is performed on a random selection at a 10% frequency. This review is provided by a technically qualified peer (water quality planner or water quality standards staff) or a section supervisor within the water quality planning bureau. Technical findings that cannot be resolved between the assessor and reviewer will be presented to the water quality planning bureau chief for a final decision.

Because beneficial use support determinations may be challenged in litigation, any assessments that result in the delisting (removal of a pollutant cause) of a previously assessed waterbody (including 1996 listings) must undergo technical review. Technical review of delisting must consider if the new assessment clearly shows that the *basis* for the original listing was in error and that any findings, data or facts that demonstrate this are documented.

#### **5.0 Literature Cited**

U.S. EPA. 1997. Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) EPA-841-B-97-002A.

**Attachment 1**

**SOP SQPBWQM-001**

**SCD Decision Tables 1-8**

**Table 1. Biology Sufficient Credible Data Decision Table for Aquatic Life Use (Streams)**

Score	Technical Components	Spatial/Temporal Coverage	Data Quality	Data Currency
1	<ul style="list-style-type: none"> <li>- Visual observations of biota were made with no true assessment.</li> <li>- Simple documentation.</li> <li>- Unable to make a comparison to reference condition.</li> <li>- Relative abundance data of fish that are not supplemented with quantitative data or cannot be interpreted by a biologist.</li> <li>- Fish creel surveys with limited supplemental information.</li> </ul>	<ul style="list-style-type: none"> <li>- Very limited monitoring</li> <li>- Data are extrapolated from other sites</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity is very low or unknown.</li> <li>- Qualified professional does not provide any oversight.</li> <li>- Poor taxonomic resolution</li> </ul>	<ul style="list-style-type: none"> <li>- Data are not relevant; biological communities may have changed significantly since the assessment was made.</li> </ul>
2	<ul style="list-style-type: none"> <li>- Only one assemblage was assessed (e.g., RBP Protocols).</li> <li>- Probable sources and causes of impairment are documented.</li> <li>- A professional scientist can approximate reference condition.</li> <li>- Relative fish abundance data that can be interpreted by a qualified professional or also includes quantitative fish density.</li> </ul>	<ul style="list-style-type: none"> <li>- Limited to a single sampling</li> <li>- Limited sampling for site-specific studies</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are low to moderate.</li> <li>- Data were collected following appropriate protocols; however individuals had limited training.</li> <li>- Qualified professional provided oversight.</li> <li>- Good taxonomic resolution.</li> </ul>	<ul style="list-style-type: none"> <li>- Data can be used to give a historical perspective for approximating reference condition or trends.</li> <li>- It is unlikely that the biological communities have changed significantly since the survey was conducted.</li> </ul>
3	<ul style="list-style-type: none"> <li>- Two assemblages assessed or one assemblage with quantitative (e.g., biomass) measurements also made following standard operating procedures (SOPs).</li> <li>- Often includes biotic index interpretations.</li> <li>- Fisheries data often includes information about growth rates, age class and condition; The entire fish assemblage is targeted.</li> <li>- Reference condition can be determined with a reasonable degree of confidence and used as a basis for assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Monitoring normally occurs during a single season.</li> <li>- Monitoring may include site-specific studies; However, also has limited spatial coverage of the stream reach.</li> </ul>	<ul style="list-style-type: none"> <li>- Data have moderate precision and sensitivity.</li> <li>- Qualified professional performs survey or provides training; the individual making the survey is well trained.</li> <li>- Qualified professional performs the survey.</li> <li>- Detailed taxonomic resolution</li> </ul>	<ul style="list-style-type: none"> <li>- Data were collected recently or it is very unlikely that the biological community has changed significantly since the survey was conducted.</li> </ul>
4	<ul style="list-style-type: none"> <li>- Two or more assemblages assessed and often include quantitative measurements following SOPs.</li> <li>- Reference condition is well understood and is used as the basis of the assessment.</li> <li>- Often includes biotic index interpretations</li> </ul>	<ul style="list-style-type: none"> <li>- Surveys conducted for multiple years and/or seasons</li> <li>- Broad coverage of sites</li> <li>- Often uses targeted or probabilistic design</li> </ul>	<ul style="list-style-type: none"> <li>- High precision and sensitivity.</li> <li>- Assessment performed by a highly experienced qualified professional.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are current; there is no doubt that the biological survey reflects current conditions.</li> </ul>

**Table 2. Chemistry/Toxicity Sufficient Credible Data Decision Table for Aquatic Life Use (Streams)**

Score	Technical Components	Spatial/Temporal Coverage	Data Quality	Data Currency
1	<ul style="list-style-type: none"> <li>- Best professional judgment based on land use data or source locations</li> <li>- Chemical parameters analyzed are limited and do not provide sufficient information concerning probable causes of impairment.</li> </ul>	<ul style="list-style-type: none"> <li>- Low spatial and temporal coverage -limited data at critical periods</li> <li>- Limited period of record (e.g. one day)</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity is very low or unknown and data appear to be an outlier (suspect).</li> <li>- High detection limits make the data difficult or impossible to interpret.</li> <li>- QC protocols indicate contamination, etc.</li> <li>- QA/QC protocols were not followed.</li> </ul>	<ul style="list-style-type: none"> <li>- Data do not reflect current conditions.</li> </ul>
2	<ul style="list-style-type: none"> <li>- Usually grab or composite water quality samples</li> <li>- Synthesis of historical information on fish contamination levels</li> <li>- Screening models based on loading data (not calibrated or verified)</li> <li>- Sediment contamination data (e.g., metal scans)</li> <li>- Limited chemical parameters; however probable impairment causes are targeted and probable sources of impairment documented.</li> <li>- A professional can approximate reference condition.</li> <li>- Acute or Chronic WET; or Acute ambient; or acute sediment tests</li> </ul>	<ul style="list-style-type: none"> <li>- Moderate spatial and/or temporal coverage..</li> <li>- Data collected at critical periods (e.g., spring, summer, spawning season)</li> <li>- Short period of record but good spatial coverage</li> <li>- Quarterly sampling</li> </ul>	<ul style="list-style-type: none"> <li>- Data quality and sensitivity are low to moderate.</li> <li>- Data were collected following appropriate protocols but individuals had limited training.</li> <li>- Low detection limits</li> <li>- QC indicates there was no contamination, etc.</li> <li>- Low replication used for toxicity tests</li> </ul>	<ul style="list-style-type: none"> <li>- Data are substantially older than ideal, but appear to be a reasonable indicator of current conditions.</li> </ul>
3	<ul style="list-style-type: none"> <li>- Series of grab or composite samples (diurnal coverage as appropriate)</li> <li>- Calibrated models</li> <li>- Width/depth integrated sampling</li> <li>- Combination of two or more analyses of the following: water column, sediment, chlorophyll; toxicity testing; bioaccumulation data (e.g., fish consumption advisory data). Reference condition can be determined with a reasonable degree of confidence and used as a basis for assessment.</li> <li>- 2-3 Acute or Chronic Ambient; or Acute sediment; or Acute and Chronic WET tests for effluent dominated system</li> </ul>	<ul style="list-style-type: none"> <li>- Broad spatial and temporal coverage of site with sufficient frequency and coverage to capture acute events.</li> <li>- Typically monthly sampling during key periods.</li> <li>- Lengthy period of record (sampled over a period of months for &gt;2 years)</li> </ul>	<ul style="list-style-type: none"> <li>- Data have moderate precision and sensitivity.</li> <li>- Professional scientist provides training; the individual collecting the samples is well trained.</li> <li>- Qualified professional collects samples; Data is analyzed in a competent laboratory that uses methods with low detection limits</li> <li>- QC documents where there are no sampling or analytical errors.</li> <li>- Moderate replication used for toxicity tests</li> </ul>	<ul style="list-style-type: none"> <li>- Data are older than ideal, but there are no indications that conditions have changed significantly.</li> </ul>
4	<ul style="list-style-type: none"> <li>- Combination of three or more of the following: water column chemistry, sediment chemistry, chlorophyll or bioaccumulation data; or toxicity testing.</li> <li>- &gt;3 acute and chronic ambient tests; or acute or chronic sediment tests.</li> </ul>	<ul style="list-style-type: none"> <li>- Broad spatial (several) and temporal coverage (monthly sampling during key periods for &gt; 3 yrs) of site with sufficient frequency and parameter coverage to capture acute events, chronic conditions and all other potential impacts.</li> </ul>	<ul style="list-style-type: none"> <li>- High precision and sensitivity.</li> <li>- Data collected and analyzed by qualified professionals following detailed QA/QC protocols.</li> <li>- High replication used for toxicity tests</li> </ul>	<ul style="list-style-type: none"> <li>- Data are current; generally less than 5 years old, and/or there is high certainty that conditions have not changed since data were collected.</li> </ul>

**Table 3. Habitat/Physical Sufficient Credible Data Decision Table for Aquatic Life Use (Streams)**

Score	Technical Components	Spatial/Temporal Coverage	Data Quality	Data Currency
1	<ul style="list-style-type: none"> <li>- Habitat characteristics were observed visually with no true assessment</li> <li>- Only has documentation of land use practices that might alter habitat.</li> <li>- No attempt to compare to reference condition; observed impacts are likely to be natural.</li> </ul>	<ul style="list-style-type: none"> <li>- Sporadic visits; assessments are only made at limited access points such as road crossings.</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are very low or unknown.</li> <li>- Data were not collected by trained individuals following appropriate protocols.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are not relevant; habitat has likely changed significantly since the assessment was made.</li> </ul>
2	<ul style="list-style-type: none"> <li>- Visual observations of habitat characteristics were made with simple assessment.</li> <li>- Land use maps used to characterize watershed condition; Probable sources of impairment are documented.</li> <li>- A qualified professional can approximate reference condition.</li> </ul>	<ul style="list-style-type: none"> <li>- Limited to annual visit and non-specific to season;</li> <li>- Limited spatial coverage</li> <li>- Site specific studies</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are low</li> <li>- Data were collected following appropriate protocols; however individuals had limited training.</li> <li>- Qualified professional involved only through correspondence.</li> </ul>	<ul style="list-style-type: none"> <li>- Data can be used to give a historical perspective for approximating reference conditions or trends.</li> <li>- It is unlikely that the habitat has changed significantly since the assessment was made.</li> </ul>
3	<ul style="list-style-type: none"> <li>- Use of visual-based habitat assessment following SOPs (e.g., Stream Reach Assessment and PFC).</li> <li>- Documentation includes photographs.</li> <li>- Assessment includes quantitative measurements of selected parameters.</li> <li>- Data on land use compiled and used to supplement assessment.</li> <li>- Reference condition can be determined with a reasonable degree of confidence and used as a basis for assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment normally occurs during a single season.</li> <li>- Assessment is broad; often covering the entire stream reach or region.</li> <li>- An attempt was made to access the stream reach wherever possible.</li> </ul>	<ul style="list-style-type: none"> <li>- Data have moderate precision and sensitivity.</li> <li>- Professional biologist performs survey or provides training; the individual making the assessment is well trained.</li> <li>- Professional biologist or hydrologist performs the assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Data were collected recently or it is very unlikely that the habitat has changed significantly since the assessment was made.</li> </ul>
4	<ul style="list-style-type: none"> <li>- Assessment of habitat based on quantitative measurements of instream parameters, channel morphology and floodplain characteristics.</li> <li>- Reference condition is well understood and is used as the basis of the assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Good access of the entire stream reach including private property.</li> <li>- Helicopter surveys, etc.</li> <li>- Data from multiple years.</li> </ul>	<ul style="list-style-type: none"> <li>- High precision and sensitivity.</li> <li>- Highly experienced professional performed assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are current; There is no doubt that the assessment reflects current conditions.</li> </ul>

**Table 4. Biology Sufficient Credible Data Tables for Aquatic Life Use (Lakes and Wetlands)**

Score	Technical Components	Spatial/Temporal Coverage	Data Quality	Data Currency
1	<ul style="list-style-type: none"> <li>- Simple documentation, visual observations only (no true assessment)</li> <li>- Unable to make a comparison to reference condition.</li> <li>- Relative abundance data of fish is not supplemented with quantitative data or cannot be interpreted by a qualified professional.</li> <li>- Fish creel surveys with limited supplemental information.</li> </ul>	<ul style="list-style-type: none"> <li>- Very limited monitoring</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are very low or unknown.</li> <li>- Professional biologist does not provide any oversight.</li> <li>- Poor taxonomic resolution</li> </ul>	<ul style="list-style-type: none"> <li>- Data do not reflect current conditions.</li> </ul>
2	<ul style="list-style-type: none"> <li>- Only one biological assemblage was surveyed or observed (usually fish or algae for lakes; and waterfowl, vegetation or macroinvertebrates for wetlands); includes documentation sufficient for interpretation by qualified professional.</li> <li>- Probable sources and causes of impairment are documented.</li> <li>- A qualified professional can approximate reference condition.</li> </ul>	<ul style="list-style-type: none"> <li>- Limited to a single sampling</li> <li>- Limited sampling for site-specific studies</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are low to moderate.</li> <li>- Data were collected or observations were made following appropriate protocols, but individuals had limited training.</li> <li>- Professional biologist provided oversight.</li> <li>- Good taxonomic resolution.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are substantially older than ideal, but there is reason to believe that current conditions are reasonably represented.</li> </ul>
3	<ul style="list-style-type: none"> <li>- Relative abundance data or well-documented observations for two biological assemblages such as fish, algae, macroinvertebrates, amphibians, etc., with quantitative (e.g. population, growth rates, primary production, age class, size, condition) data for at least one assemblage.</li> <li>- May include biotic index interpretations.</li> <li>- The entire fish assemblage may not be targeted but all fish species sampled were identified.</li> <li>- Reference condition can be determined with a reasonable degree of confidence and used as a basis for assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Monitoring normally occurs during a single season.</li> <li>- Monitoring may include site specific studies, but has limited spatial coverage</li> </ul>	<ul style="list-style-type: none"> <li>- Data have moderate precision and sensitivity.</li> <li>- Qualified professional performs survey or provides training; the individual making the survey is well trained.</li> <li>- Qualified professional performs the survey or makes observations.</li> <li>- Detailed taxonomic resolution</li> </ul>	<ul style="list-style-type: none"> <li>- Data are older than ideal, but there are no indications that conditions have changed significantly.</li> </ul>
4	<ul style="list-style-type: none"> <li>- Two or more assemblages were surveyed and assessed; includes quantitative measurements for at least two assemblages following detailed SOPs.</li> <li>- Reference condition is well understood and is used as the basis of the assessment.</li> <li>- The fish survey was designed to sample the entire fish assemblage.</li> <li>- Often includes biotic index interpretations</li> </ul>	<ul style="list-style-type: none"> <li>- Surveys conducted for multiple years and/or seasons</li> <li>- Broad coverage of sites</li> <li>- Often uses targeted or probabilistic design</li> </ul>	<ul style="list-style-type: none"> <li>- High precision and sensitivity.</li> <li>- Assessment performed by a highly experienced professional biologist.</li> <li>- Detailed taxonomic resolution</li> </ul>	<ul style="list-style-type: none"> <li>- Data are current, generally less than five years old, and/or there is certainty that the conditions have not changed.</li> </ul>

**Table 5. Chemistry/Toxicity Sufficient Credible Data Tables for Aquatic Life Use (Lakes and Wetlands)**

Score	Technical Components	Spatial/Temporal Coverage	Data Quality	Data Currency
1	<ul style="list-style-type: none"> <li>- Best professional judgment based on land use data or source locations</li> <li>- Limited chemical analyses, which do not provide sufficient information concerning probable causes of impairment.</li> <li>- Data extrapolated when homogeneous conditions are expected</li> </ul>	<ul style="list-style-type: none"> <li>- Low spatial and temporal coverage - limited data at critical periods</li> <li>- Limited period of record (e.g. one day)</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are very low or unknown and data appear to be an outlier (suspect).</li> <li>- High detection limits make the data difficult to interpret.</li> <li>- QA/QC protocols not followed.</li> </ul>	<ul style="list-style-type: none"> <li>- Data do not reflect current conditions.</li> </ul>
2	<ul style="list-style-type: none"> <li>- Usually grab or composite water quality samples</li> <li>- Screening models based on loading data (not calibrated or verified)</li> <li>- Sediment contamination data (e.g. metal scans)</li> <li>- Fish consumption advisories</li> <li>- Chemical parameters limited; however, probable causes of impairment were targeted and documented.</li> <li>- A professional can approximate reference condition.</li> <li>- Acute or Chronic WET; or Acute sediment tests</li> <li>- Synthesis of historical information on fish contamination levels for lakes</li> <li>- N/P ratios calculated for lakes</li> <li>- Trophic status determined for lakes using at least two of the following; TOC, transparency, primary production, phytoplankton density and/or biomass, total nitrogen, total phosphorus or chlorophyll a.</li> </ul>	<ul style="list-style-type: none"> <li>- Moderate spatial and/or temporal coverage.</li> <li>- Data collected at critical periods (Lakes sampled near turnover, late winter and/or mid-summer; Wetlands sampled in the spring or summer)</li> <li>- Short period of record; but good spatial coverage</li> <li>- Quarterly sampling or targeted seasonal-sampling.</li> <li>- Several parameters often collected over several years (e.g., Secchi Depth).</li> </ul>	<ul style="list-style-type: none"> <li>- Data quality and sensitivity are low to moderate.</li> <li>- Data was collected following appropriate protocols; however individuals had limited training.</li> <li>- Low detection limits</li> <li>- QC indicates there was no contamination or other problems.</li> <li>- Low replication used for toxicity tests</li> </ul>	<ul style="list-style-type: none"> <li>- Data are substantially older than ideal, but there is reason to believe that they reasonably indicate current conditions.</li> </ul>
3	<ul style="list-style-type: none"> <li>- Series of grab or composite samples ( depth-integrated, diurnal coverage, hypolimnion and epilimnion sampling as appropriate)</li> <li>- Calibrated models</li> <li>- Combination of two or more analyses of the following: water column, sediment, chlorophyll; toxicity testing; primary production; bioaccumulation.</li> <li>- Reference condition can be determined with a reasonable degree of confidence and used as a basis for assessment.</li> <li>- 2-3 Acute or Chronic Ambient; or Acute sediment; or Acute and Chronic WET tests for effluent dominated system</li> <li>- Trophic status determined using Secchi depth, total phosphorus and chlorophyll a; and includes a dissolved oxygen/temperature profile(s) for lakes.</li> <li>- N/P ratios calculated for lakes</li> </ul>	<ul style="list-style-type: none"> <li>- Broad spatial and temporal coverage of site with sufficient frequency and coverage to capture acute events (lakes sampled near turnover; late winter or mid summer; wetlands sampled late winter/early spring and mid-summer).</li> <li>- Typically monthly sampling during key periods.</li> <li>- Lengthy period of record (sampled over a period of months for &gt;2 years)</li> </ul>	<ul style="list-style-type: none"> <li>- Data have moderate precision and sensitivity.</li> <li>- Qualified professional provides training; the individual collecting the samples is well trained.</li> <li>- Qualified professional collects samples; Data are analyzed in a competent laboratory that uses methods with low detection limits</li> <li>- QC documents that there are no sampling or analytical errors.</li> <li>- Moderate replication used for toxicity tests</li> </ul>	<ul style="list-style-type: none"> <li>- Data are older than ideal, but there are no indications that conditions have changed significantly.</li> </ul>
4	<ul style="list-style-type: none"> <li>- Combination of three or more of the following: water column chemistry, sediment chemistry, chlorophyll a, primary production, bioaccumulation data or toxicity testing.</li> <li>- Includes Trophic status, dissolved oxygen profiles and N/P ratios (lakes)</li> <li>- &gt;3 acute and chronic ambient tests; or acute or chronic sediment tests.</li> <li>- Includes sediment core sampling</li> </ul>	<ul style="list-style-type: none"> <li>- Broad spatial (several) and temporal coverage (monthly sampling during key periods for &gt; 3 yrs) of site with sufficient frequency and parameter coverage to capture acute events, chronic conditions and other potential impacts.</li> </ul>	<ul style="list-style-type: none"> <li>- High precision and sensitivity.</li> <li>- Data collected and analyzed by professionals following detailed QA/QC protocols.</li> <li>- High replication used for toxicity tests</li> </ul>	<ul style="list-style-type: none"> <li>- Data are current, generally less than 5 years old, and it is certain that conditions have not changed since collection.</li> </ul>

**Table 6. Physical/Habitat Sufficient Credible Data Tables for Aquatic Life Use (Lakes and Wetlands)**

Score	Technical Components	Spatial/Temporal Coverage	Data Quality	Data Currency
1	<ul style="list-style-type: none"> <li>- Habitat characteristics were observed visually with no true assessment</li> <li>- Simple documentation of practices that might alter habitat.</li> <li>- No attempt to compare to reference condition; observations are likely to be natural.</li> </ul>	<ul style="list-style-type: none"> <li>- Sporadic visits; assessments only at limited areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment precision and sensitivity are very low or unknown.</li> <li>- Assessment was not conducted by trained individuals.</li> </ul>	<ul style="list-style-type: none"> <li>- Data do not reflect current conditions.</li> </ul>
2	<ul style="list-style-type: none"> <li>- Visual observations of habitat characteristics or impairments (e.g. shoreline erosion, fluctuating water levels, siltation, riparian and aquatic vegetation, grazing, buffer zones, spawning areas, wildlife habitat/use) were made with simple assessment.</li> <li>- Use of land use maps to characterize watershed condition; probable impairment causes &amp; sources documented.</li> <li>- A qualified professional can approximate reference condition.</li> </ul>	<ul style="list-style-type: none"> <li>- Limited to annual visit and non-specific to season;</li> <li>- Limited spatial coverage</li> <li>- Site specific studies</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment precision and sensitivity are low</li> <li>- Assessment was undertaken following appropriate protocols, but individuals had limited training.</li> <li>- Qualified professional involved only through correspondence.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are substantially older than ideal, but there is reason to believe they reasonably indicate current conditions.</li> </ul>
3	<ul style="list-style-type: none"> <li>- Use of visual-based habitat assessment following SOPs; and/or includes a detailed interpretation.</li> <li>- Documentation includes photographs</li> <li>- Sources and causes of impairment are well documented and understood.</li> <li>- Information concerning surrounding land use and/or reservoir management activities is used to supplement assessment.</li> <li>- Reference condition can be determined with a reasonable degree of confidence and used as a basis for assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment normally occurs during a single season.</li> <li>- Assessment is broad; often covering the entire water body.</li> </ul>	<ul style="list-style-type: none"> <li>- Data have moderate precision and sensitivity.</li> <li>- Qualified professional provides training; the individual making the assessment is well trained.</li> <li>- Qualified professional performs the assessment and makes interpretations.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are older than ideal, but there are no indications that conditions have changed significantly.</li> </ul>
4	<ul style="list-style-type: none"> <li>- Assessment includes quantitative measurements of selected parameters.</li> <li>- Aerial photographs, satellite images or infrared photographs are used as part of the assessment.</li> <li>- Detailed studies conducted to determine impacts to habitat caused by dam operations, etc.</li> <li>- Reference condition is well understood and is used as the basis of the assessment.</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment is broad; often covering the entire water body; data collected from multiple years.</li> <li>- Aerial surveys that are ground truthed.</li> </ul>	<ul style="list-style-type: none"> <li>- High precision and sensitivity.</li> <li>- Assessment was performed by qualified professional following detailed protocols.</li> </ul>	<ul style="list-style-type: none"> <li>- Data are current, generally less than five years old, and/or it is essentially certain that the conditions have not changed since data were collected.</li> </ul>

**Table 7. Drinking Water Sufficient Credible Data Decision Table**

Level of Information	Technical Component	Spatial/Temporal Coverage	Data Quality	Data Currency
Insufficient Data	<ul style="list-style-type: none"> <li>- Probable impairments to drinking water were not measured.</li> <li>- Impairments are inferred.</li> <li>- Probable sources of impairment were not documented.</li> </ul>	<ul style="list-style-type: none"> <li>- Limited temporal coverage (less than quarterly sampling for &lt;3 years).</li> <li>- Data not collected at critical times</li> <li>- Limited spatial coverage that does not adequately target probable impairments (e.g., one location)</li> <li>- Limited water quality data with no exceedences of standards, but sediment data indicate contamination; and/ or probable sources of impairment are located in the watershed.</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are low or unknown.</li> <li>- QC protocols not followed or indicate contamination.</li> <li>- Detection limits are too high.</li> <li>- Samples not properly preserved</li> </ul>	<ul style="list-style-type: none"> <li>- Data do not reflect current conditions.</li> </ul>
Sufficient Credible Data	<ul style="list-style-type: none"> <li>- Total recoverable metals were measured.</li> <li>- Total and dissolved metals were measured.</li> <li>- Organic compounds were measured</li> <li>- Sampling and analysis includes sediment.</li> <li>- Probable sources of impairment were documented.</li> </ul>	<ul style="list-style-type: none"> <li>- Human health water quality standards are exceeded.</li> <li>- A sufficient number of parameters were analyzed through sampling at least quarterly; or sampling adequately targeted critical time periods for &gt;3 years.</li> <li>- Good spatial coverage or well-targeted sampling locations.</li> <li>- Limited water quality data with no exceedences of standards, sediment data do not have elevated metals and/or organic compounds and no probable sources of impairment are located in the watershed.</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity moderate.</li> <li>- QA/QC protocols are followed.</li> <li>- Low detection limits</li> </ul>	<ul style="list-style-type: none"> <li>- Data likely reflects current conditions.</li> <li>- There have not been any significant changes in activities occurring in the watershed since the data were collected.</li> </ul>

**Note:** For this guidance document, exceedence is defined as a pollutant level that violates Montana’s water quality standards (Circular WQB-7).

**Table 8. Recreation and Aesthetics Sufficient Credible Data Decision Table**

<b>Level of Information</b>	<b>Technical Component</b>	<b>Spatial/Temporal Coverage</b>	<b>Data Quality</b>	<b>Data Currency</b>
Insufficient Data	<ul style="list-style-type: none"> <li>- Observations of algae blooms, odors, turbidity, aesthetics, etc. without documentation.</li> <li>- Observations made about flows or water levels without documentation.</li> <li>- Observations made concerning surface scum, pollution, toxins, etc. without documentation.</li> </ul>	<ul style="list-style-type: none"> <li>- Very limited water chemistry or fecal coliform data.</li> <li>- Data not collected at critical times such as during the summer for swimming.</li> <li>- Limited spatial coverage that does not adequately target probable causes of impairments (e.g., one location).</li> <li>- Limited temporal coverage</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity are low or unknown.</li> <li>- QA/QC protocols were not followed.</li> <li>- Samples not properly collected or preserved; or exceed holding times.</li> <li>- Poor documentation</li> </ul>	<ul style="list-style-type: none"> <li>- Data do not reflect current conditions.</li> </ul>
Sufficient Credible Data	<ul style="list-style-type: none"> <li>- Observations of algae blooms, odors, turbidity, aesthetics, etc., well documented.</li> <li>- Documentation includes photos.</li> <li>- Probable sources of impairment identified; probable causes of impairment measured or well documented (toxins, dewatering, etc).</li> <li>- Chlorophyll <i>a</i> data collected</li> <li>- Fecal coliform data collected</li> <li>- Fish consumption advisories resulting from anthropogenic impairment</li> <li>- Information concerning beach closures.</li> <li>- Secchi disk data (lakes).</li> <li>- Long-time local residents provide consistent historical perspectives regarding their observation of changes in water quality over time.</li> </ul>	<ul style="list-style-type: none"> <li>- Good temporal coverage of observations, photo documentation, fecal coliform data, etc.</li> <li>- Data and observations are targeted during the summer months.</li> <li>- Good spatial coverage or well targeted sampling location(s).</li> <li>- Limited water quality data or documentation; however, data indicate severe impairment.</li> </ul>	<ul style="list-style-type: none"> <li>- Data precision and sensitivity moderate.</li> <li>- QA/QC protocols are followed.</li> <li>- Low detection limits</li> </ul>	<ul style="list-style-type: none"> <li>- Data likely reflect current conditions.</li> <li>- There have been no significant activity changes in the watershed since the data were collected.</li> </ul>

**Attachment 2**

**SOP SQPBWQM-001**

**BUD Decision Tables 9 - 14**

**Table 9. Aquatic Life/Fisheries Use Support Decision Table for Streams**

<b>1. CHEMISTRY &amp; TOXICOLOGY (Streams)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>1(a) TOXICITY (W.E.T. Tests)</b>	Bioassay test indicates no acute or chronic toxicity	Bioassay test indicates chronic toxicity	Bioassay test indicates acute toxicity
<b>1(b) CHEMICAL TOXICANTS<sup>1</sup></b> - Trace metals, - Ammonia, - Chlorine, - Organic compounds	For any pollutant: - No exceedence of acute or chronic standards, or - The chronic standards are exceeded by less than 10% no more than once for one parameter in a three-year period when measurements were taken at least quarterly.	For any pollutant: - Acute standards are exceeded by less than 25%; <b>or</b> - Chronic standards are exceeded by 10-50%; <b>or</b> - Water quality standards are exceeded in no more than 10% of the measurements from a large data set.	For any pollutant: - Acute standards are exceeded by at least 25%; <b>or</b> - Chronic standards are exceeded by more than 50%; <b>or</b> - Water quality standards are exceeded in more than 10% of the measurements from a large data set.
<b>Sediment Chemistry<sup>2</sup></b> <i>(Toxicants, such as metals and organic compounds)</i>	Sediment trace metal concentrations are similar to reference condition.	Sediment trace metal concentrations are moderately higher than reference condition.	Sediment trace metal concentrations are substantially higher than reference condition.
<b>Models</b>	Predictive models do not indicate impairment.	Predictive models indicate moderate impairment.	Predictive models indicate severe impairment.
<b>Bioaccumulation</b> <i>(e.g., fish tissue)</i>	Pollutants are not bioaccumulated or are only slightly above background levels.	Bioaccumulation of pollutant is moderately above background levels.	Bioaccumulation of pollutant is substantially higher than background levels.

<sup>1</sup> Compared to Water Quality Standards (WQB-7). When possible, use the average concentration of samples collected over a 96-hour period and compare directly to chronic standard values; one data point (n=1) is sufficient if no other data were collected within 96 hours.

<sup>2</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, expert opinion or modeling.

**Table 9. Aquatic Life/Fisheries Use Support Decision Table for Streams (Cont.)**

<b>1. CHEMISTRY &amp; TOXICOLOGY (Streams cont.)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>1(c) CHEMISTRY<sup>3,4,5</sup></b> - Nutrients - Dissolved oxygen - pH - TSS - Turbidity - Temperature	- Water quality standards are not exceeded for any pollutant; or - The measurements are similar to reference condition; or - For one parameter only, the water quality standard was randomly exceeded by less than 10% in no more than 10% of the measurements from a large data set.	- Water quality standards are exceeded by less than or equal to 50%; - Parameters that do not have numeric values will be compared to reference condition; or - The water quality standards are exceeded for 11 to 25% of the measurements from a large data set.	- Water quality standards are exceeded by more than 50%; - Parameters that do not have numeric values will be compared to reference condition; or - The water quality standards are exceeded by more than 25% of the measurements from a large data set.
<b>Nutrients</b>	Nutrient concentrations are similar to reference condition.	Nutrient concentrations are moderately higher than reference condition.	Nutrient concentrations are substantially higher than reference condition.
<b>Sediment</b>	Total Suspended Sediment or turbidity measurements are similar to reference condition.	Total Suspended Sediment or turbidity measurements are moderately higher than reference condition.	Total Suspended Sediment or turbidity measurements are higher than reference condition.
<b>Models</b>	Predictive models indicate no impairment.	Predictive models indicate moderate impairment.	Predictive models indicate severe impairment.

<sup>3</sup> Dissolved Oxygen requires consideration of diel changes and the time of year (e.g., presence or absence of critical life stage); pH and temperature standards reflect deviations from natural. For pH and temperature a 110% exceedence of standards means a 10% exceedence of the maximum allowable change from natural.

<sup>4</sup> Note: A large data set is 4 times/year for 3 years.

<sup>5</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, or expert opinion or modeling.

**Table 9. Aquatic Life/Fisheries Use Support Decision Table for Streams (Cont.)**

<b>2. HABITAT (Streams)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>2. HABITAT</b> <sup>6,7</sup> <i>(e.g., evidence of excessive sediment or dredging)</i>	Data indicate that the habitat is similar to reference condition. - Channel morphology - Substrate composition - Bank/riparian structure	Modification of habitat slight to moderate. - Some evidence of watershed erosion caused by land use activities. - Channel modification slight to moderate.	Severe habitat alteration. - Channelization - Dredging activities - Bank failure - Heavy watershed erosion.
<b>Flow</b>	Flow regime of the region. Dams built prior to July 1, 1971 are operated in a reasonable manner where impacts to aquatic life habitat are minimized.	Comparison to reference condition indicates that flow alterations have an impact on aquatic life habitat.	Comparison to reference condition indicates that flow alterations have severely impacted aquatic life habitat.
<b>Riparian Area</b>	The stream has riparian vegetation of natural types with minimal short-term impacts.	Limited riparian zones because of encroaching land use patterns.	Removal of riparian habitat is widespread.
<b>Stream Reach Survey</b>	The DEQ Stream Reach Survey score is greater than or equal to 75 percent of reference condition or the total possible score.	DEQ Stream Reach Survey score is between 25-75 percent of reference condition or of the total possible score.	The DEQ Stream Reach Survey score is less than or equal to 25 percent of reference condition or of the total possible score.
<b>Proper Functioning Condition</b>	Proper functioning condition	Functional- at risk	Nonfunctional
<b>Geomorphology</b> <i>(e.g. pattern, channel cross section, longitudinal profile, pebble count)</i>	Measurements indicate that the geomorphology is similar to reference condition.	Measurements indicate that the stream is moderately unstable.	Measurements indicate that the stream is extremely unstable (often Rosgen stream types F, G and D).

<sup>6</sup> DEQ is using habitat and reference condition to interpret narrative water quality standards that protect aquatic life use.

<sup>7</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, expert opinion or modeling.

**Table 9. Aquatic Life/Fisheries Use Support Decision Table for Streams (Cont.)**

<b>3. BIOLOGY (Streams)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>3. BIOLOGY</b> <sup>8,9,10</sup> <i>Biological Assemblages</i> A) <i>Macroinvertebrate</i> B) <i>Periphyton</i> C) <i>Fishery</i>	Data indicate functioning, sustainable biological assemblages, none of which have been modified significantly beyond the natural range of the reference condition (greater than 75 percent of reference condition).	At least one biological assemblage indicates moderate impairment when compared to reference condition (25-75 percent of reference condition).	At least one assemblage indicates severe impairment. Data clearly indicate severe modification of the biological community when compared to reference condition (less than 25 percent of reference condition).
<b>Chlorophyll-a</b>	The benthic chlorophyll level is similar to reference condition; or the chlorophyll is <100 mg/m <sup>2</sup>	The benthic chlorophyll level is moderately higher than reference condition; or the chlorophyll is 100 to 150 mg/m <sup>2</sup>	The benthic chlorophyll level is substantially higher than reference condition; or the chlorophyll is >150 mg/m <sup>2</sup>
<b>Fish Survey</b> (Population estimates)	Sustainable (wild) fishery is greater than 75 percent of reference condition; or meets the goals of a DFWP management plan	Sustainable (wild) fishery population is 25-75 percent of reference condition; or the goals of a DFWP management plan are not met due to anthropogenic impacts to water quality.	The stream does not support a sustainable (wild) fishery due to anthropogenic impacts to water quality.
<b>Wildlife</b>	Associated wildlife populations are minimally impacted.	Associated wildlife populations have been moderately impacted.	Associated wildlife populations have been severely impacted.

<sup>8</sup> DEQ will work with DFWP to further develop fishery guidelines.

<sup>9</sup> Associated wildlife includes amphibians, waterfowl, and furbearers.

<sup>10</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, or expert opinion or modeling.

**Table 10. Aquatic Life Use Support Tables for Lakes and Wetlands (Fish, Aquatic Life, and Wildlife)**

<b>1. CHEMISTRY &amp; TOXICOLOGY (Lakes &amp; Wetlands)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>1(a) TOXICITY</b>	Bioassay test indicates that there is no acute or chronic toxicity	Bioassay test indicates chronic toxicity	Bioassay test indicates acute toxicity
<b>1(b) CHEMICAL TOXICANTS<sup>11, 12</sup></b> <ul style="list-style-type: none"> <li>- Trace metals</li> <li>- Ammonia</li> <li>- Chlorine</li> <li>- Toxic organics</li> </ul>	For any pollutant: <ul style="list-style-type: none"> <li>- No exceedence of acute or chronic standard values;</li> <li><b>or</b></li> <li>- The chronic standards are exceeded by less than 10% no more than once for one parameter in a three year period when measurements were taken at least four times/year.</li> </ul>	For any pollutant: <ul style="list-style-type: none"> <li>- Acute standards are exceeded by less than or equal to 25%; or</li> <li>- Chronic standards are exceeded by less than or equal to 50%;</li> <li><b>or</b></li> <li>- Water quality standards are exceeded in no more than 10% of the measurements from a large data set.</li> </ul>	For any pollutant: <ul style="list-style-type: none"> <li>- Acute standards are exceeded by more than 25%; or</li> <li>- Chronic standards are exceeded by more than 50%; <b>or</b></li> <li>- Water quality standards are exceeded in more than 10% of the measurements from a large data set.</li> </ul>
<b><i>Sediment Chemistry</i></b> <i>(Toxicants, e.g., metals, Organic compounds)</i>	Sediment trace metal concentrations are similar to reference condition.	Sediment trace metal concentrations are moderately higher than reference condition.	Sediment trace metal concentrations are substantially higher than reference condition.
<b><i>Trophic Status</i></b>	Trophic status is similar to reference condition	Trophic status exceeds reference condition.	Trophic status is hyper-eutrophic.
<b><i>Models</i></b>	Predictive models do not indicate impairment	Predictive models indicate moderate impairment.	Predictive models indicate severe impairment
<b><i>Bioaccumulation</i></b> <i>(e.g., fish tissue, etc.)</i>	Pollutants are not bioaccumulated above background levels.	Bioaccumulation of pollutant is slightly above background levels.	Bioaccumulation of pollutant is substantially higher than background levels.

<sup>11</sup> Compared to Water Quality Standards (WQB-7). When possible, use the average concentration of samples collected over a 96-hour period and compare directly to chronic standard values; one data point (n=1) is sufficient if no other data were collected within 96-hours.

<sup>12</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, expert opinion or modeling.

**Table 10. Aquatic Life Use Support Tables for Lakes and Wetlands (Fish, Aquatic Life, and Wildlife) (cont.)**

<b>1. CHEMISTRY &amp; TOXICOLOGY (Lakes &amp; Wetlands, cont.)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>1(c) CHEMISTRY<sup>13,14,15</sup></b> - Nutrients - Dissolved oxygen - PH - TSS - Turbidity - Temperature	- Water quality standard values are not exceeded for any pollutant; or - The measurements are similar to reference condition; or - For one parameter only the water quality standard was exceeded randomly by less than 10% in less than or equal to 10% of the measurements from a large data set.	- Water quality standard values are exceeded by less than 50%; - Parameters that do not have numeric values will be compared to reference condition; or - The water quality standards are exceeded for 11 to 25% of the measurements from a large data set.	- Water quality standard values are exceeded by greater than 50%; - Parameters that do not have numeric values will be compared to reference condition; or - The water quality standards are exceeded for greater than 25% of the measurements from a large data set.
<b>Nutrients</b>	Nutrient concentrations are similar to reference condition.	Nutrient concentrations are moderately higher than reference condition.	Nutrient concentrations are substantially higher than reference condition.
<b>Models</b>	Predictive models do not indicate impairment	Predictive models indicate moderate impairment.	Predictive models indicate severe impairment.

<sup>13</sup> Compared to Water Quality Standards (WQB-7). Note: Dissolved Oxygen requires consideration of diel changes and the time of year (e.g., presence or absence of critical life stage). pH and Temperature standards reflect deviations from natural. For pH and temperature a 10% exceedence of standards means a 10% exceedence of the maximum allowable change from natural.

<sup>14</sup> A large data set is 4 times/year for 3 years.

<sup>15</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, expert opinion or modeling.

**Table 10. Aquatic Life Use Support Tables for Lakes and Wetlands (Fish, Aquatic Life, and Wildlife) (cont.)**

<b>2. HABITAT (Lakes &amp; Wetlands)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>2. HABITAT</b> <sup>16, 17</sup>	Data indicate that the habitat is similar to reference condition.	Modification of habitat includes moderate evidence of impacts to the shoreline or littoral zone such as erosion or removal of native riparian or littoral vegetation.	Severe habitat alteration by shoreline erosion (bank failure) or removal of riparian or littoral vegetation.
<i>Sediment</i>	No significant deposition of sediments beyond reference condition.	Moderate levels of sediment are being transported to the lake from the watershed.	Excessive levels of sediment are being transported to the lake from the watershed.
<i>Water Level</i>	Water level fluctuation is similar to reference condition; or dams are operated in a reasonable manner where negative impacts to aquatic life are minimized.	Water level fluctuations have moderate impact on aquatic life habitat; or dam operations could be improved to benefit all designated beneficial uses, including aquatic life.	Water level fluctuations have severely impacted aquatic life habitat; or dams are not operated to support all designated beneficial uses, including aquatic life.
<i>Proper Functioning Condition or HGM Functional Assessment</i>	Proper Functioning Condition	Functional-at risk	Nonfunctional
<i>Habitat Assessment</i>	Habitat assessment indicate none/slight impairment	Habitat Assessment indicates moderate impairment	Habitat assessment indicates severe impairment.

<sup>16</sup> DEQ is using habitat and reference condition to interpret narrative water quality standards that protect aquatic life use.

<sup>17</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, expert opinion or modeling.

**Table 10. Aquatic Life Use Support Tables for Lakes and Wetlands (Fish, Aquatic Life, and Wildlife) (cont.)**

<b>3. BIOLOGY (Lakes &amp; Wetlands)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>3. BIOLOGY</b> <sup>18,19,20</sup> <i>Biological Assemblages</i> - <i>Fish</i> - <i>Periphyton</i> - <i>Phytoplankton</i> - <i>Macroinvertebrates</i> - <i>Zooplankton</i>	Data indicate functioning, sustainable biological assemblages, none of which have been modified significantly beyond the natural range of the reference condition (greater than 75 percent of reference condition).	At least one biological assemblage indicates moderate impairment (25-75 percent of reference condition).	At least one assemblage indicates severe impairment (less than 25 percent of reference condition).
<b><i>Chlorophyll-a</i></b>	The chlorophyll levels are similar to reference condition.	The chlorophyll level is moderately higher than reference condition.	The chlorophyll level is substantially greater than reference condition.
<b><i>Paleolimnology</i></b>	Sediment core samples do not indicate impairments.	Sediment core samples show moderate changes in salinity, trophic status, sedimentation rates or alkalinity as a result of anthropogenic impacts.	Sediment core samples show excessive changes in salinity, trophic status, sedimentation rates or alkalinity as a result of anthropogenic impacts.
<b><i>Fishery Survey</i></b>	Fishery is similar to reference condition; or meets DFWP management goals.	Fish population is moderately impaired; or although there is a fishery, the DFWP management goals are not met due to anthropogenic impacts to water quality.	The lake does not support a fishery population due to anthropogenic impacts to water quality.
<b><i>Wildlife</i></b>	Impacts to associated wildlife populations are minimal.	Impacts to wildlife populations have been moderate.	Impacts to associated wildlife populations have been severe.

<sup>18</sup> DEQ will work with DFWP to further develop fishery guidelines.

<sup>19</sup> Associated wildlife includes amphibians, waterfowl, and furbearers.

<sup>20</sup> Reference Conditions may be determined through a combination of the following: Comparison of the water body to a least impaired stream, historical data showing previous condition of the water body, conditions in a less-impaired upstream or downstream segment of the same water body, conditions in a paired watershed, a review of pertinent literature, expert opinion or modeling.

**Table 11. Drinking Water Beneficial Use Support Decision Table**

<b>DRINKING WATER (Both Streams and Lakes)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b>CHEMISTRY<sup>21</sup></b> SDWA - Inorganics - Organics - Radiochemistry	No human health standard exceedences.	Not Applicable	Exceedence of human health standards.

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<sup>21</sup> Assume drinking water will be treated prior to consumption (e.g., chlorination or filtration). For this guidance document, exceedence is defined as a violation of Montana’s water quality standards.

**Table 12. Contact Recreation Beneficial Use Support Decision Table**

<b>PRIMARY CONTACT RECREATION (Streams and Lakes)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<i><b>Algae, Toxins etc.</b></i>	There are no excessive algae blooms, turbidity, odor, toxins, etc.; similar to reference condition.	Excessive algae blooms, turbidity, odor, toxins, etc. moderately restrict swimming or boating.	Swimming or boating severely inhibited by excessive algae blooms, pathogens, turbidity, odor, toxins, etc.
<i><b>Chlorophyll-a</b></i>	The benthic chlorophyll level is similar to reference condition; or the chlorophyll is <50 mg/m <sup>2</sup> .	The benthic chlorophyll level moderately exceeds reference condition; or the chlorophyll is 50 to 100 mg/m <sup>2</sup> .	The benthic chlorophyll level greatly exceeds reference condition; or the chlorophyll is >100 mg/m <sup>2</sup>
<i><b>Bathing Closure</b></i>	No bathing area closures.	Beach closures.	Lake-wide bathing closures.
<i><b>Fecal Coliforms</b></i>	Fewer than 200 colonies fecal coliform per 100 ml for 90 percent of the samples collected in a 30-day period, or is similar to reference condition.	No more than 10 percent of samples exceed 400 colonies fecal coliform per 100 ml during any 30-day period and probable sources are identified.	More than 10 percent of samples exceed 400 colonies fecal coliform per 100 ml in a 30-day period and probable sources are identified.
<i><b>De-watering</b></i>	Water quantity is similar to reference condition; dams are operated in a reasonable manner so recreation impairment is minimized.	Water body is partially dewatered and discourages recreation.	Water body is dewatered and cannot be used for recreation.

Revision 2 note: Pathogen standard changed from Fecal Coliform to E-Coli February 2006.

Refer to ARM 17.30.621 - 629 for E-Coli limits.

**Table 13. Agriculture Supply Beneficial Use Support Decision Tables**

<b>Agriculture Supply (Streams and Lakes)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<b><i>Salinity (general)</i></b>	The water quality is similar to reference condition or does not restrict agricultural use.	Water salinity exceeds reference condition and discourages agricultural use.	Water salinity exceeds reference condition and cannot be used for agriculture.
<b><i>Livestock (Salinity)</i></b>	The water salinity is satisfactory for livestock and poultry; the specific conductance is less than 5000 uS/cm.	The water salinity limits use by livestock and poultry; Specific conductance is between 5000 and 15,000 uS/cm.	Livestock and poultry are unable to use the water due to high salinity; specific conductance is more than 15,000 uS/cm.
<b><i>Irrigation (Salinity)</i></b>	The water is satisfactory for irrigation. The sodium adsorption Ratios are less than 4; or water may only impact sensitive crops. Specific conductance is less than 1500 uS/cm.	Irrigation water may have an adverse effect on soils. Sodium adsorption ratios are between 4 and 18; or water may have an adverse effect on crops and may require careful management. Specific conductivity is 1500-7500 uS/cm.	Irrigation water is likely to have an adverse effect on soils. Sodium adsorption ratio is greater than 18, or water has an adverse effect on crops. Specific conductance is more than 7500 uS/cm.
<b><i>Toxicants</i></b>	Trace metal concentrations are similar to reference condition.	Trace metal concentrations and other toxicant concentrations exceed reference condition; however, the water can still be used for agriculture.	The water cannot be used for agriculture due to elevated trace metals or other toxicants.

**Table 14. Industry Supply Beneficial Use Support Decision Tables**

<b>Industry Supply (Streams and Lakes)</b>			
<b>DATA TYPE</b>	<b>UNIMPAIRED OR LEAST IMPAIRED</b>	<b>MODERATELY IMPAIRED</b>	<b>SEVERELY IMPAIRED</b>
<i><b>Salinity</b></i>	Salinity is similar to reference condition and / or the salinity does not restrict use by industry.	Salinity is above reference condition and discourages water use by industry.	Salinity is above reference condition and water cannot be used by industry.
<i><b>Turbidity</b></i>	Turbidity is similar to reference condition and / or the turbidity does not restrict use by industry.	Turbidity is above reference condition and discourages use by industry.	Turbidity is above reference condition and water cannot be used by industry.

**Attachment 3**

**SOP SQPBWQM-001**

**Montana Numeric Water Quality Standards  
(Department Circular WQB-7)**

# **CIRCULAR WQB-7**

## **MONTANA NUMERIC WATER QUALITY STANDARDS**



**Montana Department of Environmental Quality**

**Planning, Prevention, and Assistance Division - Water Quality Standards Section**

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# **CIRCULAR WQB-7**

**This document contains numeric water quality standards for Montana's surface and ground waters. Numeric standards that vary with use classifications, including fecal coliforms, color, turbidity, pH, and temperature, are given in the surface water quality standards (17.30.620 through 17.30.637 of the Administrative Rules of Montana [ARM]). The surface water quality standards and the ground water standards (ARM 17.30.1001 through 17.30.1045) also contain narrative standards. These narrative standards apply to substances or conditions for which sufficient information does not exist to develop specific numeric standards.**

**Narrative standards include alkalinity, chloride, hardness, sediment, sulfate, total dissolved solids and nutrients (for surface water) and any other substance or condition that may impair the uses of surface or ground water.**

**These standards were developed to comply with the Montana Water Quality Act requirement that standards be adopted to protect the present and future most beneficial uses of state waters (75-5-301, MCA). The Federal Clean Water Act (CWA) requires states to adopt numeric water quality standards for priority toxic pollutants (PP) for which EPA has issued CWA section 304(a) criteria guidance and whose presence or discharge could reasonably be expected to interfere with designated uses. In addition, the Montana Agricultural Chemical Ground Water Protection Act ( 80-15-201, MCA) requires the adoption of ground water standards for a selected list of pesticides.**

**The Montana Water Quality Act requires that human health standards for carcinogens be the more restrictive of either the one in one hundred thousand ( $1 \times 10^{-5}$ ) (one in one thousand [ $1 \times 10^{-3}$ ] for arsenic) excess lifetime cancer risk level, or EPA's drinking water maximum contaminant level (MCL). The Montana Agricultural Chemical Ground Water Protection Act requires that MCLs be adopted as ground water standards for pesticides if MCLs are available. If no MCLs or other federal criteria are available, standards must be developed using available data on health effects (reference dose, [RfD]) and standard assumptions. These assumptions are that 2 liters of water are consumed per day and seventy kilogram adults are exposed for 70 years with twenty percent of the exposure due to the consumption of water. In some cases no data was found for a pesticide in surface water. In these cases, the ground water standard was adopted as a surface water standard.**

**The standards for aquatic life are based on the most recent PP criteria. The surface water quality standards for human health toxins are the more restrictive of the MCL or the PP criteria. The ground water standards for human health toxins are based on the least restrictive of the MCL or the PP criteria. Because the PP criteria include exposure due to consumption of contaminated aquatic organisms while the MCL and the RfD do not, the human health standards for surface and ground water frequently differ. If neither an MCL nor PP criteria for human health were available, the most recent RfD or Health Advisory (HA) were used to compute the standard using the assumptions given above.**

**For carcinogens, the standards are the more restrictive of the criteria based on cancer risk (at the risk levels given above) or the criteria based on toxic effects. For ground water the risk based levels given in the drinking water regulations and the health advisories were used. For surface water the risk based levels given in the PP criteria list were used. In some cases substances are known to be carcinogenic but no risk levels are available. In these cases standards are based on toxic effects.**

**The Integrated Risk Information System (IRIS) or other federal data sources were used when the EPA's most recent Drinking Water Regulations and Health Advisories did not include data for a pesticide.**

EPA has published priority pollutant (PP), health advisory (HA), National Recommended Water Quality Criteria (NRWQC), and drinking water criteria in numerous publications. These include EPA, 1986 Quality Criteria for Water, EPA 440/5/86-001 (the "Gold Book") and numerous updates; Toxics Criteria for those States not Complying with Clean Water Act 303(c)(2)(B); (The National Toxics Rule [NTR]) which was published in the Code of Federal Regulations, 40 CFR 131.36 (1992); Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; (62 F.R. 42159 [1997]); National Recommended Water Quality Criteria-Correction (EPA 822-Z-99-001); and Drinking Water Standards and Health Advisories (EPA 822-B-00-001). The most recent Priority Pollutant Criteria (PP), Non Priority Pollutant (NPP), Maximum Contaminant Level (MCL), National Recommended Water Quality Criteria (NRWQC), or Health Advisory (HA) were used to develop this circular.

CIRCULAR WQB-7 will be updated as additional information becomes available. Users should ensure that they are using the edition cited in the Board's current rules.

WQB-7 is a complex document. In addition to numeric standards for the protection of aquatic life and human health, it also contains the primary synonyms of each substance, the CASRN that is a unique number for each chemical, a categorization of the type of pollutant, the bioconcentration factor if known, trigger values that are used in the assessment of degradation, and required reporting values. The department can provide electronic copies of this document. Use of an electronic copy will enable the user to search for synonyms or CASRN numbers. Such searches will make this document easier to use. Substances are listed in alphabetical order. In order to facilitate this listing, substances that are normally written with the numbers first are listed with numbers last. For example, 2,4-Dinitrophenol is listed as Dinitrophenol, 2,4-.

There are many "detailed notes of explanation." They are in both the table headings and in individual line items. Detailed notes of explanation follow the table portion of CIRCULAR WQB-7. Note that some standards, e.g., some metals, ammonia, dissolved oxygen, and phenol, are set over a range of values, which are computed using a complex formula, or depend upon special circumstances.

It may be difficult to determine compliance with some of the standards because some of them are lower than the required reporting levels (RRVs). Nevertheless, the standards in this circular are set at the levels necessary to protect the uses of water. They are based on the best available scientific evidence relating the concentration of pollutants to the effects on aquatic life and human health.

**CIRCULAR QWB-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

Except where indicated, values are listed as micro-grams-per-liter ( µg/L). A '---' indicates that a Standard has not been adopted or information is currently unavailable. A '( )' indicates that a detailed note of explanation is provided.

Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Acenaphthene §§--- § 3Acenaphthalene § Naphthyleneethylene § 1,8-Ethylenenaphthalene § 1,8-Ethylene Naphthalene § 1,2-Dihydroacenphthylene § Acenphthylene, 1,2-Dihydro-	83329 or 83-32-9 NIOSH: AB 1255500 SAX: AAE750	Toxic	---	---	242	1,200 PP	420 HA	N/A	10
Acifluorfen §§ Blazer § Tackle § Scepter § as sodium salt	62476-59-9	Carcinogen	---	---	---	10 HA	10 HA	N/A	---
Acrolein §§ Aqualine § Biocide § Crolean § Aqualin § Propenal § SHA 00701 § 2-propenal § Acraldehyde § Acrylaldehyde § Acrylic Aldehyde § Ethylene Aldehyde	107028 or 107-02-8 NIOSH: AS 1050000 SAX: ADR000	Carcinogen	---	---	215	320 PP	320 PP	0.7	20
Acrylamide §§ 2-Propenamide § Propenamide § Acrylic Amide § Ethylenecarboxamide § RCRA Waste Number U007	79061 or 79-06-1 NIOSH: AS 3325000 SAX: ADS250	Carcinogen	---	---	---	0.1 HA	0.1 HA	---	---
Acrylonitrile §§ Fumigrain § Ventox § ENT 54 § TL 314 § Carbacryl § Cyanoethylene § Vinyl cyanide § Propenenitrile § 2-Propenenitrile § Acrylonitrile monomer § RCRA Waste Number U009	107131 or 107-13-1 also listed as 75-05-8 NIOSH: AT 5250000 SAX: ADX500 75-05-8	Carcinogen	---	---	30	0.59 PP	0.59 HA	N/A	20
Alachlor §§ Lasso § Lazo § Alator § Alanex § Alochlor § Pillarzo § Metachlor §§ Chemiclor § SHA 090501 § Methachlor § 2-Chloro-N-(2,6-Diethyl)Phenyl-N- Methoxymethylacetamide § 2-Chloro-2',6'-Diethyl-N-(Methoxymethyl)Acetanilide	15972608 or 15972-60-8 NIOSH: AE 1225000 SAX: CFX000	Carcinogen	---	---	---	2 MCL	2 MCL	N/A	0.4
Aldicarb §§ Temik § Temic § Ambush § OMS 771 § Temik G 10 § Aldecarb § Carbamyl § SHA 098301 § Carbanolate § Sulfone Aldoxycarb § Union Carbide 21149 § RCRA Waste Number P070 § Propanal, 2-Methyl-2-(Methylthio)-, O- [(Methylamino)Carbonyl]Oxime	116063 or 116-06-3 NIOSH: UE 2275000 SAX: CBM500	Toxic	---	---	---	7 MCL	7 MCL	1	1
Aldicarb Sulfone §§ Aldoxycarb § Standak § UC 21865 § Sulfocarb § SHA 110801 § Propionaldehyde, 2-Methyl-2- (Methylsulfonyl)-, O-(Methylcarbomoyl)Oxime § 2-Methyl-2-(Methylsulfonyl)Propanal O- [(Methylamino)Carbonyl]Oxime	1646884 or 1646-88-4 NIOSH: UE 2080000 SAX: AFK000	Toxic	---	---	---	7 MCL	7 MCL	2	1
Aldicarb Sulfoxide §§ ---	1646873 or 1646-87-3 NIOSH: --- SAX: ---	Toxic	---	---	---	7 MCL	7 MCL	2	1



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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Antimony §§ Sb § Antimony Black § Antimony Regulus § C.I. 77050 § Stibium	7440360 or 7440-36-0 NIOSH: CC 4025000 SAX: AQB750	Toxic	---	---	1	6 MCL	6 MCL	0.4	3
Arsenic §§ As § Arsenicals § Arsenic-75 § Arsenic Black § Colloidal Arsenic § Grey Arsenic § Metallic Arsenic	7440382 or 7440-38-2 NIOSH: CG 0525000 SAX: ARA750	Carcinogen	340 PP	150 PP	44	18 HA	20 HA	N/A	3
Asbestos, fibers longer than 10 microns in length §§ --- § Amianthus § Amosite (Obs.) § Amphibole § Asbestos Fiber § Fibrous Grunerite § NCI C08991 § Serpentine, includes Chrysotile, Actinolite, Aurosite, Anthophyllite, Crocidolite, and Tremolite	Multiple	Carcinogen	---	---	---	7,000,000 fibers/liter MCL	7,000,000 fibers/liter MCL	N/A	---
Atrazine §§ --- § Aatrex § Aktikon § Atrasine § Atred § Candex § Crisatrina § Crisazine § Cyazin § Fenamin § Fenamine § Zeaphos § Fenatrol § Gesaprim § Hungazin § Inakor § Primatol § Malermais § Radazin § Radizine § Shell Atrazine herbicide § Strazine § Zeazine § SHA 080803 § 1-Chloro-3-Ethylamino-5-Isopropylamino-2,4,6- Triazine § s-Triazine, 2-Chloro-4-Ethylamino-6-Isopropylamino- § 2-Chloro-4-Ethylamino-6- Isopropylamino-s-Triazine § 6-Chloro-N-Ethyl-N'-(1-Methylethyl)-1,3,5-Triazine-2, 4-Diamine	1912249 or 1912-24-9 NIOSH: XY 5600000 SAX: PMC325	Carcinogen	---	---	---	3 MCL	3 MCL	0.1	0.6
Barium §§ Ba	7440393 or 7440-39-3 NIOSH: CA 8370000 SAX: BAH250	Toxic	---	---	---	2,000 MCL	2,000 MCL	2	5
Bentazon Methyl §§ --- § Basagran	50723-80-3 25057-89-0	Toxic	---	---	---	200 HA	200 HA	---	---
Benzene §§ --- § Phene § Benzol § Benzolene § Pyrobenzol § Carbon Oil § SHA 109301 § Coal Naphtha § Motor Benzol § Phenyl hydride § Cyclohexatriene C § Caswell Number 077 § RCRA Waste Number U019 § EPA Pesticide Chemical Code 008801 § NCI C55276	71432 or 71-43-2 NIOSH: CY 1400000 SAX: BBL250	Carcinogen	---	---	5.2	5 MCL	5 MCL	N/A	0.5
Benzidine §§ --- § p,p'-Bianiline § 4,4'-Bianiline § 4,4'-Biphenyldiamine § p,p'-Diaminobiphenyl § 4,4'-Diaminodiphenyl § RCRA Waste Number U021 § 4,4'-Biphenylenediamine § 4,4'-Diphenylenediamine § Biphenyl, 4,4'-Diamino- § 4,4'-Diamino-1,1'-Biphenyl §§ (1,1'-Biphenyl)-4,4'-Diamine § NCI C03361	92875 or 92-87-5 NIOSH: DC 9625000 SAX: BBX000	Carcinogen	---	---	87.5	0.0012 PP	0.0012 PP	N/A	20

**CIRCULAR WQB-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Benzo(g,h,i)perylene (PAH) § 1,12-Benzoperylene § 1,12-Benzperylene § Benzo(ghi)Perylene	191242 or 191-24-2 NIOSH: DI 6200500 SAX: BCR000	Toxic	---	---	30	---	---	0.076	10
Benzo[a]Pyrene (PAH) §§ --- § BaP § 3,4-BP § Benz(a)Pyrene § Benzo-a-Pyrene § 3,4-Benzpyrene § 6,7-Benzopyrene § 3,4-Benzopyrene § 3,4-Benz(a)Pyrene § Benzo(d,e,f)Chrysene § Benzo(def)Chrysene	50328 or 50-32-8 NIOSH: DJ 3675000 SAX: BCS750	Carcinogen	---	---	30	0.044 PP	0.048 I	N/A	0.2
Benzo[b]Fluoranthene (PAH) §§ --- § B(b)F § Benzo(b)Fluoranthene § Benzo(e)Fluoranthene § Benzo[e]Fluoranthene § 2,3-Benzfluoranthene § 3,4-Benzfluoranthene § 3,4-Benzofluoranthene § 2,3-Benzofluoranthene § 2,3-Benzofluoranthrene § Benz(e)Acephanthrylene § Benz[e]Acephanthrylene § 3,4-Benz(e)Acephanthrylene	205992 or 205-99-2 NIOSH: CU 1400000 SAX: BAW250	Carcinogen	---	---	30	0.044 PP	0.48 HA	N/A	0.25
Benzo[k]Fluoranthene (PAH) §§ --- § Benzo(k)Fluoranthene § 8,9-Benzofluoranthene § Dibenzo(b,jk)Fluorene § 2,3,1'8'-Binaphthylene § 11,12-Benzofluoranthene § 11,12-Benzo(k)Fluoranthene	207089 or 207-08-9 NIOSH: DF 6350000 SAX: BCJ750	Carcinogen	---	---	30	0.044 PP	4.79 I	N/A	0.25
Benz[a]anthracene (PAH) §§ --- § Tetraphene § Benzanthracene § Benzoanthracene § Naphthanthracene § 1,2-Benzanthrene § Benz(a)Anthracene § Benzo[a]Anthracene § Benzo(a)Anthracene § 1,2-Benzanthracene § Benzo(b)Phenanthrene § 1,2-Benzanthracene § Benzanthracene, 1,2- § 1,2-Benz(a)Anthracene § 2,3-Benzophenanthrene § RCRA Waste Number U018	56553 or 56-55-3 NIOSH: CV 9275000 SAX: BBC250	Carcinogen	---	---	30	0.044 PP	0.48 I	N/A	0.25
Beryllium §§ Be § Beryllium-9 § Glucinum § RCRA Waste Number P015	7440417 or 7440-41-7 NIOSH: DS 1750000 SAX: BFO750	Carcinogen	---	---	19	4 MCL	4 MCL	N/A	1
Beta Emitters (11) §§ --- § Gross Beta	Multiple	Carcinogen/ Radioactive	---	---	---	0.4 mrem /yr HA	0.4 mrem /yr HA	N/A	---
Beta-Chloronaphthalene §§ 2-Chloronaphthalene § β-Chloronaphthalene § Naphthalene, 2-Chloro- § RCRA Waste Number U047	91587 or 91-58-7 NIOSH: QJ 2275000 SAX: CJA000	Toxic	---	---	202	1,700 PP	1,700 PP	0.94	10

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
beta-Hexachlorocyclohexane §§ Lindane § β-BHC § beta-BHC § HCH-beta § beta-HCH § β-Lindane § beta-Lindane § beta-Hexachlorobenzene § β Hexachlorocyclohexane § Hexachlorocyclohexane-beta § Hexachlorocyclohexane, beta- § trans-alpha-Benzenehexachloride § Benzenehexachloride, trans-alpha- § beta-1,2,3,4,5,6-Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, beta- § 1-alpha,2-beta,3-alpha,4-beta,5-alpha,6-beta- Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, (1-alpha, 2-beta, 3-alpha, 4-beta, 5-alpha, 6-beta)-	319857 or 319-85-7 NIOSH: GV 4375000 SAX: BBR000	Carcinogen	---	---	130	0.14          PP	0.14          PP	N/A	0.1
Bis(2-Chloroisopropyl) Ether §§ --- § DCIP § NCI C50044 § RCRA Waste Number U027 § Dichlorodiisopropyl Ether § 2,2'-Oxybis(1-Chloropropane) § Bis (2-Chloroisopropyl) ether § Propane, 2,2'-Oxybis(2- Chloro- § Propane, 2,2'-Oxybis[1-Chloro- § 2',2'-Dichlorodiisopropyl Ether § Dichlorodiisopropyl Ether (DOT) § Bis(2-Chloro-1-Methylethyl) Ether	108601 or 108-60-1 NIOSH: KN 1750000 SAX: BII250 39638-32-9	Toxic	---	---	2.47	1,400          PP	1,400          PP	0.8	10
Bis(2-Chloroethoxy)Methane §§ --- § Bis(B-Chloroethyl)Formal	111911 or 111-91-1 NIOSH: PA 3675000 SAX: BID750	Toxic	---	---	0.64	---	---	0.5	---
Bis(Chloroethyl)Ether §§ --- § BCEE § DCEE § Clorex § Chlorex § Chloroethyl Ether § Dichloroethyl Ether § Dichloroethyl Oxide § RCRA Waste Number U025 § Bis(Chloroethyl) Ether § Di(2-Chloroethyl) Ether § Bis (Chloroethyl) Ether § Bis(2-Chloroethyl) Ether § Bis(B-Chloroethyl) Ether § β,β'-Dichloroethyl Ether § 2,2'-Dichloroethyl Ether § Bis (2-Chloroethyl) Ether § 1,1'-Oxybis(2-Chloro)Ethane § Ethane, 1,1'-Oxybis[2-Chloro- § beta,beta'-Dichloroethyl Ether § 1-Chloro-2-(beta-Chloroethoxy)Ethane	111444 or 111-44-4 NIOSH: KN 0875000 SAX: BIC750	Carcinogen	---	---	6.9	0.31          PP	0.31          PP	N/A	10
Bis(Chloromethyl)Ether §§ --- § BCME § bis-CME § Chloromethyl Ether § Oxybis(Chloromethane) § RCRA Waste Number P016 § Bis (Chloromethyl) Ether § sym-Dichlorodimethyl Ether § 1,1'-Dichlorodimethyl Ether § Dimethyl-1,1'-Dichloroether § Chloro(Chloromethoxy)Methane	542881 or 542-88-1 NIOSH: 1575000 SAX: BIK000	Carcinogen	---	---	0.63	0.0016          PP	0.0016          PP	N/A	10
Bromacil §§ Hyvar § ---	314-40-9	Carcinogen	---	---	---	90          HA	90          HA	N/A	0.5
Bromodichloromethane (HM) §§ Dichlorobromomethane § BDCM § NCI C55243 § Methane, bromodichloro- § Dichloromonobromomethane § Monobromodichloromethane	75274 or 75-27-4 NIOSH: PA 5310000 SAX: BND500	Carcinogen	---	---	3.75	5.6          PP	5.6          PP	N/A	0.5

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Bromoform (HM) §§ Tribromomethane § NCI C55130 § Methane, Tribromo- § Methenyl Tribromide § RCRA Waste Number U225	75252 or 75-25-2 NIOSH: PB 5600000 SAX: BNL000	Carcinogen	---	---	3.75	40 HA	40 HA	N/A	0.5
Bromomethane (HM) §§ Methyl Bromide § EDCO § Celfume § Dowfume § Methogas § SHA 053201 § Brom-O-Sol § Brom-O-Gas § Terr-O-Gas § Halon 1001 § Terr-O-Cide § Bromo-O-Gas § Bromo Methane § Methylbromide § Methyl Bromide § Methane, Bromo- § Monobromomethane § RCRA Waste Number U029	74839 or 74-83-9 NIOSH: PA 4900000 SAX: BNM500	Toxic	---	---	3.75	48 PP	48 PP	0.11	0.5
Bromoxynil	1689-84-9	Carcinogen	---	---	---	3.4 HA	3.4 HA	---	---
Butyl Benzyl Phthalate §§ --- § BBP § Sicol 160 § Unimoll BB § Palatinol BB § Santicizer 160 § Butylbenzylphthalate § Butylbenzyl Phthalate § Benzyl Butyl Phthalate § n-Benzyl Butyl Phthalate § Benzyl n-Butyl Phthalate § Phthalic Acid, Benzyl Butyl Ester § Butyl Phenylmethyl 1,2-Benzenedicarboxylate § 1,2-Benzenedicarboxylic Acid, Butyl Phenylmethyl Ester § NCI C54375	85687 or 85-68-7 NIOSH: TH 9990000 SAX: BEC500	Toxic with BCF >300	---	---	414	3,000 PP	3,000 PP	N/A	10
Butylate §§ Sutan § ---	2008-41-5	Carcinogen	---	---	---	350 HA	350 HA	N/A	---
Cadmium §§ Cd § C.I. 77180 § Colloidal Cadmium	7440439 or 7440-43-9 NIOSH: EU 9800000 SAX: CAD000	Toxic	1.05 @ 50 mg/l hardness (12) PP	0.16 @ 50 mg/l hardness (12) PP	64	5 MCL	5 MCL	0.1	0.1
Carbaryl §§ Sevin § ---	63-25-2	Toxic	---	---	---	700 HA	700 HA	2	---
Carbofuran §§ --- § Yaltox § Euradan § Furadan § Curaterr § Furacarb § SHA 090601 § Niagra 10242 § 2,2-Dimethyl-7-Coumaranyl N-Methylcarbamate § 2,2-Dimethyl-2,3-Dihydro-7- Benzofuranyl N-Methylcarbamate § Carbamic Acid, Methyl-, 2,3-Dihydro-2,2-Dimethyl-7- Benzofuranyl Ester	1563662 or 1563-66-2 NIOSH: FB 9450000 SAX: FPE000	Toxic	---	---	---	40 MCL	40 MCL	1	1
Carbon Tetrachloride §§ Freon 10 § R 10 § Univerm § Tetrasol § Fasciolin § Flukoids § Necatorina § Necatorine § Halon 104 § Tetraform § Carbon Tet § Benzinoform § Carbon Chloride § Perchloromethane § Tetrachloromethane § Methane Tetrachloroide § RCRA Waste Number U211	56235 or 56-23-5 NIOSH: FG 4900000 SAX: CBY000	Carcinogen	---	---	18.75	2.5 PP	3 HA	N/A	0.5



**CIRCULAR WQB-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Chlorophenyl Phenyl Ether, 4- §§ --- § 4- Chlorophenyl Phenyl Ether	7005723 or 7005-72-3 NIOSH: --- SAX: ---	Toxic with BCF >300	---	---	1,200	---	---	---	---
Chlorsulfuron §§ Glean §§ Telar	64902-72-3	Toxic	---	---	---	1750 HA	1750 HA	---	---
Chlorothalonil §§ Bravo § ---	1897-45-6	Carcinogen	---	---	---	15 HA	15 HA	N/A	---
Chlorpyrifos §§ Dursban § Ethion § Brodan § Eradex § Lorsban § Pyrinex § NA 2783 § Piridane § DowCo 179 § SHA 059101 § Ethion, dry § Chlorothalonil § Chlorpyrifos-Ethyl § O,O-Diethyl O-3,5,6-Trichloro-2-Pyridyl Phosphorothioate § Phosphorothioic Acid, O,O-Diethyl O-(3,5,6-Trichloro-2-Pyridyl) Ester	2921882 or 2921-88-2 NIOSH: TF 6300000 SAX: DYE000	Toxic	0.083  NPP	0.041  NPP	---	20  HA	20  HA	0.25	1
Chromium, all forms §§ Cr § Chrome	7440473 or 7440-47-3 NIOSH: GB 4200000 SAX: CMI750	Toxic	---	---	---	100  MCL	100  MCL	1	1
Chromium, hexavalent §§ Chromium (VI) § ---	18540299 or 18540-29-9 NIOSH: --- SAX: ---	Toxic	16  PP	11  PP	16	---	---	---	5
Chromium, trivalent §§ Chromium (III) § ---	16065831 or 16065-83-1 NIOSH: --- SAX: ---	Toxic	1804 @ 100 mg/l hardness (12) PP	86 @ 100 mg/l hardness (12) PP	16	---	---	1	---
Chrysene (PAH) §§ --- § Benz(a)Phenanthrene § Benzo(a)Phenanthrene § 1,2-Benzphenanthrene § 1,2-Benzophenanthrene § RCRA Waste Number U050 § 1,2,5,6-Dibenzonaphthalene	218019 or 218-01-9 NIOSH: GC0700000 SAX: CML810	Carcinogen	---	---	30	0.044  PP	48  I	N/A	0.25
cis-1,2-Dichloroethylene §§ --- § 1,2-Dichloroethylene § cis-Dichloroethylene § cis-1,2-Dichloroethene § 1,2,cis-Dichloroethylene § ethylene, 1,2-Dichloro-, (z)-	156592 or 156-59-2 NIOSH: KV 9420000 SAX: DFI200	Toxic	---	---	---	70  MCL	70  MCL	0.002	0.5
cis-1,3-Dichloropropene §§ Telone II § 1,3-Dichloropropene § 1,3-Dichloropropylene § (Z)-1,3-Dichloropropene § cis-1,3-Dichloropropylene § 1-Propene, 1,3-Dichloro-, (Z)-	10061015 or 10061-01-5 NIOSH: UC 8325000 SAX: DGH200	Carcinogen	---	---	1.91	2  HA	2  HA	N/A	0.5
Clopyralid §§ Stinger § ---	1702-17-6	Toxic	---	---	---	3,500  I	3,500  I	1	---

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Coliform, fecal §§ ---	N/A	Harmful	---	---	---	(13)	Less than 1 per 100ml (6)	1 per 100ml	1 per 100ml
Color §§ ---	N/A	Harmful	---	---	---	---	(18)	---	5 UNITS
Copper §§ Cu § Allbri Natural Copper § ANAC 110 § Arwood Copper § Bronze Powder § CDA 101 § CDA 102 § CDA 110 § CDA 122 § C.I. 77400 § C.I. Pigment Metal 2 § Copper Bronze § 1721 Gold § Gold Bronze § Kafar Copper § M1 (Copper) § M2 (Copper) § OFHC Cu § Raney Copper	7440508 or 7440-50-8 NIOSH: GL 5325000 SAX: CNI000	Toxic	7.3 @ 50 mg/l ) hardness (12)  PP	5.2 @ 50 mg/l hardness (12)  PP	36	1,300  PP	1,300  PP	0.5	1
Cyanazine §§ Bladex § ---	21725-46-2	Toxic	---	---	---	1.0  HA	1.0  HA	N/A	---
Cyanide, total §§ --- § Cyanide § Isocyanide § RCRA Waste Number P030 § Cyanides, includes soluble salts and complexes	57125 or 57-12-5 NIOSH: GS 7175000 SAX: COI500	Toxic	22  PP	5.2  PP	1	200  MCL	200  MCL	---	5
Dacthal §§ DCPA § ---	1861-32-1	Toxic	---	---	---	70  HA	70  HA	0.025	---
Dalapon §§ Revenge § Dalpon § Unipon § Dowpon § Radapon § Basinex § Ded-Weed § Dalacide § Gramevin § Crisapon § Dalpon Sodium § 2,2-Dichloropropionic Acid § SHA 28902, for sodium salt § SHA 28901, for dalapon only Propionic Acid, 2,2-Dichloro- § Sodium 2,2-Dichloropropionate § a-Dichloropropionic Acid § a,a-Dichloropropionic Acid § alpha-alpha-Dichloropropionic Acid	75990 or 75-99-0 NIOSH: UF 0690000 SAX: DGI400	Toxic	---	---	---	200  MCL	200  MCL	1.3	3
Dalapon, sodium salt §§ Dalpon § Unipon § Dowpon § Radapon § Revenge § Basinex § Ded-Weed § Dalacide § Gramevin § Crisapon § Dalpon Sodium § Sodium Dalapon § 2,2-Dichloropropionic Acid § SHA 28902, for sodium salt § SHA 28901, for dalapon only § Propionic Acid, 2,2-Dichloro- § Sodium 2,2-Dichloropropionate § alpha-alpha-Dichloropropionic Acid	127208 or 127-20-8 NIOSH: UF 1225000 SAX: DGI600	Toxic	---	---	---	200  MCL	200  MCL	1.3	3
delta-Hexachlorocyclohexane §§ Lindane § -BHC § delta-BHC § HCH-delta § delta-HCH § -BHC § -Lindane § delta-Lindane § Hexachlorocyclohexane § delta-Benzenehexachloride § Hexachlorocyclohexane-delta § Hexachlorocyclohexane, delta- § Cyclohexane, delta- 1,2,3,4,5,6-Hexachloro- § delta-1,2,3,4,5,6-Hexachlorocyclohexane § 1-alpha,2-alpha,3-alpha, 4-beta,5-alpha,6-beta-Hexachlorocyclohexane § Cyclohexane, delta-1,2,3,4,5,6-Hexachloro-, (1-alpha, 2-alpha, 3-alpha, 4-beta, 5-alpha, 6-beta)-	319868 or 319-86-8 NIOSH: GV 4550000 SAX: BFW500	Carcinogen	---	---	130	0.14  PP	0.14  PP	N/A	0.1

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Demeton §§ Systox § Bay 10756 § Bayer 8169 § Demox § Diethoxy Thiophosphoric Acid Ester of 2-Ethylmercaptoethanol § O,O-Diethyl 2-Ethylmercaptoethyl Thiophosphate § O,O-Diethyl O(and S)-2-(Ethyl-Thio)Ethyl Phosphorothioate Mixture § E 1059 § ENT 17,295 § Mercaptophos § Systemox § Systox § ULV § Demeton-O + Demeton-S	8065483 or 8065-48-3 NIOSH: TF 3150000 SAX: DAO600	Toxic	---	0.1  NPP	---	1.4  HA	1.4  HA	0.25	---
Di(2-Ethylhexyl)Phthalate (PAE) §§ Bis(2-Ethylhexyl)Phthalate § BEHP § DEHP § Octoil § Fleximel § Flexol DOP § Kodaflex DOP § Ethylhexyl Phthalate § Diethylhexyl Phthalate § 2-Ethylhexyl Phthalate § Di(Ethylhexyl)phthalate § Di(2-Ethylhexyl)phthalate § Bis (2-Ethylhexyl) Phthalate § Bis(2-Ethylhexyl)-1,2-Benzene-Dicarboxylate § 1,2-Benzenedicarboxylic Acid, Bis(2-Ethylhexyl)Ester	117817 or 117-81-7 NIOSH: TI 0350000 SAX: BJS000	Carcinogen	---	---	130	6  MCL	6  MCL	---	6
Di(2-Ethylhexyl)Adipate §§ Hexanedioic Acid § DEHA § BEHA § Bisoflex DOA § Effemoll DOA § Ergoplast AdDO § Flexol A 26 § PX-238 § Reomol DOA § Vestinol OA § Wickenol 158 § Kodaflex DOA § Monoplex DOA § NCI C54386 § Octyl Adipate § Dioctyl Adipate § Di-2-Ethylhexyl Adipate § Di (2-Ethylhexyl) Adipate § Bis(2-Ethylhexyl) Adipate § Adipic Acid, Bis(2-Ethylhexyl) Ester § Hexanedioic Acid, Bis(2-Ethylhexyl) Ester	103231 or 103-23-1 NIOSH: AU 9700000 SAX: AEO000	Carcinogen	---	---	---	300  HA	300  HA	N/A	6
Diazinon §§ ---	333-41-5	Toxic	---	---	---	0.6 HA	0.6 HA	0.25	---
Dibenz[a,h]Anthracene (PAH) §§ --- § DBA § DB(a,h)A § Dibenz(a,h)Anthracene § RCRA Waste Number U063 § Dibenzo(a,h)anthracene § 1,2:5,6-Benzanthracene § Dibenzo (a,h) Anthracene § 1,2,5,6-Dibenzanthracene § 1,2:5,6-Dibenz(a)Anthracene	53703 or 53-70-3 NIOSH: HN 2625000 SAX: DCT400	Carcinogen	---	---	30	0.044  PP	0.048  I	N/A	0.5
Dibromochloromethane (THM) §§ Monochlorodibromomethane § CDBM § NCI C55254 § Chlorodibromomethane § Methane, Dibromochloro-	124481 or 124-48-1 NIOSH: PA 6360000 SAX: CFK500	Carcinogen	---	---	3.75	4.1 PP	4.1 PP	N/A	0.5
Dibromoethane, 1,2- §§ Ethylene Dibromide § DBE § EDB § Nephis § Kopfume § Celmid § E-D-Bee § Soilfume § Bromofume § Dowfume 40 § SHA 042002 § Pestmaster § Soilbrom-40 § Dibromoethane § Ethylene Bromide § Glycol Dibromide § 1,2-Dibromoethane § 1,2-Dibromoethane § 1,2-Ethylene Dibromide § RCRA Waste Number U067	106934 or 106-93-4 NIOSH: KH 9275000 SAX: EIY500	Carcinogen	---	---	---	0.005  HA	0.005  HA	N/A	0.5

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Dibutyl Phthalate §§ --- § DPB § Celluflex DPB § Elaol § Hexaplas M/B § Palatinol C § Polycizer DBP § PX 104 § Staflex DBP § Witcizer § SHA 028001 § Butylphthalate § N-Butylphthalate § Di-n-Butylphthalate § Di-n-Butylphthalate § Dibutyl-o-Phthalate § Di-n-Butyl Phthalate § RCRA Waste Number U069 § Phthalic Acid Dibutyl Ester § Dibutyl 1,2-Benzene Dicarboxylate § 1,2-Benzenedicarboxylic Acid Dibutyl Ester § 1,2-Benzenedicarboxylic Acid, Dibutyl Ester § Benzene-o-Dicarboxylic Acid Di-n-Butyl Ester	84742 or 84-74-2 NIOSH: TI 0875000 SAX: DEH200	Toxic	---	---	89	2,700  PP	2,700  PP	0.25	0.25
Dicamba §§ Banvel § ---	1918-00-9	Toxic	---	---	---	200  HA	200  HA	0.28	---
Dichlorobenzene, 1,2- §§ DCB § ODB § ODCB § Dizene § Cloroben § Chloroben § Chloroden § Termitkil § Dilatin DB § Dowtherm E § Dilantin DB § o-Dichlorobenzene § Orthodichlorobenzene § ortho-Dichlorobenzene § Special Termite Fluid § Benzene, 1,2-Dichloro- § RCRA Waste Number U070	95501 or 95-50-1 NIOSH: CZ 4500000 SAX: DEP600	Toxic	---	---	55.6	600  MCL	600  MCL	0.02	10
Dichlorobenzene, 1,3- §§ Benzene, 1,3-Dichloro § M-Dichlorobenzene § m-Dichlorobenzene § meta-Dichlorobenzene § 1,3-Dichlorobenzene-	541731 or 541-73-1 NIOSH: CZ 4499000 SAX: DEP699	Toxic	---	---	55.6	400  PP	400  PP	0.006	10
Dichlorobenzene, 1,4- §§ Benzene, 1,4-Dichloro- § 1,4-Dichlorobenzene § PDB § PDCB § NCI C54955 § Evola § Paradi § Paradow § Persia-Perazol § Paracide § Parazene § Paramoth § Santochlor § Paranuggets § di-Chloricide § Para Chrystals § p-Dichlorobenzene § Caswell Number 632 § Paradichlorobenzene § para-Dichlorobenzene- § RCRA Waste Number U070 § RCRA Waste Number U071 § RCRA Waste Number U072 § p-Chlorophenyl Chloride § EPA Pesticide Chemical Code 061501	106467 or 106-46-7 NIOSH: CZ 4550000 SAX: DEP800	Carcinogen	---	---	55.6	75  MCL	75  MCL	N/A	10
Dichlorobenzidine, 3,3'- §§ DCB § C.I. 23060 § Curithane C126 § Dichlorobenzidine § o,o'-Dichlorobenzidine § Dichlorobenzidine Base § Benzidine, 3,3'-Dichloro- § RCRA Waste Number U073 § 3,3'-Dichloro-4,4'-Diaminodiphenyl § 3,3'-Dichloro-(1,1'- Biphenyl)-4,4'-Diamine § 1,1'-Biphenyl-4,4'-Diamine, 3,3'-Dichloro-	91941 or 91-94-1 NIOSH: DD 0524000 SAX: DEQ400	Carcinogen	---	---	312	0.4  PP	0.4  PP	N/A	20
Dichlorodifluoromethane (HM) §§ Freon 12 § F 12 § R 12 § FC 12 § Halon § CFC-12 § Arcton 6 § Electro-CF 12 § Eskimon 12 § Frigen 12 § Gentron 12 § Isceon 122 § Kaiser Chemicals 12 § Ledon 12 § Ucon 12 § Propellant 12 § Refrigerant 12 § Fluorcarbon-12 § RCRA Waste Number U075 § Difluorodichloromethane § Methane, dichlorodifluoro-	75718 or 75-71-8 NIOSH: PA 8200000 SAX: DFA600	Toxic	---	---	3.75	1,000  HA	1,000  HA	0.05	0.5

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Dichloroethane, 1,2- §§ Ethylene Chloride § EDC § Brocide § 1,2-DCE § NCI C00511 § Dutch Oil § Dutch Liquid § Dichloremlusion § Di-Chlor-Mulsion § 1,2-Bichlorethane § 1,2-Dichlorethane § Ethane Dichloride § 1,2-Bichloroethane § Ethylene Dichloride § 1,2-Dichloroethane § Ethane, 1,2-Dichloro- § RCRA Waste Number U077 § 1,2-Ethylene Dichloride § alpha,beta-Dichloroethane	107062 or 107-06-2 NIOSH: KI 0525000 SAX: DFF900	Carcinogen	---	---	1.2	3.8	4	N/A	0.5
Dichloroethene, 1,1- §§ Vinylidene Chloride § VDC § 1,1-DCE § Sconatex § NCI C54262 § 1,1-Dichloroethene § Vinylidene Chloride § 1,1-Dichloroethylene § Vinylidene Dichloride § Ethene, 1,1-Dichloro- § Vinylidene Chloride II § RCRA Waste Number U078 § Dichloroethylene, 1,1- § Ethylene, 1,1-Dichloro-	75354 or 75-35-4 NIOSH: KV 9275000 SAX: DFI000	Carcinogen	---	---	5.6	0.57	7	N/A	0.5
Dichloromethane (HM) §§ Methylene Chloride § R 30 § DCM § Freon 30 § Aerothene MM § NCI C50102 § Solmethine § Methylene Chloride § Methane Dichloride § Methane, Dichloro- § 1,1-Dichloromethane § Methylene Bichloride § Methylene Dichloride	75092 or 75-09-2 NIOSH: PA 8050000 SAX: MDR000	Carcinogen	---	---	0.9	5	5	N/A	0.5
Dichlorophenol, 2,4- §§ Phenol, 2,4-Dichloro § DCP § 2,4-DCP § NCI C55345 § 2,4-Dichlorophenol § RCRA Waste Number U081	120832 or 120-83-2 NIOSH: SK 8575000 SAX: DFX800	Toxic	---	---	40.7	93	93	10	10
Dichlorophenoxyacetic Acid, 2,4- §§ Dichlorophenoxyacetic Acid § 2,4-D § Salvo § Phenox § Farmco § Amidox § Miracle § Agrotect § Weedtrol § Herbidal § Ded-Weed § Lawn-Keep § Fernimine § Crop Rider § Aqua-Kleen § 2,4-Dichlorophenoxy Acetic Acid § Dichlorophenoxyacetic Acid, 2,4- § Acetic Acid, (2,4-Dichlorophenoxy)- § 2,4-Dichlorophenoxyacetic Acid, salts and esters	94757 or 94-75-7 NIOSH: AG 6825000 SAX: DFY600	Toxic	---	---	---	70	70	0.02	1
Dichloropropane, 1,2- §§ Propylene Chloride § 1,2-Dichloropropane § NCI C55141 § Propylene Dichloride § Caswell Number 324 § Propane, 1,2-Dichloro- § a,β-Propylene Dichloride § alpha,beta-Dichloropropane § RCRA Waste Number U083 § EPA Pesticide Chemical Code 029002	78875 or 78-87-5 NIOSH: TX 9625000 SAX: DGF600	Carcinogen	---	---	4.11	5.2	5		
Dichloropropene, 1,3- §§ Telone II § Telone § NCI C03985 § Vidden D § Dichloropropene § a-Chloroallyl Chloride § g-Chloroallyl Chloride § 1,3-Dichloropropene § 1,3-Dichloropropylene § 1,3-Dichloro-2-Propene § Propene, 1,3-Dichloro- § Telone II Soil Fumigant § 3-Chloropropenyl Chloride § alpha,gamma-Dichloropropylene	542756 or 542-75-6 NIOSH: UC 8310000 SAX: CEF750	Carcinogen	---	---	1.91	4	4	N/A	0.5

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Dieldrin §§ --- § Alvit § Quintox § Octalox § Illoxol § Dieldrex § NCI C00124 § Dieldrite § SHA 045001 § RCRA Waste Number P037 § 1,4:5,8-Dimethanonaphthalene § Hexachloroepoxyoctahydro-endo,exo-Dimethanonaphthalene § 3,4,5,6,9,9-Hexachloro- 1a,2,2a,3,6,6a,7,7a-Octahydro-2,7:3,6-Dimethanonaphth(2,3-b)Oxirene § 2,7:3,6-Dimethanonaphth(2,3-b)Oxirene, 3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7, 7a-Octahydro- § 1,2,3,4,10,10-Hexachloro-6,7-Epoxy-1,4,4a,5,6,7,8,8a-Octahydro-Endo, Exo-1,4:5,8-Dimethanonaphthalene	60571 or 60-57-1 NIOSH: IO 1750000 SAX: DHB400	Carcinogen	0.24	0.056	4,670	0.0014	0.02	N/A	0.02
Diethyl Phthalate §§ --- § Anozol § Neantine § Solvanol § NCI C60048 § Placidole E § Ethyl Phthalate § Diethylphthalate § Diethyl-o-Phthalate § RCRA Waste Number U088 § 1,2-Benzenedicarboxylic Acid, Diethyl Ester	84662 or 84-66-2 NIOSH: TI 1050000 SAX: DJX000	Toxic	---	---	73	23,000	23,000	0.25	0.25
Dimethoate §§ ---	60-51-5	Toxic	---	---	---	7 HA	7 HA	---	---
Dimethrin §§ ---	70-38-2	Toxic	---	---	---	2,000 HA	2,000 HA	---	---
Dimethyl Phthalate §§ --- § DMP § NTM § ENT 262 § Mipax § Avolin § Fermine § Solvanom § Solvarone § Palatinol M § Methyl Phthalate § Dimethylphthalate § Phthalic Acid, Dimethyl Ester § Dimethyl Benzene-o-Dicarboxylate § Dimethyl 1,2-Benzenedicarboxylate § 1,2-Benzenedicarboxylic Acid, Dimethyl Ester	131113 or 131-11-3 NIOSH: TI 1575000 SAX: DTR200	Toxic	---	---	36	313,000	313,000	0.04	0.25
Dimethylphenol, 2,4- §§ Phenol, 2,4-Dimethyl- § m-Xylenol § 2,4-Xylenol § 4,6-Dimethylphenol § Caswell Number 907A § 2,4-Dimethyl Phenol § RCRA Waste Number U101 § 1-Hydroxy-2,4-Dimethylbenzene § 4-Hydroxy-1,3-Dimethylbenzene § EPA Pesticide Chemical Code 086804	105679 or 105-67-9 NIOSH: ZE 5600000 SAX: XKJ500	Toxic	---	---	93.8	540	540	10	10
Dinitro-o-Cresol, 4,6- §§ Dinitrocresol § Detal § Sinox § DNOC § Arborol § Capsine § Dinitrol § Trifocide § Antinonin § Winterwash § Dinitro-o-Cresol § Caswell Number 390 § 2,4-Dinitro-o- Cresol § 4,6-Dinitro-o-Cresol § o-Cresol, 4,6-dinitro- § RCRA Waste Number P047 § 2-Methyl-4,6-Dinitrophenol § 4,6-Dinitro-2-Methylphenol § 2,4-Dinitro-6-Methylphenol § 3,5-Dinitro-2-Hydroxytoluene § Phenol, 2-Methyl-4,6-Dinitro-	534521 or 534-52-1 NIOSH: GO 9625000 SAX: DUT400	Toxic	---	---	5.5	13.4	13.4	---	50
Dinitrophenol, 2,4- §§ Phenol, 2,4-Dinitro § Nitro § Kleenup § Aldifen § 2,4-Dinitrophenol § 2,4-DNP § Chemox PE § Maroxol-50 § Solfo Black B § alpha-Dinitrophenol § Dinitrophenol, 2,4- § Tertrosulphur Black PB § RCRA Waste Number P048 § 1-Hydroxy-2,4-Dinitrobenzene	51285 or 51-28-5 NIOSH: SL 2800000 SAX: DUZ000	Toxic	---	---	1.5	70	70	13	50

**CIRCULAR WQB-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Dinitrotoluene, 2,4- §§ Toluene, 2,4-Dinitro § 2,4-DNT § NCI C01865 § 2,4-Dinitrotoluol - § RCRA Waste Number U105 § Benzene, 1-Methyl-2,4-Dinitro-	121142 or 121-14-2 NIOSH: XT 1575000 SAX: DVH000	Carcinogen	---	---	3.8	0.5 HA	0.5 HA	N/A	10
Dinitotoluene, 2,6- §§ Toluene-dinitro § 2,4-DNT § Methyl-1,3-Dinitrobenzene § RCRA Waste Number U106	606202 or 606-20-2 NIOSH: XT 1925000 SAX: DVH400	Carcinogen	---	---	---	0.5 HA	0.5 HA	0.01	---
Dinoseb §§ --- § DNB § DBNF § Aretit § Basanite § Caldon § Sparic § Kiloseb § Spurge § Premerge § Dinitro § Hel-Fire § SHA 037505 § Dow General § Sinox General § RCRA Waste Number P020 § Dow General Weed Killer § Vertac General Weed Killer § 2-sec-Butyl-4,6-Dinitrophenol § Dinitro-Ortho-Sec-Butyl Phenol § 2-(1-Methylpropyl)-4,6-Dinitrophenol § 4,6-Dinitro-2-(1-Methyl-n-Propyl)Phenol § Phenol, 2-(1-Methylpropyl)-4,6-Dinitro-	88857 or 88-85-7 NIOSH: SJ 9800000 SAX: BRE500	Toxic	---	---	---	7 MCL	7 MCL	0.19	1.5
Dioxin --Chlorinated Dibenzo-p-dioxins and Chlorinated Dibenzofurans Dioxins and congeners expressed as equivalent concentration of 2,3,7,8, Tetrochlorodibenzo-p-dioxin (TCDD) based on the method described in "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update". EPA/625/3- 89/016, March 1989 and EPA Method 1613	Various	Carcinogen	---	---	5,000	0.0000013 (10) PP	0.000002 (10) HA	N/A	1
Diphenamid §§ ---	957-51-7	Carcinogen	---	---	---	200 HA	200 HA	N/A	---
Diphenylhydrazine, 1,2- §§ Hydrazine, 1,2-Diphenyl- § Hydrazobenzene § NCI C01854 § N,N'-Bianiline § Benzene, Hydrazodi- § RCRA Waste Number U109 § (sym)-Diphenylhydrazine § 1,2-Diphenylhydrazine	122667 or 122-66-7 NIOSH: MW 2625000 SAX: HHG000	Carcinogen	---	---	24.9	0.4 PP	0.4 PP	N/A	10
Diquat §§ --- § Actor § Feglox § Deiquat § Reglone § Aquacide § Dextrone § Paraquat § Preeglove § SHA 032201 § Weedtrine-D § Diquat Dibromide § Ethylene Dipyridylum Dibromide § 1,1-Ethylene 2,2-Dipyridylum Dibromide § 5,6-Dihydro- Dipyrido(1,2a,1c)Pyrazinium Dibromide § 9,10-Dihydro-8a,10a-Diazoniaphenanthrene(1,1'- Ethylene-2,'-Bipyridylum)Dibromide	85007 or 85-00-7 NIOSH: JM 5690000 SAX: DWX800	Toxic	---	---	---	20 MCL	20 MCL	0.44	10
Disulfoton §§ --- § Disyston	298-04-4	Toxic	---	---	---	0.3 HA	0.3 HA	0.07	---
Diuron §§ --- § Karmex	330-54-1	Toxic	---	---	---	10 HA	10 HA	1	---

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Endosulfan §§ --- § NCI C00566 § Malixv § Ensure § Beosit § Endocel § Thiodan § Cyclodan § Crisulfan § Benzoepin § Thiosulfan § SHA 079401 § Chlorthiepin § RCRA Waste Number P050 § Endosulfan (mixed isomers) § Hexachlorohexahydromethano 2,4,3- Benzodioxathiepin-3-Oxide § 1,4,5,6,7,7-Hexachloro-5-Norbornene-2,3-Dimethanol Cyclic Sulfite § 5-Norbornene-2, 3-Dimethanol, 1,4,5,6,7,7-Hexachloro Cyclic Sulfite § 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-Hexahydro-6,9-Methano-2,4,3-Benzodioxathiepin-3- Oxide § 6,9-Methano-2,4,3-Benzodioxathiepin, 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-Hexahydro , 3-Oxide	115297 or 115-29-7 NIOSH: RB 9275000 SAX: BCJ250	Toxic	0.11	0.056	270	110	110	0.014	see Cis and trans isomers
Endosulfan, I §§ --- § Thiodan I § Endosulfan-I § Alpha-Endosulfan § alpha-Endosulfan	959988 or 959-98-8 NIOSH: --- SAX: ---	Toxic	0.22	0.056	270	110	110	---	0.015
Endosulfan, II §§ --- § Thiodan II § Endosulfan-II § Beta-Endosulfan § beta-Endosulfan	33213659 or 33213- 65-9 NIOSH: --- SAX: ---	Toxic	0.22	0.056	270	110	110	0.004	0.024
Endosulfan Sulfate §§ --- § 6,9-Methano-2,3,4-Benzodioxathiepin, 6,7	1031078 or 1031-07-8 NIOSH: --- SAX: ---	Toxic	0.22	0.056	270	110	110	0.05	0.05
Endothall §§ --- § Hydout § Hydrothal-47 § Aquathol § SHA 038901 § Accelerate § Tri-Endothal § Endothal Hydout § RCRA Waste Number P088 § 3,6-Endooxohexahydrophthalic Acid § Phthalic Acid, Hexahydro-3,6-endo-Oxy- § 7-Oxabicyclo(2,2,1)Heptane-2,3-Dicarboxylic Acid § 1,2-Cyclohexanedicarboxylic Acid, 3,6-endo-Epoxy-	145733 or 145-73-3 NIOSH: RN 7875000 SAX: EAR000	Toxic	---	---	---	100	100	1	2
Endrin §§ --- § NCI C00157 § Endrex § Mendrin § Nendrin § Hexadrin § SHA 041601 § Compound 269 § RCRA Waste Number P051 § 1,2,3,4,10,10-Hexachloro-6,7-Epoxy- 1,4,4(a)5,6,7,8,8a-Octahydro-endo § 3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-Octahydro-2, 7:3,6-Dimethanonaphth[2,3-b]oxirene § 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10- Hexachloro-6,7-Epoxy-1,4,4a,5,6,7,8,8a-Octahydro-Endo,Endo-	72208 or 72-20-8 NIOSH: IO 1575000 SAX: EAT500	Toxic with BCF >300	0.086	0.0036	3,970	0.76	2	N/A	0.3
Endrin Aldehyde §§ ---	7421934 or 7421-93-4 NIOSH: --- SAX: ---	Toxic with BCF >300	---	---	3,970	0.76	2	N/A	0.025
Epichlorohydrin §§ --- § ECH § Epoxy Propane § -Epichlorohydrin § Chloromethyloxirane § RCRA Waste Number U041 § γ-Chloropropyleneoxide § 2-Chloropropylene Oxide § Glycerol Epichlorhydrin § 2,3-Epoxypropyl Chloride § 1-Chlor-2,3-Epoxypropane § 3-Chlor-1,2-Epoxypropane	106898 or 106-89-8 NIOSH: TX 4900000 SAX: CGN750	Carcinogen	---	---	---	40	40	N/A	---
						HA	HA		

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Ethylbenzene §§ --- § EB § NCI C56393 § Ethylbenzol § Phenylethane § Ethyl Benzene § Benzene, Ethyl	100414 or 100-41-4 NIOSH: DA 0700000 SAX: EGP500	Toxic	---	---	37.5	700 MCL	700 MCL	0.002	0.5
Fenamiphos §§ --- § Namacur	22224-92-6	Toxic	---	---	---	2 HA	2 HA	N/A	---
Fluometuron §§ --- § Flo-Met	2164-17-2	Carcinogen	---	---	---	90 HA	90 HA	N/A	---
Fluoranthene §§ --- § Idryl § Benzo(jk)Fluorene § Benzo(j,k)Fluorene § 1,2-Benzacenaphthene § RCRA Waste Number U120 § 1,2-(1,8-Naphthylene)Benzene § Benzene, 1,2-(1,8-Naphthalenediyl)-	206440 or 206-44-0 NIOSH: LL 4025000 SAX: FDF000	Toxic with BCF >300	---	---	1,150	300 PP	280 I	N/A	10
Fluorene (PAH) §§ --- § 9H-Fluorene § Diphenylenemethane § o-Biphenylenemethane § 2,2'-Methylenebiphenyl	86737 or 86-73-7 NIOSH: --- SAX: ---	Toxic	---	---	30	1,300 PP	280 HA	0.25	0.25
Fluoride §§ Flourine § Fluoride § Fluoride(1-) § Perfluoride § Fluoride Ion § Fluorine, Ion § Soluable § Fluoride § RCRA Waste Number P056 § Hydrofluoric Acid, Ion(1-)	16984488 or 16984-48-8 NIOSH: LM 6290000 SAX: FEX875	Toxic	---	---	---	4,000 MCL	4,000 MCL	5	100
Fonofos §§ --- § Dyfonate	944-22-9	Toxic	---	---	---	10 HA	10 HA	---	---
Gamma Emitters (11) §§ ---	Multiple	Carcinogen / Radioactive	---	---	---	0.4 mrem /yr MCL	0.4 mrem /yr MCL	N/A	---
gamma-Chlordane §§ --- § Chlordane, beta-Isomer	5103742 or 5103-74-2 NIOSH: --- SAX: ---	Carcinogen	2.4 PP	0.0043 PP	14,100	0.0057 PP	0.3 HA	N/A	0.4
gamma-hexachlorocyclohexane §§ Lindane § BHC § -BHC § Gamene § Lintox § Lentox § Hexcide § Aparsin § Agrocide § Afcide § BHC-gamma § gamma-BHC § HCH-gamma § gamma-HCH § Hexachlorocyclohexane § gamma-Hexachlorobenzene § gamma- Benzenehexachloride § gamma-Benzene Hexachloride § Hexachlorocyclohexane-gamma § Hexachlorocyclohexane (gamma) § Benzene Hexachloride-gamma-isomer § gamma- 1,2,3,4,5,6-Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, gamma-isomer § 1,2,3,4,5,6-Hexachlorocyclohexane, gamma-isomer § 1-alpha,2-alpha,3-beta,4-alpha, 5-alpha,6-beta-Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, (1-alpha, 2-alpha, 3-beta, 4-alpha, 5-alpha, 6-beta)	58899 or 58-89-9 NIOSH: GV 4900000 SAX: BBQ500	Carcinogen	0.95 PP	---	130	0.19 PP	0.19 PP	N/A	0.1
Gases, dissolved, total-pressure (20) §§ ---	Multiple	Toxic	110% of saturation	---	---	---	---	---	---

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Glyphosate §§ --- § Jury § Honcho § Rattler § Weedoff § Roundup § Glifonox § n-(Phosphonomethyl)-Glycine § Glycine, n-(Phosphonomethyl)- § Glyphosate plus inert ingredients § MON 0573	1071836 or 1071-83-6 NIOSH: MC 1075000 SAX: PHA500	Toxic	---	---	---	700	700	6	50
Glyphosate Isopropylamine Salt §§ --- § SHA 103601	38641940 or 38641-94-0 NIOSH: --- SAX: ---	Toxic	---	---	---	MCL	MCL	6	50
Guthion §§ --- § DBD § NCI C00066 § Carfene § Gothnion § Azinphos § Crysthion § Gusathion § Bay 17147 § Methylazinphos § Methyl Guthion § Methyl-Guthion § Azinphos-Methyl § Azinphos Methyl § Caswell Number 374 § EPA Pesticide Chemical Code 058001 § o,o-Dimethylphosphorodithioate S-Ester § 3-Mercaptomethyl)-1,2,3- Benzotriazin-4(3H)-One § Benzotriazinedithiophosphoric Acid Dimethoxy Ester § 3-Dimethoxyphosphinothiomethyl-1,2,3-Benzotriazin-4(3H)-One § Phosphorodithioic Acid, O,O-Dimethyl Ester, S-Ester with 3-(Mercaptomethyl)-1,2,3- Benzotriazin-4(3H)-One	86500 or 86-50-0 NIOSH: TE 1925000 SAX: ASH500	Toxic	---	0.01	---	---	---	---	---
Heptachlor §§ --- § NCI C00180 § Drinox § Heptamul § Agroceris § Heptagran § SHA 04481 § Rhodiachlor § Velsicol-104 § RCRA Waste Number P059 § 3,4,5,6,7,8,8a- heptachlorodicyclopentadiene § Dicyclopentadiene, 3,4,5,6,7,8,8a-Heptachloro- § 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-Tetrahydro-4,7-Methano-1H-Indene § 4,7-Methano-1H- Indene, 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-Tetrahydro- § 1(3a),4,5,6,7,8,8-Heptachloro-3a(1),4,7,7a-Tetrahydro-4,7-Methanoindene	76448 or 76-44-8 NIOSH: PC 0700000 SAX: HAR000	Carcinogen	0.52	0.0038	11,200	0.0021	0.08	N/A	0.2
Heptachlor Epoxide §§ --- § HCE § Velsicol 53-CS-17 § Epoxyheptachlor § 1,4,5,6,7,8,8-Heptachloro-2,3-Epoxy- 2,3,3a,4,7,7a-Hexahydro-4,7-Methanoindene § 2,5-Methano-2H-Indeno[1,2b]Oxirene, 2,3,4,5,6,7,7-Heptachloro-1a,1b,5,5a,6,6a-Hexahydro- (alpha, beta, and gamma isomers)	1024573 or 1024-57-3 NIOSH: PB 9450000 SAX: EBW500	Carcinogen	0.26	0.0038	11,200	0.001	0.04	N/A	0.1
Hexachlorobenzene §§ --- § HCB § Amatin § Smut-Go § Sanocide § Anticarie § Bunt-Cure § Bunt-No-More § Perchlorobenzene § Phenyl Perchloryl § No Bunt Liquid § Julin's Carbon Chloride § Co-op Hexa § Hexa C.B. § Benzene, Hexachloro-	118741 or 118-74-1 NIOSH: DA 2975000 SAX: HCC500	Carcinogen	---	---	8,690	0.0075	0.2	N/A	0.2
Hexachlorobutadiene §§ --- § HCBd § Dolan-Pur § Perchlorobutadiene § RCRA Waste Number U128 § 1,3-Hexachlorobutadiene § 1,3-Butadiene, Hexachloro- § 1,1,2,3,4,4-Hexachloro-1,3- Butadiene § 1,3-Butadiene, 1,1,2,3,4,4-Hexachloro-	87683 or 87-68-3 NIOSH: EJ 0700000 SAX: PCF000	Carcinogen	---	---	2.78	4.4	4.4	N/A	10

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Hexachlorocyclohexane §§ --- § BHC § DBH § HCH § HCCH § HEXA § Hexylan § Hexachlor § Gammexane § Hexachloran § Compound 666 § Benzenehexachloride § Benzene Hexachloride	608731 or 608-73-1 NIOSH: GV 3150000 SAX: BBP750	Carcinogen	---	---	130	0.039  PP	0.039  PP	N/A	0.1
Hexachlorocyclopentadiene §§ --- § HEX § HCP § PCL § C-56 § HCCPD § NCI C55607 § Hexachloropentadiene § RCRA Waste Number U130 § Perchlorocyclopentadiene § 1,3-Cyclopentadiene, 1,2,3,4,5,5- Hexachloro-	77474 or 77-47-4 NIOSH: GY 1225000 SAX: HCE500	Toxic	---	---	4.34	50  MCL	50  MCL	1	1
Hexachloroethane §§ --- § Avlotane § Distokal § Distopan § Distopin § Egitol § Falkitol § Fasciolin § NCI C04604 § Phenohep § Mottenhexe § Perchloroethane § Hexachloroethylene § Ethane, Hexachloro- § Carbon Hexachloride § Ethane Hexachloride § Ethylene Hexachloride § RCRA Waste Number U131 § 1,1,1,2,2,2-Hexachloroethane	67721 or 67-72-1 NIOSH: KI 4025000 SAX: HCl000	Carcinogen	---	---	86.9	19  PP	19  PP	N/A	10
Hexazinone §§ ---	51235-04-2	Toxic	---	---	---	400 HA	400 HA	1	---
Hydrogen Sulfide §§ --- § Stink Damp § Sulfur Hydride § Hydrogen Sulphide § Dihydrogen Sulfide § Hydrosulfuric Acid § Sulfurated Hydrogen § RCRA Waste Number U135 § Dihydrogen Monosulfide § Hydrogen Sulfuric Acid	7783064 or 7783-06-4 NIOSH: MX 1225000 SAX: HIC500	Toxic	---	2  NPP	---	---	---	NA	---
Imazamethabenz-methyl §§ Assert § ---	81405-85-8	Toxic	---	---	---	400 I	400 I	N/A	---
Imazapyr §§ Arsenal § ---	81334-34-1	Toxic	---	---	---	21,000 I	21,000 I	N/A	---
Indeno(1,2,3-cd)pyrene (PAH) §§ --- § o-Phenylene-pyrene § 2,3-Phenylene-pyrene § 2,3-o-Phenylene-pyrene § RCRA Waste Number U137 § Indeno (1,2,3-cd) Pyrene § 1,10-(o-Phenylene)Pyrene § 1,10-(1,2- Phenylene)Pyrene	193395 or 193-39-5 NIOSH: NK 9300000 SAX: IBZ000	Carcinogen	---	---	30	0.044  PP	0.044  PP	N/A	0.5
Iron §§ Fe § Ancor EN 80/150 § Carbonyl Iron § Armco Iron	7439896 or 7439-89-6 NIOSH: NO 4565500 SAX: IGK800	Harmful (aquatic life)	---	1,000  NPP	---	(23)	(23)	N/A	10
Isophorone §§ --- § Isoforon § NCI C55618 § Isoacetophorone § alpha-Isophorone § 1,1,3-Trimethyl-3-Cyclohexene-5-One § 3,5,5-Trimethyl-2-Cyclohexene-1-One § 3,5,5-Trimethyl-2-Cyclohexone	78591 or 78-59-1 NIOSH: GW 7700000 SAX: IHO000	Carcinogen	---	---	4.38	360  PP	360  PP	N/A	10

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Lead §§ Pb § C.I. 77575 § C.I. Pigment Metal 4 § Glover § Lead Flake § Lead 22 § Omaha § Omaha & Grant § SI § SO	7439921 or 7439-92-1 NIOSH: OF 7525000 SAX: LCF000	Toxic	82 @ 100 mg/l hardness (12) PP	3.2 @ 100 mg/l hardness (12) PP	49	15  PP	15  PP	0.1	3
m-Xylene §§ --- § m-Xylol § 1,3-Xylene § meta-Xylene § m-Dimethylbenzene § m-Methyltoluene § 1,3-Dimethylbenzene § 1,3-Dimethyl Benzene	108383 or 108-38-3 NIOSH: ZE 2275000 SAX: XHA000	Toxic	---	---	1.17	10,000  MCL	10,000  MCL	0.5	1.5
Malathion §§ --- § Formal § Sumitox § Emmatos § Celthion § Forthion § Malacide § Kop-Thion § Calmathion § Carbethoxy § NCI C00215 § Carbethoxy Malathion § SHA 057701 § Phosphothion § S-1,2-Bis(Ethoxycarbonyl)Ethyl-O,O-Dimethyl Thiophosphate § O, O-Dimethyl-S-(1,2-Dicarbethoxyethyl) Dithiophosphate § O,O-Dimethyl S-1,2- Di(Ethoxycarbonyl)Ethyl Phosphorodithioate § Succinic Acid, mercapto-, diethyl ester, S-Ester with O,O-Dimethyl Phosphorodithioate	121755 or 121-75-5 NIOSH: WM 8400000 SAX: CBP000	Toxic	---	0.1  NPP	---	100  HA	100  HA	---	---
Manganese §§ Mn § Colloidal Manganese § Magnacat § Tronamang	7439965 or 7439-96-5 NIOSH: OO 9275000 SAX: MAP750	Harmful	---	---	---	(24)	(24)	N/A	5
MCPA §§ 4-chloro-2 methylphenoxy acetic acid	94-74-6	Toxic	---	---	---	4 HA	4 HA	N/A	---
MCPP §§ Mecoprop § (+)-2-(4-chloro-2-methylphenoxy)-propanoic acid	7085-19-0	Toxic	---	---	---	7 I	7 I	---	---
Mercury §§ Hg § Colloidal Mercury § Mercury, Metallic § NCI C60399 § Quick Silver § RCRA Waste Number U151	7439976 or 7439-97-6 NIOSH: OV 4550000 SAX: MCW250	Toxic with BCF >300	1.7  PP	0.91  PP	5,500	0.05  PP	2  MCL	N/A	0.6
Metalaxyl § Ridomil § ---	57837-19-1	Toxic	---	---	---	420 I	420 I	3.5	---
Methamidophos §§ Monitor § ---	10265-92-6	Toxic	---	---	---	0.35 I	0.35 I	---	---
Methomyl §§ Lannate § ---	16752-77-5	Toxic	---	---	---	200 HA	200 HA	1	---
Methoxychlor §§ --- § DMDT § Metox § Moxie § Methoxcide § NCI C00497 § Methoxy-DDT § Dimethoxy-DDT § RCRA Waste Number U247 § 1,1,1-Trichloro-2,2-Bis(p- Methoxyphenyl)Ethane § Benzene, 1,1'-(2,2,2-Trichloroethylidene)Bis[4-Methoxy- § 1,1'-(2,2,2-Trichloroethylidene)Bis[4-Methoxybenzene] § Ethane, 1,1,1-Trichloro-2, 2-Bis(p-Methoxyphenyl)-	72435 or 72-43-5 NIOSH: KJ 3675000 SAX: DOB400	Toxic	---	0.03  NPP	---	40  MCL	40  MCL	---	1

**CIRCULAR WQB-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Metsulfuron Methyl §§ Ally § ---	74223-64-6	Toxic	---	---	---	1,750 I	1,750 I	0.1	---
Methyl Chloride §§ Chloromethane § Arctic § Monochloromethane § RCRA Waste Number U045	74873 or 74-87-3 NIOSH: PA 6300000 SAX: CHX500	Toxic	---	---	3.75	5.7 HA	5.7 HA	0.08	---
Metolachlor §§ Dual § ---	51218-45-2	Carcinogen	---	---	---	100 HA	100 HA	N/A	---
Metribuzin §§ Sencor § ---	21087-64-9	Toxic	---	---	---	200 HA	200 HA	10	---
Mirex §§ --- § NCI C06428 § Dechlorane § Bichlorendo § Ferriamicide § Perchloropentacyclodecane § Dodecachloropentacyclodecane § Hexachlorocyclopentadiene Dimer § Cyclopentadiene, Hexachloro-, Dimer § Perchloropentacyclo(5.2.1.0[sup 2,6].0[sup 3,9].0[sup 5,8])Decane § Dodecachlorooctahydro-1,3,4-Metheno-2H-Cyclobuta (c,d)Pentalene § 1,1a,2,2,3,3a,4,5,5,5a,5b,6-Dodecachlorooctahydro-1,3,4-Metheno-1H-Cyclobuta(cd) Pentalene § 1,3,4-Metheno-1H-Cyclobuta[cd]Pentalene, 1,1a,2,2,3,3a,4,5,5,5a,5b,6,- Dodecachlorooctahydro-	2385855 or 2385-85-5 NIOSH: PC 8225000 SAX: MQW500	Carcinogen	---	0.001 NPP	---	14 I	14 I	0.01	0.1
MTBE §§ Methyl Tertiary-Butyl Ether	1634-04-4	Harmful	---	---	---	30 (21)	30 (21)	---	---
N-Nitrosodimethylamine §§ Dimethylnitrosamine A707 § DMN § NDMA § DMNA § Nitrosodimethylamine § Dimethylnitrosoamine § N-Nitrosodimethylamine § RCRA Waste Number P082 § N,N-Dimethylnitrosamine § Methylamine, N-Nitrosodi- § Dimethylamine, N-Nitroso- § N-Methyl-N- Nitrosomethanamine § Methamine, N-Methyl-N-Nitroso- § Methanamine, N-Methyl-N-Nitroso-	62759 or 62-75-9 NIOSH: IQ 0525000 SAX: DSY400	Carcinogen	---	---	0.026	0.0069 PP	0.0069 PP	N/A	10
N-Nitrosodiphenylamine §§ --- § NDPA § NDPhA § Vultrol § Curetard A § NCI C02880 § Redax § TJP § Retarder J § Vulcalent A § Vulcatard § Vultrol § Nitrosodiphenylamine § Diphenylnitrosamine § N,N-Diphenylnitrosamine § N-Nitroso-N-Phenylaniline § Diphenylamine, N-Nitroso- § Benzenamine, N-Nitroso-N-Phenyl-	86306 or 86-30-6 NIOSH: JJ 9800000 SAX: DWI000	Carcinogen	---	---	136	50 PP	50 PP	N/A	10
n-Dioctyl Phthalate §§ --- § DNOP § PX-138 § Vinicizer 85 § Dinopol NOP § n-Octyl Phthalate § Octyl Phthalate § Dioctyl Phthalate § Di-n-Octyl Phthalate § Di-sec-Octyl Phthalate § RCRA Waste Number U107 § 1,2-Benzenedicarboxylic Acid, Dioctyl Ester	117840 or 117-84-0 NIOSH: TI 1925000 SAX: DVL600	Carcinogen	---	---	---	---	---	N/A	6

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
N-Nitrosodi-n-Propylamine §§ --- § DPN § DPNA § NDPA § Dipropyl nitrosamine § N-Nitrosodipropylamine § Di-n-Propyl nitrosamine § RCRA Waste Number U111 § Dipropylamine, N-Nitroso- § N-Nitrosodi-n-propylamine § N-Nitroso-di-n-propylamine § 1-Propanamine, N- Nitroso-n-Propyl-	621647 or 621-64-7 NIOSH: JL 9700000 SAX: DWU600	Carcinogen	---	---	1.13	0.05  PP	0.05  PP	N/A	10
N-Nitrosopyrrolidene §§ --- § NPYR § NO-pyr § N-N-pyr § 1-Nitrosopyrrolidene § Pyrrolidine, 1-Nitroso- § RCRA Waste Number U180 § Tetrahydro-N-Nitrosopyrrole § Pyrrole, Tetrahydro-N- Nitroso-	930552 or 930-55-2 NIOSH: UY 1575000 SAX: NLP500	Carcinogen	---	---	0.055	0.17  PP	0.17  PP	N/A	10
Naphthalene §§ Moth Balls § Mighty 150 § NCI C52904 § Naphthene § White Tar § Naphthalin § Tar Camphor § Caswell Number 587 § RCRA Waste Number U165 § EPA Pesticide Chemical Code 055801	91203 or 91-20-3 NIOSH: QJ 0525000 SAX: NAJ500	Carcinogen	---	---	10.5	100  HA	100  HA	0.04	10
Nickel §§ Ni § C.I. 77775 § Ni 270 § Nickel 270 § Ni 0901-S § Ni 4303T § NP 2 § Raney Alloy § Raney Nickel	7440020 or 7440-02-0 NIOSH: QR 5950000 SAX: NCW500	Toxic	261 @ 50 mg/l hardness (12)  PP	29 @ 50 mg/l hardness (12)  PP	47	100  MCL	100  MCL	0.5	20
Nicosulfuron §§ Accent § ---	111991-09-4	Toxic	---	---	---	8,750  I	8,750  I	0.01	---
Nitrate (as Nitrogen[N]) §§ NO <sub>3</sub>	14797558 or 14797-55-8 NIOSH: --- SAX: ---	Toxic	(8)	(8)	---	10,000  MCL	10,000  MCL	10, surface water 5000, Ground water, see ARM 17.30.715	10
Nitrate plus nitrite (as Nitrogen[N]) §§ NO <sub>3</sub> + NO <sub>2</sub>	See nitrate and nitrite NIOSH: --- SAX: ---	Toxic	(8)	(8)	---	10,000  MCL	10,000  MCL	10, surface water 5000, Ground water, see ARM 17.30. 715	10
Nitrite (as Nitrogen[N]) §§ NO <sub>2</sub>	14797650 or 14797-65-0 NIOSH: --- SAX: ---	Toxic	(8)	(8)	---	1,000  MCL	1,000  MCL	4	10
Nitrobenzene §§ --- § NCI C60082 § Mirbane Oil § Nitrobenzol § Oil of Mirbane § Benzene, Nitro- § Essence of Myrbane § RCRA Waste Number U169	98953 or 98-95-3 NIOSH: DA 6475000 SAX: NEX000	Toxic	---	---	2.89	17  PP	17  PP	1.9	10

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Nitrogen, total inorganic (as Nitrogen[N]) §§ the sum of ammonia, nitrite, and nitrate	See ammonia, nitrate, and nitrite	Nutrient	(8)	(8)	---	---	---	10	10
Nitrophenol, 4- §§p-Nitropheno (DOT)l § 4-Hydroxynitrobenzene § NCI C55992 ) § RCRA Waste Number U170	100027 or 100-02-7 NIOSH: SM 2275000 SAX: NIF000	Toxic	---	---	3.31	60 HA	60 HA	2.4	---
o-Nitrophenol §§ --- § 2-Nitrophenol § 2-Hydroxynitrobenzene	88755 or 88-75-5 NIOSH: SM 2100000 SAX: NIE500	Toxic	---	---	2.33	---	---	0.45	---
o-Xylene §§ --- § o-Xylol § 1,2-Xylene § ortho-Xylene § o-Methyltoluene § o-Dimethylbenzene § 1,2-Dimethylbenzene § 1,2-Dimethyl Benzene	95476 or 95-47-6 NIOSH: ZE 2450000 SAX: XHJ000	Toxic	---	---	1.17	10,000 MCL	10,000 MCL	0.5	1.5
Oxamyl §§ --- § D-1410 § DPX 1410 § Insecticide-Nematicide 1410 § Vydate § Thioxamyl § Methyl 2-(Dimethylamino)-N- § Vydate L, Insecticide/Nematicide § ({[Methylamino]Carbonyl)Oxy)-2-Oxoethanimidothioate § 2-Dimethylamino-1- (Methylthio)Glyoxal O-Methylcarbamoylmonozime § S-Methyl 1-Dimethylcarbamoyl)-N ({Methylcarbamoyl)Oxy)Thioformimidate § Methyl N',N'-Dimethyl-N-({Methylcarbamoyl Oxy)-1-Thioxamimidate § N',N'-Dimethyl-N-({Methylcarbamoyl oxy)-1-Methylthioxamimidic Acid	23135220 or 23135-22-0 NIOSH: RP 2300000 SAX: DSP600	Toxic	---	---	---	200 MCL	200 MCL	1	1
Oxydemeton Methyl §§ Metasystox R § ---	301-12-2	Toxic	---	---	---	3.5 I	3.5 I	1.4	---
Oxygen, dissolved (20) §§ O2 § Oxygen, Compressed § Oxygen, Refrigerated Liquid	7782447 or 7782-44-7 NIOSH: RS 2060000 SAX: OQW000	Toxic	(15)	(15)	---	---	---	---	50
p,p'-Dichlorodiphenyldichloroethylene §§ DDE § DDE § p,p'-DDE § 4,4'-DDE § NCI C00555 § Dichlorodiphenyldichloroethylene § Dichlorodiphenyldichloroethylene, p,p'- § 2,2'-bis (4-Chlorophenyl)-1,1-Dichloroethylene § 1,1'-(Dichloroethenylidene)bis(4-Chlorobenzene) § 2,2'-bis(p-Chlorophenyl)-1,1-Dichloroethylene § Benzene, 1,1'-(Dichloroethenylidene)Bis[4- Chloro-	72559 or 72-55-9 NIOSH: KV 9450000 SAX: BIM750	Carcinogen	---	---	53,600	0.0059 PP	0.0059 PP	N/A	0.01
p,p'-Dichlorodiphenyltrichloroethane §§ DDT § DDT § 4,4'-DDT § Agritan § Anoflex § Arkotone § Azotox § Bosan Supra § Boveridmol § Chlorophenothan § Chlorophenothane § Chlorophenotoxum § Citox § Clofenotane § Dedelo § Chlorophenothane § Diphenyltrichloroethane § Dichlorodiphenyltrichloroethane § 4,4'-Dichlorodiphenyltrichloroethane § Dichlorodiphenyltrichloroethane, p,p'- § 1,1,1-Trichloro-2,2,-bis(p-Chlorophenyl) Ethane § 1,1,1-Trichloro-2,2,-bis(p-Chlorophenyl)Ethane § 1,1,1-Trichloro-2,2,-Di(4-Chlorophenyl)- Ethane § 1,1-Bis-(p-Chlorophenyl)-2,2,2-Trichloroethane § 2,2-Bis-(p-Chlorophenyl)-1,1,1- Trichloroethane § Benzene, 1,1'-(2,2,2-Trichloroethylidene)Bis(4-Chloro-) § alpha,alpha- Bis(p-Chlorophenyl)-beta,beta,beta-Trichlorethane	50293 or 50-29-3 NIOSH: KJ 3325000 SAX: DAD200	Carcinogen	1.1 PP	0.001 PP	53,600	0.0059 PP	0.0059 PP	N/A	0.06

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
p,p'-Dichlorodiphenyldichloroethane §§ DDD § TDE § Dilene § NCI C00475 § Rothane § Rhothane § 4,4'-DDD § p,p'-DDD § p,p'-TDE § 4',4'-DDD § RCRA Waste Number U060 § Tetrachlorodiphenylethane § Dichlorodiphenyldichloroethane § Dichlorodiphenyl Dichloroethane § 2,2-bis(4-Chlorophenyl)-1,1-Dichloroethane § 1,1-Dichloro-2,2-bis(p- Chlorophenyl) Ethane § 1,1-bis(4-Chlorophenyl)-2,2-Dichloroethane § 2,2-bis(p- Chlorophenyl)-1,1-Dichloroethane § Benzene, 1,1'(2,2-Dichloroethylidene)Bis[4-Chloro-	72548 or 72-54-8 NIOSH: KI 0700000 SAX: BIM500	Carcinogen	---	---	53,600	0.0083	0.0083	N/A	0.01
p-Bromodiphenyl Ether §§ Benzene, 1-Bromo-4-Phenoxy- § p-Bromodiphenyl Ether § 4-Bromophenoxybenzene § 4-Bromodiphenyl Ether § 1-Bromo-4-Phenoxybenzene § p-Bromophenylphenyl Ether § 4-Bromophenyl Phenyl Ether	101553 or 101-55-3 NIOSH: --- SAX: ---	Toxic with BCF >300	---	---	1,640	---	---	N/A	10
p-Chloro-m-Cresol §§ --- § PCMC § Parol § Aptal § Baktol § Baktolan § Ottafact § Raschit § Rasen-Anicon § Parnetol § Candasetpic § Chlorocresol § Preventol CMK § RCRA Waste Number U039 § Parachlorometra Cresol § 4-Chloro-3-methylphenol § 2-Chloro-Hydroxytoluene § Phenol, 4-Chloro-3-methyl- § Chlorophenol, 4-, methyl, 3-	59507 or 59-50-7 NIOSH: GO 7100000 SAX: CFE250	Harmful	---	---	---	3,000	3,000	N/A	20
p-Xylene §§ --- § p-Xylol § Chromar § Scintillar § 1,4-Xylene § para-Xylene § p-Methyltoluene § p-Dimethylbenzene § 1,4-Dimethylbenzene § 1,4-Dimethyl Benzene	106423 or 106-42-3 NIOSH: ZE 2625000 SAX: XHS000	Toxic	---	---	1.17	10,000	10,000	0.5	1.5
Paraquat Dichloride §§ ---	1910-42-5	Toxic	---	---	---	30 HA	30 HA	0.8	---
Parathion §§ --- § DNTP § Niran § Phoskil § Paradust § Stathion § Strathion § Pestox Plus § Nitrostigmine § Parathion Ethyl § Parathion-ethyl § Ethyl Parathion § Diethylparathion § Caswell Number 637 § RCRA Waste Number P089 § EPA Pesticide Chemical Code 057501 § Diethyl 4-Nitrophenylphosphorothioate § Diethyl para-Nitrophenol Thiophosphate § Diethyl-p-Nitrophenyl Monothiophosphate § O,O-Diethyl O-4-Nitrophenyl Thiophosphate § Phosphorothioic Acid, O,O-Diethyl O-(4-Nitrophenyl) Ester	56382 or 56-38-2 NIOSH: TF 4920000, dry TF 4950000, liquid SAX: PAK250, dry	Carcinogen	0.065	0.013	---	2	2	---	1
Pentachlorobenzene §§ Benzene, Pentachloro- § QCB- § RCRA Waste Number U183	608935 or 608-93-5 NIOSH: DA 6640000 SAX: PAV500	Toxic with BCF >300	---	---	2,125	3.5	3.5	N/A	0.1
Pentachlorophenol §§ Penta § PCP § Durotox § Weedone § Chem-Tol § Lauxtol A § NCI C54933 § NCI C55378 § NCI C56655 § Permite § Dowcide 7 § Permacide § Penta-Kil § Permagard § Penchlorol § Chlorophen § Pentachlorophenol § Pentachlorofenolo § Thompson's Wood Fix § Phenol, Pentachloro- § 2,3,4,5,6-Pentachlorophenol § 1-Hydroxy- 2,3,4,5,6-Pentachlorobenzene	87865 or 87-86-5 NIOSH: SM 6300000 SAX: PAX250	Carcinogen	5.3 @ pH of 6.5 (14)	4 @ pH of 6.5 (14)	11	1	1	N/A	0.05
pH §§ ---	N/A	Harmful	(13)	(13)	---	(18)	(18)	N/A	---

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Phenanthrene (PAH) §§ --- § Phenantrin	85018 or 85-01-8 NIOSH: SF 7175000 SAX: PCW250	Toxic	---	---	30	---	---	0.01	0.25
Phenol §§ --- § Baker's P and S Liquid and Ointment § NCI C50124 § Benzenol § Monophenol § Oxybenzene § Phenic Acid § Carboic Acid § Phenylc Acid § Hydroxybenzene § Hydroxybenzene § Phenyl Alcohol § Phenyl Hydrate § Phenylc Alcohol § Phenyl Hydroxide § Benzene, Hydroxy- § Monohydroxybenzene § RCRA Waste Number U188	108952 or 108-95-2 NIOSH: SJ 3325000 SAX: PDN750	Harmful	---	---	1.4	300  PP	300  PP	100	10
Phosphorus, inorganic (20) §§ --- § Ortho-phosphorus § phosphorus, Ortho-	14265442 or 14265-44-2 NIOSH: --- SAX: ---	Nutrient	(8)	(8)	---	---	---	1	1
Picloram §§ Tordon § ATCP § K-Pin § Borolin § Amdon Grazon § NCI C00237 § Tordon 10K § Tordon 22K § Tordon 101 Mixture § 3,5,6-Trichloro-4-Aminopicolinic Acid § 4-Amino-3,5,6-Trichloropicolinic Acid	1918021 or 1918-02-1 NIOSH: TJ 7525000 SAX: AMU250	Toxic	---	---	---	500  MCL	500  MCL	0.14	1
Polychlorinated Biphenyls, individually or mixed §§ PCB's § Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1268, 2565, 4465 § Chlophen § Chlorextol § Chlorinated Biphenyl § Chlorinated Diphenyl § Chlorinated Diphenylene § Chloro Biphenyl § Chloro-1,1-Biphenyl § Clophen § Dykanol § Fenclor § Inerteen § Kanechlor 300, 400, 500 § Montar § Noflamol § PCB (DOT) § Phenochlor § Polychlorobiphenyl § Pyralene § Pyranol § Santotherm § Sovol § Therminol FR-1	Multiple	Carcinogen	---	0.014  PP	31,200	0.0017  PP	0.5  MCL	N/A	1
Primsulfuron Methyl §§ Beacon § Exceed	86209-51-0	Toxic	---	---	---	42  I	42  I	0.1	---
Prometon §§ Pramitol § ---	1610-18-0	Toxic	---	---	---	100  HA	100  HA	0.3	---
Pronamide §§ Kerb § ---	23950-58-5	Carcinogen	---	---	---	50  HA	50  HA	N/A	---
Propachlor §§ Ramrod § ---	1918-16-7	Toxic	---	---	---	90  HA	90  HA	0.5	---
Propane, 1,2-Dibromo-3-Chloro- §§ Dibromochloropropane § 1,2-Dibromo-3-Chloropopane § Fumagon § Fumazone § NCI C00500 § Nemabrom § Nemaforme § Nemagon § Nemagone § Nemagone Soil Fumigant § Nemanax § Nemapaz § Nemaset § Nematocide § Nematox § OS 1897 § OXY DBCP § SD 1897 § Caswell Number 287 § RCRA Waste Number U066 § 1-Chloro-2,3-Dibromopropane § DBCP § EPA Pesticide Chemical Code 011301	96128 or 96-12-8 NIOSH: TX 8750000 SAX: DDL800	Carcinogen	---	---	---	0.2  MCL	0.2  MCL	N/A	0.05

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Propazine §§ ---	139-40-2	Carcinogen	---	---	---	10 HA	10 HA	N/A	---
Propham §§ ---	122-42-9	Toxic	---	---	---	100 HA	100 HA	0.13	---
Propoxur §§ Baygon § ---	114-26-1	Carcinogen	---	---	---	140 HA	140 HA	N/A	---
Pyrene (PAH) §§ --- § β-Pyrine § beta-Pyrene § Benzo(def)Phenanthrene § Benzo[def]Phenanthrene	129000 or 129-00-0 NIOSH: UR 2450000 SAX: PON250	Toxic	---	---	30	960 HA	960 HA	0.25	0.25
Radium 226 §§ ---	Radium 226 13982636 or 13982-63-6 NIOSH: --- SAX: ---	Carcinogen / Radioactive	---	---	---	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	N/A	---
Radium 228 §§ ---	Radium 228 15262201 or 15262-20-1 NIOSH: --- SAX: ---	Carcinogen / Radioactive	---	---	---	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	N/A	---
Radon 222 §§ ---	14859677 or 14859-67-7 NIOSH: --- SAX: ---	Carcinogen / Radioactive	---	---	---	15 picocuries/ liter HA	15 picocuries/ liter HA	N/A	---
Selenium §§ Se § C.I. 77805 § Colloidal Selenium § Elemental Selenium § Selenium Alloy § Selenium Base § Selenium Dust § Selenium Elemental § Selenium Homopolymer § Selenium Metal Powder, Non-Pyrophoric § Vandex	7782492 or 7782-49-2 NIOSH: VS 7700000 VS 8310000, colloidal SAX: SBO500 SAX: SBP000, colloidal	Toxic	20 PP	5 PP	6	50 MCL	50 MCL	0.6	1
Silver §§ Ag § Argentum § C.I. 77820 § Shell Silver § Silver Atom	7440224 or 7440-22-4 NIOSH: VW 3500000 SAX: SDI500	Toxic	4.1 @ 100 mg/l hardness (12) PP	---	0.5	100 HA	100 HA	0.2	3
Simazine §§ --- § CDT § Herbex § Framed § Bitemol § Radokor § A 2079 § Batazina § Cat (Herbicide) § CET § G 27692 § Geigy 27,692 § Gesaran § Gesatop 50 § Simazine 80W § Symazine § Taphazine § W 6658 § Zeapur § Princep § Aquazine § Herbazin § Tafazine § 2,4-bis(Ethylamino)-6-Chloro-s-Triazine § 1-Chloro, 3,5-Bisethylamino-2,4,6-Triazine § 2-Chloro-4,6-Bis(Ethylamino)-1,3,5-Triazine § 6-Chloro-N,N'-Diethyl-1,3,5-Triazine-2,4-Diyldiamine	122349 or 122-34-9 NIOSH: XY 5250000 SAX: BJP000	Carcinogen	---	---	---	4 MCL	4 MCL	N/A	0.3
Strontium §§ ---	7447246 NIOSH: --- SAX: ---	Toxic	---	---	---	4,000 HA	4,000 HA	100	---

**CIRCULAR QWB-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition §§ - Primary Synonym § - Other Names	CASRN, NIOSH and SAX Numbers (25) (26) (27)	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting Value (19)
			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Styrene §§ --- § Styrol § Cinnamol § Cinnamene § Cinnamenol § NCI C02200 § Styrole § Strolene § Styron § Stropor § Vinylbenzol § Phenethylene § Phenylethene § Vinylbenzene § Ethenylbenzene § Phenylethylene § Benzene, Vinyl- § Stryene, Monomer	100425 or 100-42-5 NIOSH: WL 3675000 SAX: SMQ000	Carcinogen	---	---	---	100  HA	100  HA	N/A	0.5
Sulfometuron Methyl §§ Oust § ---	74222-97-2	Toxic	---	---	---	1,750  I	1,750  I	0.01	---
Tebuthiuron §§ --- § Spike	34014-18-1	Toxic	---	---	---	500  HA	500  HA	2	---
Temperature §§ ---	N/A	Harmful	(13)	(13)	---	---	---	N/A	---
Terbacil §§ Sinbar § ---	5902-51-1	Toxic	---	---	---	90  HA	90  HA	2.2	---
Terbufos §§ Counter § ---	13071-79-9	Toxic	---	---	---	0.9  HA	0.9  HA	0.5	---
Tetrachlorobenzene, 1,2,4,5- §§ Benzene, 1,2,4,5-Tetrachloro- § RCRA Waste Number U207 § 1,2,4,5-Tetrachlorobenzene	95943 or 95-94-3 NIOSH: DB 9450000 SAX: TBN750	Toxic with BCF >300	---	---	1,125	2.3  PP	2.3  PP	N/A	0.1
Tetrachloroethane, 1,1,2,2- §§ Tetrachloroethane § TCE § Cellon § Westron § Bonoform § sym-Tetrachloroethane § RCRA Waste Number U209 § Acetylene Tetrachloride § 1,1,2,2-Tetrachloroethane § Ethane, 1,1,2,2-Tetrachloro- § 1,1-Dichloro-2, 2-Dichloroethane	79345 or 79-34-5 NIOSH: KI 8575000 SAX: ACK500	Carcinogen	---	---	5	1.7  PP	1.7  PP	N/A	0.5
Tetrachloroethylene §§ Perchlroethylene § NCI C04580 § PCE § Perk § PERC § ENMA § Dow-Per § Perchlor § Perclene § Perklone § Didakene § Tetra Cap § Percosolve § Perchloroethylene § Tetrachloroethene § Carbon Bichloride § Carbon Dichloride § RCRA Waste Number U210 § Ethylene Tetrachloride § Ethylene, Tetrachloro- § 1,1,2,2-Tetrachloroethylene	127184 or 127-18-4 NIOSH: KX 3850000 SAX: TBQ250	Carcinogen	---	---	30.6	5  MCL	5  MCL	N/A	0.5
Thallium §§ TI § Ramor	7440280 or 7440-28-0 NIOSH: XG 3425000 SAX: TEI000	Toxic	---	---	119	1.7  PP	2  MCL	0.3	3
Thifensulfuron Methyl §§ --- § Pinnacle	79277-27-3	Toxic	---	---	---	910  I	910  I	1	---

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Toluene §§ --- § Antisal 1a § NCI C07272 § Toluol § Tolu-Sol § Methacide § Methylbenzol § Methylbenzene § Phenylmethane § Phenyl-Methane § Methyl-Benzene § Benzene, Methyl § RCRA Waste Number U220	108883 or 108-88-3 NIOSH: XS 5250000 SAX: TGK750	Toxic	---	---	10.7	1,000  MCL	1,000  MCL	0.01	0.5
Toxaphene §§ --- § Attac 4-2 § Alltox § Alltex § Attac 6 § Toxakil § Agricide § Chem-Phene § Clor Chem T-590 § Compound 3956 § Crestoxo § Estonox § Geniphene § Gy-Phene § Hercules 3956 § Melipax § Motox § PCC § Phenacide § Phenatox § Toxadust § Camphechlor § Maggot Killer (F) § Toxaphene mixture § Chlorinated-Camphene § Camphene, Octachloro- § RCRA Waste Number P123	8001352 or 8001-35-2 NIOSH: XW 5250000 SAX: THH750	Carcinogen	0.73  PP	0.0002  PP	13,100	0.0073  PP	0.3  HA	N/A	1
Tralkoxydim (28) §§ Achieve	87820-88-0	Carcinogen	---	---	---	20  HA	20  HA	N/A	---
trans-1,2-Dichloroethylene §§ --- § trans-Dichloroethylene § RCRA Waste Number U079 § trans-1,2-Dichloroethane § trans-1,2-Dichloroethene § Dichloroethylene, trans- § trans-Acetylene Dichloride § 1,2-trans-Dichloroethylene § Ethene, 1,2-Dichloro-, (E)- § 1,2-Dichloroethylene, trans-	156605 or 156-60-5 NIOSH: KV 9400000 SAX: DFI600	Toxic	---	---	1.58	100  MCL	100  MCL	0.05	0.5
trans-1,3-Dichloropropene §§ Telone II § 1,3-Dichloropropene § 1,3-Dichloropropylene § (E)-1,3-Dichloropropene § trans- 1,3-Dichloropropylene § 1-Propene, 1,3-Dichloro-, (E)-	10061026 or 10061-02-6 NIOSH: UC 8320000 SAX: DGH000	Carcinogen	---	---	1.91	2  HA	2  HA	N/A	0.5
trans-Nonachlor (Chlordane component) §§ --- § Chlordane, trans-Isomer	39765805 or 39765-80-5 NIOSH: --- SAX: ---	Carcinogen	2.4  PP	0.0043  PP	14,100	0.0057  PP	0.3  HA	N/A	0.4
Triasulfuron §§ Amber	82097-50-5	Toxic	---	---	---	70 I	70 I	1	---
Tribenuron Methyl §§ Express	101200-48-0	Carcinogen	---	---	---	8 I	8 I	0.1	---
Tributyltin (TBT)	56573-85-4	Toxic	0.46 NPP	0.063 NPP	---	---	---	N/A	---
Trichlorobenzene, 1,2,4- §§ Benzene, 1,2,4-Trichloro- § unsym-Trichlorobenzene § 1,2,4-Trichlorobenzene	120821 or 120-82-1 NIOSH: DC 2100000 SAX: TIK250	Toxic	---	---	114	70  MCL	70  MCL	0.02	0.5
Trichloroethane, 1,1,2- §§ Vinyl Trichloride § 1,1,2-Trichloroethane § β-T § Ethane Trichloride § beta-Trichloroethane § 1,2,2-Trichloroethane § RCRA Waste Number U227 § NCI C04579 § Ethane, 1,1,2-Trichloro- § Caswell Number 875A [NLM] § EPA Pesticide Chemical Code 081203 [NLM]	79005 or 79-00-5 NIOSH: KJ 3150000 SAX: TIN000	Carcinogen	---	---	4.5	5  MCL	5  MCL	N/A	0.5

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Trichloroethane, 1,1,1- §§ Methyl Chloroform § -T § Strobane § Inhibisol § 1,1,1-TCE § Tri-Ethane § Solvent 111 § Aerothene TT § Chloroethene § Chlorten § NCI C04626 § Methylchloroform § Chloroform, Methyl- § 1,1,1-Trichloroethene § alpha-Trichloroethane § Methyltrichloromethane § RCRA WASTE Number U226 § 1,1,1-Trichloroethane § Ethane, 1,1,1-Trichloro-	71556 or 71-55-6 NIOSH: KJ 2975000 SAX: TIM750	Toxic	---	---	5.6	200  MCL	200  MCL	0.5	0.5
Trichloroethylene §§ --- § TCE § Triad § Vitran § Algylen § Dow-Tri § Lanadin § Vestrol § Anamenth § Benzinol § Tri-Plus § Tri-Clene § Trichlorethene § Trichloroethene § Trichloroethane § Trichloroethylene § Tetrachloroethene § Ethene, Trichloro- § Ethylene Trichloride § Ethylene, Trichloro- § Acetylene Trichloride § 1,1,2-Trichloroethylene § 1,2,2-Trichloroethylene § 1-Chloro-2,2-Dichloroethylene § 1, 1-Dichloro-2-Chloroethylene	79016 or 79-01-6 NIOSH: KX 4550000 SAX: TIO750	Carcinogen	---	---	10.6	5  MCL	5  MCL	N/A	0.5
Trichlorofluoromethane (HM) §§ Freon 11 § F 11 § FC 11 § Arcton 9 § Eskimon 11 § Halocarbon 11 § Algofrene Type 1 § RCRA Waste Number U121 § Fluorocarbon Number 11 § NCI C04637 § Isotron 11 § Fluorotrichloromethane § Isceon 131 § Monofluorotrichloromethane § Ucon Refrigerant 11 § Trichloromonofluoromethane	75694 or 75-69-4 NIOSH: PB 6125000 SAX: TIP500	Toxic	---	---	3.75	10,000  PP	10,000  PP	0.07	0.5
Trichlorophenol, 2,4,5- §§ Dowcide B § 2,4,5-Trichlorophenol § Nurelle § Dowcide 2 § Collunosol § Preventol 1 § RCRA Waste Number U230 § NCI C61187	95954 or 95-95-4 NIOSH: SN 1400000 SAX: TIV750	Harmful	---	---	110	7  I	7  I	10	10
Trichlorophenol, 2,4,6- §§ Phenachlor § 2,4,6-Trichlorophenol § Dowcide 2S § RCRA Waste Number U231 § Omal § Phenol, 2,4,6-trichloro- § NCI C02904	88062 or 88-06-2 NIOSH: SN 1575000 SAX: TIW000	Carcinogen	---	---	150	21  PP	30  HA	N/A	10
Trichlorophenoxy Propionic Acid, 2 (2,4,5-) §§ Fenoprop § 2 (2,4,5-Trichlorophenoxy) Propionic Acid § Kuran § Propon § Silvex § Aqua-Vex § Ded-Weed § Sta-Fast § 2,4,5-TP § Color-Set § Weed-B-Gon § Double Strength § RCRA Waste Number U233 § 2,4,5-Trichlorophenoxypropionic Acid § (2,4,5-Trichlorophenoxy)Propionic Acid § 2-(2,4,5-Trichlorophenoxy)-Propionic Acid § (+/-)-2-(2,4,5-Trichlorophenoxy)propanoic Acid	93721 or 93-72-1 NIOSH: UF 8225000 SAX: TIX500	Toxic	---	---	---	10  NRWQC	50  MCL	0.075	0.1
Trichlorophenoxyacetic Acid §§ Brush-Rhap § 2,4,5-T (Brush-Rhap)	93-76-5	Toxic	---	---	---	350  HA	350  HA	N/A	---

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			Acute (3)	Chronic (4)		Surface Water	Groundwater		
Triclopyr - amine salt §§ Garlon § ---	55335-06-3	Toxic	---	---	---	350  I	350  I	0.25	---
Trifluralin §§ Treflan § Buckle	1582-09-8	Carcinogen	---	---	---	5  HA	5  HA	N/A	---
Trihalomethanes, total §§ --- § THMs	Multiple	Carcinogen	---	---	---	100  MCL	100  MCL	N/A	2
Turbidity (20) §§ ---	N/A	Harmful	(13)	(13)	---	---	---	N/A	1 NTU
Uranium, natural §§ U § Uranium Metal, Pyrophoric	7440611 or 7440-61-1 NIOSH: YR 3490000 SAX: UNS000	Carcinogen / Radioactive	---	---	---	20  MCL	20  MCL	0.03	---
Vinyl 2-Chloroethyl Ether §§ Vinyl β-Chloroethyl Ether- § (2-Chloroethoxy)Ethene § RCRA Waste Number U042 § 2-Chloroethyl Vinyl Ether	110758 or 110-75-8 NIOSH: KN 6300000 SAX: CHI250	Carcinogen	---	---	0.557	---	---	N/A	---
Vinyl Chloride §§ --- § VC § VCM § Chloroethene § Chloroethene § Chloroethylene § Chloroethylene § Ethylene, Chloro- § Monochloroethylene § Ethylene Monochloride § RCRA Waste Number U043 § Vinyl Chloride Monomer § Vinyl C Monomer § Trovidur	75014 or 75-01-4 NIOSH: KU 9625000 SAX: VNP000	Carcinogen	---	---	1.17	0.2  HA	2  MCL	N/A	0.5
Xylenes §§ --- § Xylol § Violet 3 § Mixed Xylenes § Methyl Toluene § Dimethylbenzene § RCRA Waste Number U239 § NCI C55232 § Total equals the sum of meta, ortho, and para.	1330207 or 1330-20-7 NIOSH: ZE 2100000 SAX: XGS000	Toxic	---	---	1.17	10,000  MCL	10,000  MCL	0.5	1.5
Zinc §§ Zn § Blue Powder § C.I. 77945 § C.I. Pigment Black 16 § C.I. Pigment Metal 6 § Emanay Zinc Dust § Granular Zinc § Jasad § Merrillite § Pasco § Zinc, Powder or Dust, non-Pyrophoric § Zinc, Powder or Dust, Pyrophoric	7440666 or 7440-66-6 NIOSH: ZG 8600000 SAX: ZBJ000	Toxic	67 @ 50 mg/l hardness (12)  PP	67 @ 50 mg/l hardness (12)  PP	47	2,000  HA	2,000  HA	5	10

(1) Based on EPA's categories and include parameters determined to be toxic (toxin), carcinogenic (carcinogen), or harmful. Harmful parameters include nutrients, biological agents, and those parameters which cause taste and/or odor effects or physical effects.

(2) Carcinogens are chemicals classified by EPA as carcinogens for an oral route of exposure in the drinking water regulations and health advisories (EPA 822-B-96-002) and those listed as carcinogens in the EPA priority pollutants list. Carcinogens include those parameters in classifications A (Human Carcinogens), B1 or B2 (Probable Human Carcinogens), and C (Possible Human Carcinogen).

(3) No sample shall exceed these concentrations.

(4) No four-day (96-hour) or longer period average concentration shall exceed these values.

(5) All bioconcentration factors (BCF's) were developed by the EPA as part of the Standards development as mandated by Section 304(a) of the federal Clean Water Act. Values shown are current as of 07/01/1993.

(6) The 24 hour geometric mean value must not exceed these values.

(7) Freshwater Aquatic Life Standards for total ammonia nitrogen (mg/l NH<sub>3</sub>-N plus NH<sub>4</sub>-N).

Because these formulas are non-linear in pH and temperature, the Standard is the average of separate evaluations of the formulas reflective of the fluctuations of flow, pH, and temperature within the averaging period; it is not appropriate to apply the formula to average pH, temperature and flow.

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed the CMC (acute criterion) calculated using the following equations.

Where salmonid fish are present:

$$CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

Or where salmonid fish are not present:

$$CMC = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

2. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed the CCC (chronic criterion) calculated using the following equations.

When fish early life stages<sup>1</sup> are present:

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \times \text{MIN} (2.85, 1.45 \times 10^{0.028 \times (25 - T)})$$

When fish early life stages<sup>1</sup> are absent:

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \times 1.45 \times 10^{0.028 \times (25 - \text{MAX}(T,7))}$$

<sup>1</sup> Includes all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.

3. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

**Table 1.**  
**pH-Dependent Values of the CMC (Acute Criterion) Ammonia Standard.**

CMC, total ammonia nitrogen (mg/l NH <sub>3</sub> -N plus NH <sub>4</sub> -N)		
pH	Salmonids Present	Salmonids Absent
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Table 2. Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Present and for Fish Early Life Stages Absent.

pH	CCC for Fish Early Life Stages Present, total ammonia nitrogen (mg/l NH <sub>3</sub> -N plus NH <sub>4</sub> -N)										CCC for Fish Early Life Stages Absent, total ammonia nitrogen (mg/l NH <sub>3</sub> -N plus NH <sub>4</sub> -N)									
	Temperature, C										Temperature, C									
	0	14	16	18	20	22	24	26	28	30	0-7	8	9	10	11	12	13	14	15*	16*
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46	10.8	10.1	9.51	8.92	8.36	7.8	7.35	6.89	6.46	6.06
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

\*At 15 C and above, the criterion for fish ELS absent is the same as the criterion for fish ELS present

(8) A plant nutrient, excessive amounts of which may cause violations of Administrative Rules of Montana (ARM) 17.30.637 (1)(e).

(9) Approval methods of sample preservation, collection, and analysis for determining compliance with the standards set forth in WQB-7 are found in the surface water quality standards (ARM17.30.601, et seq.) and the ground water rules (ARM 17.30.1001, et seq.).

Standards for metals (except aluminum) in surface water are based upon the analysis of samples following a "total recoverable" digestion procedure (Section 9.4, "Methods of Analysis of Water and Wastes", 1983, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, EPA-600/4-79-020, or equivalent).

Standards for metals in groundwater are based upon the dissolved portion of the sample (after filtration through a .045 µm membrane filter, as specified in "Methods for Analysis of Water and Wastes" 1983, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, EPA-600/4-79-020, or equivalent).

Standard for organic parameters in surface and ground water are based on unfiltered samples.

(10) Calculation of an equivalent concentration of 2,3,7,8-TCDD is to be based on congeners of CDDs/CDFs and the toxicity equivalency factors (I-TEFs/89) in Table 2, Part II, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans (CDDs and CDFs) and 1989 Update", EPA/625/3-89/016, March 1989. The analysis method to be used is EPA Method 1613, Revision B, Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS, 40 CFR 136.3 (1 July 1998 Edition).

(11) Radionuclides consisting of alpha particles, and beta and gamma emitters are classified as carcinogenic. The emitters covered under this Standard are:  
Cesium, radioactive Iodine, radioactive Strontium -89 and -90, radioactive Tritium Gamma photon emitters

(12) Freshwater Aquatic Life Standards for these metals are expressed as a function of total hardness (mg/l, CaCO3). The values displayed in the chart correspond to a total hardness of 50 mg/l or 100 mg/l. The hardness relationships are:

$$\text{Acute} = \exp.\{ma[\ln(\text{hardness})]+ba\}$$

$$\text{Chronic} = \exp.\{mc[\ln(\text{hardness})]+bc\}$$

	ma	ba	mc	bc
cadmium	1.0166	-3.924	0.7409	-4.719
copper	0.9422	-1.700	0.8545	-1.702
chromium (III)	0.819	3.7256	0.819	0.6848
lead	1.273	-1.46	1.273	-4.705
nickel	0.846	2.255	0.846	0.0584
silver	1.72	-6.52	-----	-----
zinc	0.8473	0.884	0.8473	0.884

Note: If the hardness is <25mg/L as CaCO3, the number 25 must be used in the calculation. If the hardness is greater than or equal to 400 mg/L as CaCO3, 400 mg/L must be used in the calculation.

(13) This standard is based upon Water-Use Classifications. See Administrative Rules of Montana (ARM), title 17, Chapter 30 - Water Quality, Sub-Chapter 6 - Surface Water Quality Standards.

(14) Freshwater Aquatic Life Standard for pentachlorophenol with pH. Values displayed in the chart correspond to a pH of 6.5 and are calculated as follows:

$$\text{Acute} = \exp[1.005(\text{pH}) - 4.869] \quad \text{Chronic} = \exp[1/005(\text{pH}) - 5.134]$$

(15) Freshwater Aquatic Life Standard for dissolved oxygen in milligrams per liter are as follows:

	Standards for Waters Classified A-1, B-1,B-2, C-1, and C-2		Standards for Waters Classified B-3, C-3, and I	
	Early Life Stages <sup>1,2</sup>	Other Life Stages	Early Life Stages <sup>2</sup>	Other Life Stages
30 Day Mean	N/A <sup>3</sup>	6.5	N/A <sup>3</sup>	5.5
7 Day Mean	9.5 (6.5)	N/A	6.0	N/A
7 Day Mean Minimum	N/A <sup>3</sup>	5.0	N/A <sup>3</sup>	4.0
1 Day Minimum <sup>4</sup>	8.0 (5.0)	4.0	5.0	3.0

<sup>1</sup> These are water column concentrations recommended to achieve the required inter-gravel dissolved oxygen concentrations shown in parentheses. For species that have early life stages exposed directly to the water column, the figures in parentheses apply.

<sup>2</sup> Includes all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.

<sup>3</sup> N/A (Not Applicable).

<sup>4</sup> All minima should be considered as instantaneous concentrations to be achieved at all times.

(16) Aquatic Life Standards apply to surface waters only and are based upon the analysis of samples following a "total recoverable" digestion procedure (Section 9.4, "Methods for Analysis of Water and Wastes", 1983, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, EPA-600/4-79-020, or equivalent).

(17) Source of the criteria used to derive the standard:

PP = priority pollutant criteria

MCL = Maximum contaminate level from the drinking water regulations

SMCL =secondary maximum contaminate level

HA = health advisory all from EPA's "Drinking Water Standards and Health Advisories" (October 1996)

I = standard derived from data obtained from federal data sources available on the Internet as of June 1998.

NRWQC = National Recommended Water Quality Criteria

For surface waters the Standard is the more restrictive of either the Aquatic Life Standard or the Human Health Standard.

(18) The Narrative Standards are located in the Administrative Rules of Montana (ARM) 17.30.601 et seq and ARM 17.30.1001 et seq.

(19) The Required Reporting Value (RRV) is the Department's best determination of a level of analysis that can be achieved in routine sampling. It is based on levels actually achieved at both commercial and government laboratories in Montana using accepted methods. The (RRV) is the detection level that must be achieved in reporting ambient or compliance monitoring results to the Department. Higher detection levels may be used if it has been demonstrated that the higher detection levels will be less than 10% of the expected level of the sample.

(20) Applicable to surface waters only.

(21) Based on taste and odor thresholds given in EPA 822-f-97-008 December 1997.

(22) Trigger Values are used to determine if a given increase in the concentration of toxic parameters is significant or non-significant as per the non-degradation rules. The acronym "N/A" means "not applicable".

(23) The concentration of iron must not reach values that interfere with the uses specified in the surface and groundwater standards (17.30.601 et seq. and 17.30.1001 et seq.) The Secondary Maximum Contaminant Level of 300 micrograms per liter which is based on aesthetic properties such as taste, odor, and staining may be considered as guidance to determine the levels that will interfere with the specified uses.

(24) The concentration of manganese must not reach values that interfere with the uses specified in the surface and groundwater standards (17.30.601 et seq. and 17.30.1001 et seq.). The Secondary Maximum Contaminant Level of 50 micrograms per liter which is based on aesthetic properties such as taste, odor, and staining may be considered as guidance to determine the levels that will interfere with the specified uses.

(25) CASRN is an acronym for the American Chemical Society's Chemical Abstracts Service Registry Number.

(26) The NIOSH RTECS number is a unique number used for identification in the National Institute For Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances.

(27) SAX number in the format AAA123 is a unique number for identification of materials in the Dangerous Properties of Industrial Materials, authors N. Irving Sax and Richard J. Lewis, publisher Van Nostrand Reinhold.

(28) The sum of the concentrations of tralkoxydim and its breakdown products shall not exceed the standards listed. For a list of known breakdown products, see EPA memorandum "EFED's Section 3 Review for Tralkoxydim (Chemical #121000; Case # 060780; DP Barcodes 0234682, 0234752, 0238697, 0235723 & 0239519)," and the associated "Environmental Fate Assessment for Tralkoxydim."

**CIRCULAR DEQ-7**  
**MONTANA**  
**NUMERIC WATER QUALITY STANDARDS**



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**CIRCULAR DEQ-7**

## Introduction

This document contains numeric water quality standards for Montana's surface and ground waters. The standards were developed in compliance with Section 75-5-301, MCA of the Montana Water Quality Act and Section 303(c) of the Federal Clean Water Act (CWA). Together, those provisions of state and federal law require the adoption of standards that will protect the designated beneficial uses of state waters, such as the support of aquatic life, public water supplies, recreation, or agriculture. The numeric water quality standards in this Circular have been established for parameters (i.e., "pollutants") that are categorized as toxic, carcinogenic, bioconcentrating, radioactive, nutrient, or harmful. In addition, the Circular contains ground water standards for pesticides developed in compliance with the Montana Agricultural Chemical Ground Water Protection Act (80-15-201, MCA).

Montana's numeric water quality standards were developed using guidance from the U.S. Environmental Protection Agency (EPA). EPA's guidance for water quality standards includes criteria for priority pollutants (PP) and non-priority pollutants (NPP) developed under Section 304 of the CWA, health advisories (HA), National Recommended Water Quality Criteria (NRWQC), and drinking water criteria referred to as Maximum Contaminant Levels (MCL). Publications containing EPA guidance include: 1986 Quality Criteria for Water, EPA 440/5/86-001 (the "Gold Book") and numerous updates; Toxics Criteria for those States not Complying with Clean Water Act 303(c)(2)(B); (The National Toxics Rule [NTR]) which was published in the Code of Federal Regulations, 40 CFR 131.36 (1992); Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; (62 F.R. 42159 [1997]); National Recommended Water Quality Criteria :2002 (EPA 822-R-02-047); and 2004 Edition of the Drinking Water Standards and Health Advisories (EPA 822-R-04-005). In general, the most recent EPA guidance was used to develop the standards in this Circular.

CIRCULAR DEQ-7 is regularly updated as additional information or guidance from EPA becomes available. Accordingly, readers should ensure that they are using the edition incorporated into the Board's current rules regarding water quality standards.

CIRCULAR DEQ-7 is a complex document. In addition to providing the numeric water quality standards for each parameter, the Circular also contains the primary synonyms of each parameter, the Chemical Abstracts Service Registry Number (CASRN) number for each chemical, the categorization of each parameter according to the type of pollutant, the bioconcentration factor if known, trigger values used to determine "significance" under Montana's nondegradation policy, and required reporting values. The Department will provide electronic copies of this document upon request or the document may be retrieved from the Department WEB site at, <http://www.deq.mt.gov/wqinfo/Circulars/DEQ-7.PDF>. Use of an electronic copy will enable the reader to search for synonyms or CASRN numbers. Such searches will make this document easier to use. Parameters are listed in alphabetical order. In order to facilitate listing by alphabetical order, parameters that are normally written with the numbers first are listed with the numbers last. For example, 2,4-Dinitrophenol is listed as Dinitrophenol, 2,4-

There are many explanatory notes following the table portion of CIRCULAR DEQ-7. Footnotes referencing the explanatory notes are found in both the table headings and in individual line items. The notes following the table explain various aspects of the standards. For example, the standards for some metals, ammonia, dissolved oxygen, and phenol, cover a range of values that are computed by using a complex formula, or depend upon special circumstances.

## Rules Containing Montana's Water Quality Standards

The Administrative Rules of Montana (ARM), 17.30.620 through 17.30.670, contain numeric surface water quality standards that vary with each stream classification. Examples of numeric standards that change under each stream classification include *Escherichia coli* bacteria, color, turbidity, pH, and temperature. Montana's surface water rules also contain narrative standards. Narrative standards are also contained in Montana's rules for ground water (ARM 17.30.1001 through 17.30.1045). The narrative standards cover a number of parameters, such as alkalinity, chloride, hardness, sediment, sulfate, total dissolved solids and nutrients (for surface water), for which sufficient information does not exist to develop specific numeric standards.

## Statutory Basis and Assumptions Used to Develop Water Quality Standards

Carcinogens: The Montana Water Quality Act requires that human health standards for carcinogens be the more restrictive of either of the following: (1) the risk-based level of one in one hundred thousand [ $1 \times 10^{-5}$ ] for all carcinogens except arsenic, which is based upon one in one thousand [ $1 \times 10^{-3}$ ]; or, (2) the MCL. For surface water the risk-based levels given in EPA's NRWQC criteria were used or, if not available, health advisory (HA) information was used. In cases where a risk-based level was not available, the most recent RfD or cancer potency factor ( $q1^*$ ) in IRIS was used to compute the standard. In cases where no risk-based levels were available for known carcinogens, the standards in this Circular are based on toxic effects. Ground water standards are based on EPA Drinking Water Health Advisories, NRWQC or IRIS information.

Bio-concentrating: The human health standards for carcinogens and other parameters that exhibit bio-concentration properties were developed using the assumption that there are two routes of exposure: through consumption of water and fish. EPA's water quality criteria are derived using an average fish consumption rate of 17.5 grams/day. Montana has not conducted its own fish consumption survey. The standards in this Circular use EPA's recommended average daily fish consumption value.

Pesticides: The Montana Agricultural Chemical Ground Water Protection Act requires that MCLs be adopted as ground water standards for pesticides if MCLs are available. If no MCLs or other federal criteria are available, standards must be developed using available data on health effects (reference dose, [RfD]) and standard assumptions. The standard assumptions used assume that 2 liters of water are consumed per day and adults weighing seventy kilograms are exposed for 70 years (life long exposure) to a single source of water. When information was available, a relative source contribution (RSC) factor was also applied. The RSC is the percentage of a parameter's intake through drinking water versus other dietary sources. A RSC of 0.2 was used in most cases to develop ground water standards for pesticides. In some cases, no data was available to develop a water quality standard for a pesticide in surface water. In these cases, the ground water standard (developed for a pesticide according to the risk-base analysis provided above) was also adopted as a surface water standard. The Integrated Risk Information System (IRIS) or other federal data sources were used when the EPA's most recent drinking water regulations and health advisories did not include data for a pesticide.

Toxins: The surface water quality standards for human health toxins are the more restrictive of the MCL or the NRWQC criteria. The ground water standards for human health toxins are based on the drinking water MCL or if a MCL is not available the NRWQC criteria.

Aquatic life: The standards for aquatic life are based on the most recent National Recommended Water Quality Criteria (NRWQC) published by EPA.

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

Except where indicated, values are listed as micro-grams-per-liter ( µg/L). A '---' indicates that a Standard has not been adopted or information is currently unavailable. A '( )' indicates that a detailed note of explanation is provided.									
Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Acenaphthene §§--- § 3Acenaphthalene § Naphthyleneethylene § 1,8-Ethylenenaphthalene § 1,8-Ethylene Naphthalene § 1,2-Dihydroacenphthylene § Acenphthylene, 1,2-Dihydro-	83329 or 83-32-9 NIOSH: AB 1255500 SAX: AAE750	Toxic	---	---	242	670	670	N/A	10
Acifluorfen §§ Blazer § Tackle § Scepter § as sodium salt	62476-59-9	Carcinogen	---	---	---	PP	PP	N/A	---
Acrolein §§ Aqualine § Biocide § Crolean § Aqualin § Propenal § SHA 00701 § 2-propenal § Acraldehyde § Acrylaldehyde § Acrylic Aldehyde § Ethylene Aldehyde	107028 or 107-02-8 NIOSH: AS 1050000 SAX: ADR000	Carcinogen	---	---	215	190	190	0.7	20
Acrylamide §§ 2-Propenamide § Propenamide § Acrylic Amide § Ethylenecarboxamide § RCRA Waste Number U007	79061 or 79-06-1 NIOSH: AS 3325000 SAX: ADS250	Carcinogen	---	---	---	0.08	0.08	---	---
Acrylonitrile §§ Fumigrain § Ventox § ENT 54 § TL 314 § Carbacryl § Cyanoethylene § Vinyl cyanide § Propenenitrile § 2-Propenenitrile § Acrylonitrile monomer § RCRA Waste Number U009	107131 or 107-13-1 also listed as 75-05-8 NIOSH: AT 5250000 SAX: ADX500 75-05-8	Carcinogen	---	---	30	0.51	0.6	N/A	20
Alachlor §§ Lasso § Lazo § Alator § Alanex § Alochlor § Pillarzo § Metachlor § Chimiclor § SHA 090501 § Methachlor § 2-Chloro-N-(2,6-Diethyl)Phenyl-N- Methoxymethylacetamide § 2-Chloro-2',6'-Diethyl-N-(Methoxymethyl)Acetanilide	15972608 or 15972-60-8 NIOSH: AE 1225000 SAX: CFX000	Carcinogen	---	---	---	2	2	N/A	0.4
Aldicarb §§ Temik § Temic § Ambush § OMS 771 § Temik G 10 § Aldecarb § Carbamyl § SHA 098301 § Carbanolate § Sulfone Aldoxycarb § Union Carbide 21149 § RCRA Waste Number P070 § Propanal, 2-Methyl-2-(Methylthio)-, O- [(Methylamino)Carbonyl]Oxime	116063 or 116-06-3 NIOSH: UE 2275000 SAX: CBM500	Toxic	---	---	---	3	3	1	1
Aldicarb Sulfone §§ Aldoxycarb § Standak § UC 21865 § Sulfocarb § SHA 110801 § Propionaldehyde, 2-Methyl-2- (Methylsulfonyl)-, O-(Methylcarbomoyl)Oxime § 2-Methyl-2-(Methylsulfonyl)Propanal O- [(Methylamino)Carbonyl]Oxime	1646884 or 1646-88-4 NIOSH: UE 2080000 SAX: AFK000	Toxic	---	---	---	3	3	2	1
Aldicarb Sulfoxide §§ ---	1646873 or 1646-87-3 NIOSH: --- SAX: ---	Toxic	---	---	---	4	4	2	1

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Aldrin §§ --- § HHDN § Altox § Drinox § Aldrex § Aldrite § Seedrin § Octalene § SHA 045101 § RCRA Waste Number P004 § Hexachlorohexahydro-endo-exo-Dimethanonaphthalene § 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8, 8a-Hexahydro-1,4,5,8-Dimethanonaphthalene § 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-Hexahydro-endo,exo- § 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-Hexa-Hydro-1,4:5,8-Endo,Exo-Dimethanonaphthalene § 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-Hexahydro-1,4-endo-exo-5,8-Dimethanonaphthalene	309002 or 309-00-2 NIOSH: IO 2100000 SAX: AFK250	Carcinogen	1.5	---	4,670	0.00049	0.02	N/A	0.2
Alpha Emitters (11) §§ --- § Gross Alpha § Adjusted Gross Alpha	Multiple	Carcinogen / Radioactive	---	---	---	1.5 pico-curies/liter HA	1.5 pico-curies/liter HA	N/A	---
alpha-Chlordane §§ -Chlordane § cis-Chlordane § cis-Chlordane § c (cis)-Chlordane § Chlordane, cis-Isomer	5103719 or 5103-71-9 NIOSH: PB 9705000 SAX: CDR675	Carcinogen	---	---	14,100	0.0080 PP	1 HA	N/A	0.4
alpha-Hexachlorocyclohexane §§ --- § Benzene Hexachloride-§-isomer § a-BHC § alpha-BHC § HCH-alpha § alpha-HCH § alpha-Lindane § a Hexachlorocyclohexane § alpha-Benzenehexachloride § Hexachlorocyclohexane-alpha § alpha-Hexachlorocyclohexane § Benzene Hexachloride-alpha-isomer § alpha-1,2,3,4,5,6-Hexachlorocyclohexane § Cyclohexane, alpha-1,2,3,4,5,6-Hexachloro- § 1-alpha,2-alpha,3-beta,4-alpha,5-beta,6-beta-Hexachlorocyclohexane § Cyclohexane, alpha-1,2,3,4,5,6-Hexachloro-, (1-alpha, 2-alpha, 3-beta, 4-alpha, 5-beta, 6-beta)-	319846 or 319-84-6 NIOSH: GV 3500000 SAX: BBQ000	Carcinogen	---	---	130	0.026 PP	0.026 PP	N/A	0.1
Aluminum, dissolved, pH 6.5 to 9.0 only (9) §§ Al	7429905 or 7429-90-5 NIOSH: BD 0330000 SAX: AGX000	Toxic	750 NPP	87 NPP	---	---	---	30	30
Ametryn §§ Ametrex	834-12-8	Toxic	---	---	---	60 HA	60 HA	---	---
Ammonia [total ammonia nitrogen (NH3-N plus NH4-N)] as mg/l N §§ --- § Ammonia Anhydrous § Anhydrous Ammonia § Spirit of Hartshorn	7664417 or 7664-41-7 NIOSH: BO 0875000 SAX: AMY500	Toxic	(7)(8) NPP	(7)(8) NPP	---	---	---	10	50
Ammonium Sulfamate §§ ---	7773-06-0	Toxic	---	---	---	2,000 HA	2,000 HA	---	---
Anthracene (PAH) §§ Paranaphthalene § Green Oil § Anthracin § Tetra Olive N2G	120127 or 120-12-7 NIOSH: CA 9350000 SAX: APG500	Toxic	---	---	30	8,300 PP	2,100 HA	0.04	0.2

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Antimony §§ Sb § Antimony Black § Antimony Regulus § C.I. 77050 § Stibium	7440360 or 7440-36-0 NIOSH: CC 4025000 SAX: AQB750	Toxic	---	---	1	5.6	6	0.4	3
						PP	MCL		
Arsenic §§ As § Arsenicals § Arsenic-75 § Arsenic Black § Colloidal Arsenic § Grey Arsenic § Metallic Arsenic	7440382 or 7440-38-2 NIOSH: CG 0525000 SAX: ARA750	Carcinogen	340	150	44	see footnote 29	see footnote 29	N/A	3
			PP	PP					
Asbestos, fibers longer than 10 microns in length §§ --- § Amianthus § Amosite (Obs.) § Amphibole § Asbestos Fiber § Fibrous Grunerite § NCI C08991 § Serpentine, includes Chrysotile, Actinolite, Aurosite, Anthophyllite, Crocidolite, and Tremolite	Multiple	Carcinogen	---	---	---	7,000,000 fibers/liter	7,000,000 fibers/liter	N/A	---
						MCL	MCL		
Atrazine §§ --- § Aatrex § Aktikon § Atrazine § Atred § Candex § Crisatrina § Crisazine § Cyazin § Fenamin § Fenamine § Zeaphos § Fenatrol § Gesaprim § Hungazin § Inakor § Primatol § Malermois § Radazin § Radizine § Shell Atrazine herbicide § Strazine § Zeazine § SHA 080803 § 1-Chloro-3-Ethylamino-5-Isopropylamino- 2,4,6-Triazine § s-Triazine, 2-Chloro-4-Ethylamino-6-Isopropylamino- § 2-Chloro-4- Ethylamino-6-Isopropylamino-s-Triazine § 6-Chloro-N-Ethyl-N'-(1-Methylethyl)-1,3,5-Triazine- 2, 4-Diamine	1912249 or 1912-24-9 NIOSH: XY 5600000 SAX: PMC325	Carcinogen	---	---	---	3	3	0.1	0.6
						MCL	MCL		
Barium §§ Ba	7440393 or 7440-39-3 NIOSH: CA 8370000 SAX: BAH250	Toxic	---	---	---	2,000	2,000	2	5
			NPP	NPP		MCL	MCL		
Bentazon Methyl §§ --- § Basagran	50723-80-3 25057-89-0	Toxic	---	---	---	200	200	---	---
						HA	HA		
Benzene §§ --- § Phene § Benzol § Benzolene § Pyrobenzol § Carbon Oil § SHA 109301 § Coal Naphtha § Motor Benzol § Phenyl hydride § Cyclohexatriene C § Caswell Number 077 § RCRA Waste Number U019 § EPA Pesticide Chemical Code 008801 § NCI C55276	71432 or 71-43-2 NIOSH: CY 1400000 SAX: BBL250	Carcinogen	---	---	5.2	5	5	N/A	0.5
						MCL	MCL		
Benzidine §§ --- § p,p'-Bianiline § 4,4'-Bianiline § 4,4'-Biphenyldiamine § p,p'-Diaminobiphenyl § 4,4'-Diaminodiphenyl § RCRA Waste Number U021 § 4,4'-Biphenylenediamine § 4,4'- Diphenylenediamine § Biphenyl, 4,4'-Diamino- § 4,4'-Diamino-1,1'-Biphenyl § (1,1'-Biphenyl)- 4,4'-Diamine § NCI C03361	92875 or 92-87-5 NIOSH: DC 9625000 SAX: BBX000	Carcinogen	---	---	87.5	0.00086	0.00086	N/A	20
						PP	PP		

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Benzo(g,h,i)perylene (PAH) § 1,12-Benzoperylene § 1,12-Benzperylene § Benzo(ghi)Perylene	191242 or 191-24-2 NIOSH: DI 6200500 SAX: BCR000	Toxic	---	---	30	---	---	0.076	10
Benzo[a]Pyrene (PAH) §§ --- § BaP § 3,4-BP § Benz(a)Pyrene § Benzo-a-Pyrene § 3,4-Benzpyrene § 6,7-Benzopyrene § 3,4-Benzopyrene § 3,4-Benz(a)Pyrene § Benzo(d,e,f)Chrysene	50328 or 50-32-8 NIOSH: DJ 3675000 SAX: BCS750	Carcinogen	---	---	30	0.038  PP	0.05  HA	N/A	0.10
Benzo[b]Fluoranthene (PAH) §§ --- § B(b)F § Benzo(b)Fluoranthene § Benzo(e)Fluoranthene § 2,3-Benzfluoranthene § 3,4-Benzfluoranthene § 3,4-Benzofluoranthene § 2,3-Benzofluoranthene § 2,3-Benzofluoranthrene § Benz(e)Acephanthrylene § 3,4-Benz(e)Acephanthrylene	205992 or 205-99-2 NIOSH: CU 1400000 SAX: BAW250	Carcinogen	---	---	30	0.038  PP	0.5 (30)  HA	N/A	0.10
Benzo[k]Fluoranthene (PAH) §§ --- § Benzo(k)Fluoranthene § 8,9-Benzofluoranthene § Dibenzo(b,jk)Fluorene § 2,3,1'8'- Binaphthylene § 11,12-Benzofluoranthene § 11,12-Benzo(k)Fluoranthene	207089 or 207-08-9 NIOSH: DF 6350000 SAX: BCJ750	Carcinogen	---	---	30	0.038  PP	5 (30)  HA	N/A	0.10
Benz[a]anthracene (PAH) §§ --- § Tetrathene § Benzanthracene § Benzoanthracene § Naphthanthracene § 1,2-Benzanthrene § Benz(a)Anthracene § Benzo(a)Anthracene § 1,2-Benzanthracene § Benzo(b)Phenanthrene § 1,2-Benzoanthracene § Benzanthracene, 1,2- § 1,2-Benz(a)Anthracene § 2,3-Benzophenanthrene § RCRA Waste Number U018	56553 or 56-55-3 NIOSH: CV 9275000 SAX: BBC250	Carcinogen	---	---	30	0.038  PP	0.5 (30)  HA	N/A	0.10
Beryllium §§ Be § Beryllium-9 § Glucinum § RCRA Waste Number P015	7440417 or 7440-41-7 NIOSH: DS 1750000 SAX: BFO750	Carcinogen	---	---	19	4  MCL	4  MCL	N/A	1
Beta Emitters (11) §§ --- § Gross Beta	Multiple	Carcinogen/ Radioactive	---	---	---	0.4 mrem /yr  HA	0.4 mrem /yr  HA	N/A	---
Beta-Chloronaphthalene §§ 2-Chloronaphthalene § β-Chloronaphthalene § Naphthalene, 2-Chloro- § RCRA Waste Number U047	91587 or 91-58-7 NIOSH: QJ 2275000 SAX: CJA000	Toxic	---	---	202	1,000  PP	1,000  PP	0.94	10

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
beta-Hexachlorocyclohexane §§ --- § β-BHC § beta-BHC § HCH-beta § beta-HCH § β-Lindane § beta-Lindane § beta-Hexachlorobenzene § β Hexachlorocyclohexane § Hexachlorocyclohexane-beta § Hexachlorocyclohexane, beta- § trans-alpha-Benzenehexachloride § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, beta- § 1-alpha,2-beta,3-alpha,4-beta,5-alpha,6-beta- Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, (1-alpha, 2-beta, 3-alpha, 4- beta, 5-alpha, 6-beta)- § Benzenehexachloride, trans-alpha- § beta-1,2,3,4,5,6- Hexachlorocyclohexane	319857 or 319-85-7 NIOSH: GV 4375000 SAX: BBR000	Carcinogen	---	---	130	0.091          PP	0.091          PP	N/A	0.1
Bis(2-Chloroisopropyl) Ether §§ --- § DCIP § NCI C50044 § RCRA Waste Number U027 § Dichlorodiisopropyl Ether § 2,2'-Oxybis(1-Chloropropane) § Bis (2-Chloroisopropyl) ether § Propane, 2,2'-Oxybis(2-Chloro- § Propane, 2,2'-Oxybis[1-Chloro- § 2,2'-Dichlorodiisopropyl Ether § Dichlorodiisopropyl Ether (DOT) § Bis(2-Chloro-1-Methylethyl) Ether	108601 or 108-60-1 NIOSH: KN 1750000 SAX: BII250 39638-32-9	Toxic	---	---	2.47	1,400          PP	1,400          PP	0.8	10
Bis(2-Chloroethoxy)Methane §§ --- § Bis(B-Chloroethyl)Formal	111911 or 111-91-1 NIOSH: PA 3675000 SAX: BID750	Toxic	---	---	0.64	---	---	0.5	---
Bis(Chloroethyl)Ether §§ --- § BCEE § DCEE § Clorex § Chlorex § Chloroethyl Ether § Dichloroethyl Ether § Dichloroethyl Oxide § RCRA Waste Number U025 § Bis(Chloroethyl) Ether § Di(2-Chloroethyl) Ether § Bis (Chloroethyl) Ether § Bis(2- Chloroethyl) Ether § Bis(B-Chloroethyl) Ether § β,β'-Dichloroethyl Ether § 2,2'-Dichloroethyl Ether § Bis (2-Chloroethyl) Ether § 1,1'-Oxybis(2-Chloro)Ethane § Ethane, 1,1'-Oxybis[2-Chloro- § beta,beta'-Dichloroethyl Ether § 1-Chloro-2-(beta- Chloroethoxy)Ethane	111444 or 111-44-4 NIOSH: KN 0875000 SAX: BIC750	Carcinogen	---	---	6.9	0.30          PP	0.30          PP	N/A	10
Bis(Chloromethyl)Ether §§ --- § BCME § bis-CME § Chloromethyl Ether § Oxybis(Chloromethane) § RCRA Waste Number P016 § Bis (Chloromethyl) Ether § sym-Dichlorodimethyl Ether § 1,1'-Dichlorodimethyl Ether § Dimethyl-1,1'-Dichloroether § Chloro(Chloromethoxy) Methane	542881 or 542-88-1 NIOSH: 1575000 SAX: BIK000	Carcinogen	---	---	63	0.0010          NPP	0.0010          NPP	N/A	10
Bromacil §§ Hyvar § ---	314-40-9	Carcinogen	---	---	---	90          HA	90          HA	N/A	0.5
Bromodichloromethane (HM) §§ Dichlorobromomethane § BDCM § NCI C55243 § Methane, bromodichloro- § Dichloromonobromomethane § Monobromodichloromethane	75274 or 75-27-4 NIOSH: PA 5310000 SAX: BND500	Carcinogen	---	---	3.75	5.5          PP	10          HA	N/A	0.5

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Bromoform (HM) §§ Tribromomethane § NCI C55130 § Methane, Tribromo- § Methenyl Tribromide § RCRA Waste Number U225	75252 or 75-25-2 NIOSH: PB 5600000 SAX: BNL000	Carcinogen	---	---	3.75	43  PP	80  HA	N/A	0.5
Bromomethane (HM) §§ Methyl Bromide § EDCO § Celfume § Dowfume § Methogas § SHA 053201 § Brom-O-Sol § Brom-O-Gas § Terr-O-Gas § Halon 1001 § Terr-O-Cide § Bromo-O-Gas § Bromo Methane § Methylbromide § Methyl Bromide § Methane, Bromo- § Monobromomethane § RCRA Waste Number U029	74839 or 74-83-9 NIOSH: PA 4900000 SAX: BNM500	Toxic	---	---	3.75	47  PP	10  HA	0.11	0.5
Bromoxynil	1689-84-9	Carcinogen	---	---	---	3.4 HA	3.4 HA	---	---
Butyl Benzyl Phthalate §§ --- § BBP § Sicol 160 § Unimoll BB § Palatinol BB § Santicizer 160 § Butylbenzylphthalate § Butylbenzyl Phthalate § Benzyl Butyl Phthalate § n-Benzyl Butyl Phthalate § Benzyl n-Butyl Phthalate § Phthalic Acid, Benzyl Butyl Ester § Butyl Phenylmethyl 1,2-Benzenedicarboxylate § 1,2-Benzenedicarboxylic Acid, Butyl Phenylmethyl	85687 or 85-68-7 NIOSH: TH 9990000 SAX: BEC500	Toxic with BCF >300	---	---	414	1,500  PP	1,500  PP	N/A	10
Butylate §§ Sutan § ---	2008-41-5	Carcinogen	---	---	---	400  HA	400  HA	N/A	---
Cadmium §§ Cd § C.I. 77180 § Colloidal Cadmium	7440439 or 7440-43-9 NIOSH: EU 9800000 SAX: CAD000	Toxic	0.52@25 mg/l hardness (12) PP	0.097@25 mg/l hardness (12) PP	64	5  MCL	5  MCL	0.1	0.08
Carbaryl §§ Sevin § ---	63-25-2	Toxic	---	---	---	700  HA	700  HA	2	---
Carbofuran §§ --- § Yaltox § Euradan § Furadan § Curaterr § Furacarb § SHA 090601 § Niagra 10242 § 2,2-Dimethyl-7-Coumaranyl N-Methylcarbamate § 2,2-Dimethyl-2,3-Dihydro- 7-Benzofuranyl N-Methylcarbamate § Carbamic Acid, Methyl-, 2,3-Dihydro-2,2-Dimethyl-7- Benzofuranyl Ester	1563662 or 1563-66-2 NIOSH: FB 9450000 SAX: FPE000	Toxic	---	---	---	40  MCL	40  MCL	1	1
Carbon Tetrachloride §§ Freon 10 § R 10 § Univerm § Tetrasol § Fasciolin § Flukoids § Necatorina § Necatorine § Halon 104 § Tetraform § Carbon Tet § Benzinoform § Carbon Chloride § Perchloromethane § Tetrachloromethane § Methane Tetrachloroide § RCRA Waste Number U211	56235 or 56-23-5 NIOSH: FG 4900000 SAX: CBY000	Carcinogen	---	---	18.75	2.3  PP	3  HA	N/A	0.5

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Carboxin §§ Vitavax § ---	5234-68-4	Toxic	---	---	---	700 HA	700 HA	1	---
Chloramben §§ Vegiben § ---	133-90-4	Toxic	---	---	---	100 HA	100 HA	---	---
Chlordane §§ Termex § Belt § Niran § Dowchlor § Chlortox § Chlordan § Clordano § Chlor Kil § Toxichlor § Octa-Klor § Ortho-Klor § SHA 058201 § Gold Crest C-100 § Chlordane, Technical § RCRA Waste Number U036 § Octachloro-4, 7-Methanohydroindane § Octachlorodihydrodicyclopentadiene § 1,2,4,5,6,7,8,8-Octachloro-3a,4,7,7a-Hexahydro § Octachloro-4,7-Methanotetrahydroindane-4,7-Methylene Indane § 4,7-Methanoindan, 1,2,4,5,6,7,8,8-Octachloro-3a,4,7,7a-tetrahydro- § 1,2,4,5,6,7,8,8-Octachloro-2,3,3a,4,7,7a-Hexahydro-4,7-Methano-Indene § 4,7-Methano-1H-Indene 1,2,4,5,6,7,8,8-Octachloro-2,3,3a,4,7,7a-Hexahydro-	57749 or 57-74-9 NIOSH: PB 9800000 SAX: CDR750	Carcinogen	2.4 PP	0.0043 PP	14,100	0.0080 PP	1 HA	N/A	0.4
Chlorimuron Ethyl §§ Classic § ---	90982-32-4	Toxic	---	---	---	700 HA	700 HA	0.1	---
Chlorine, total residual §§ Cl § Bertholite § Chlorine, molecular § Molecular Chlorine	7782505 or 7782-50-5 NIOSH: FO 2100000 SAX: CDV750	Toxic	19 NPP	11 NPP	---	4,000 MCL	4,000 MCL	---	---
Chlorobenzene §§ Monochlorobenzene § MCB § Chlorobenzol § Chlorbenzene § Phenyl Chloride § Benzene Chloride § Benzene, Chloro- § Monochlorbenzene § RCRA Waste Number U037 § NCI C54886	108907 or 108-90-7 NIOSH: CZ 0175000 SAX: BBM750	Toxic	---	---	10.3	100 MCL	100 MCL	0.5	0.5
Chloroethane §§ Ethyl Chloride § Aethylis § Aethylis Chloridum § Anodynon § Chelen § Chlorethyl § Chloridum § Chloryl § Chloryl Anesthetic § Ether Chloratus § Ether Hydrochloric § Ether Muriatic § Hydrochloric Ether § Kelene § Monochlorethane § Muriatic Ether § Narcotile § NCI C06224	75003 or 75-00-3 NIOSH: KH 7525000 SAX: EHH000	Toxic	---	---	---	---	---	0.52	---
Chloroform (HM) §§ Trichloromethane § TCM § Freon 20 § Trichloroform § R-20 Refrigerant § Methenyl Chloride § Formyl Trichloride § Methyl Trichloride § Methane Trichloride § Methane, Trichloro- § Methenyl Trichloride § RCRA Waste Number U044 § NCI CO2686	67663 or 67-66-3 NIOSH: FS 9100000 SAX: CHJ500	Carcinogen	---	---	3.75	57 PP	70 HA	N/A	0.5
Chlorophenol, 2- §§ Phenol, 2-Chloro § o-Chlorophenol § 2-Chlorophenol § Phenol, o-Chloro- § RCRA Waste Number U048	95578 or 95-57-8 NIOSH: SK 2625000 SAX: CJK250	Toxic	---	---	134	81 PP	81 PP	0.3	10

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Chlorophenyl Phenyl Ether, 4- §§ --- § 4- Chlorophenyl Phenyl Ether	7005723 or 7005-72-3 NIOSH: --- SAX: ---	Toxic with BCF >300	---	---	1,200	---	---	---	---
Chlorsulfuron §§ Glean §§ Telar	64902-72-3	Toxic	---	---	---	1750 HA	1750 HA	---	---
Chlorothalonil §§ Bravo § ---	1897-45-6	Carcinogen	---	---	---	15 HA	15 HA	N/A	---
Chlorpyrifos §§ Dursban § Ethion § Brodan § Eradex § Lorsban § Pyrinex § NA 2783 § Piridane § DowCo 179 § SHA 059101 § Ethion, dry § Chlorothalonil § Chlorpyrifos-Ethyl § O,O-Diethyl O-3,5,6-Trichloro-2-Pyridyl Phosphorothioate § Phosphorothioic Acid, O,O- Diethyl O-(3,5,6-Trichloro-2-Pyridyl) Ester	2921882 or 2921-88-2 NIOSH: TF 6300000 SAX: DYE000	Toxic	0.083  NPP	0.041  NPP	---	20  HA	20  HA	0.25	1
Chromium, all forms §§ Cr § Chrome	7440473 or 7440-47-3 NIOSH: GB 4200000 SAX: CMI750	Toxic	---	---	---	100 MCL	100 MCL	1	1
Chromium, hexavalent §§ Chromium (VI) § ---	18540299 or 18540-29-9 NIOSH: --- SAX: ---	Toxic	16  PP	11  PP	16	---	---	---	5
Chromium, trivalent §§ Chromium (III) § ---	16065831 or 16065-83-1 NIOSH: --- SAX: ---	Toxic	579@25mg/l  hardness(12) PP	27.7 @ 25 mg/l  hardness (12) PP	16	---	---	1	---
Chrysene (PAH) §§ --- § Benz(a)Phenanthrene § Benzo(a)Phenanthrene § 1,2-Benzphenanthrene § 1,2-Benzophenanthrene § RCRA Waste Number U050 § 1,2,5,6-Dibenzonaphthalene	218019 or 218-01-9 NIOSH: GC0700000 SAX: CML810	Carcinogen	---	---	30	0.038 PP	50 (30) HA	N/A	0.10
cis-1,2-Dichloroethylene §§ --- § 1,2-Dichloroethylene § cis-Dichloroethylene § cis-1,2-Dichloroethene § 1,2,cis-Dichloroethylene § ethylene, 1,2-Dichloro-, (z)-	156592 or 156-59-2 NIOSH: KV 9420000 SAX: DFI200	Toxic	---	---	---	70 MCL	70 MCL	0.002	0.5
cis-1,3-Dichloropropene §§ Telone II § 1,3-Dichloropropene § 1,3-Dichloropropylene § (Z)-1,3-Dichloropropene § cis-1,3-Dichloropropylene § 1-Propene, 1,3-Dichloro-, (Z)-	10061015 or 10061-01-5 NIOSH: UC 8325000 SAX: DGH200	Carcinogen	---	---	1.91	3.4 PP	4 HA	N/A	0.5
Clopyralid §§ Stinger § ---	1702-17-6	Toxic	---	---	---	3,500 I	3,500 I	1	---

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Color §§ ---	N/A	Harmful	---	---	---	(18)	(18)	---	5 UNITS
Copper §§ Cu § Allbri Natural Copper § ANAC 110 § Arwood Copper § Bronze Powder § CDA 101 § CDA 102 § CDA 110 § CDA 122 § C.I. 77400 § C.I. Pigment Metal 2 § Copper Bronze § 1721 Gold § Gold Bronze § Kafar Copper § M1 (Copper) § M2 (Copper) § OFHC Cu § Raney Copper	7440508 or 7440-50-8 NIOSH: GL 5325000 SAX: CNI000	Toxic	3.79@25mg/l hardness(12)  PP	2.85mg/l @ 25 mg/l hardness (12)  PP	36	1,300  PP	1,300  PP	0.5	1
Cyanazine §§ Bladex § ---	21725-46-2	Toxic	---	---	---	1.0  HA	1.0  HA	N/A	---
Cyanide, total §§ --- § Cyanide § Isocyanide § RCRA Waste Number P030 § Cyanides, includes soluble salts and complexes	57125 or 57-12-5 NIOSH: GS 7175000 SAX: COI500	Toxic	22  PP	5.2  PP	1	140  PP	200  MCL	---	5
Dacthal §§ DCPA § ---	1861-32-1	Toxic	---	---	---	70  HA	70  HA	0.025	---
Dalapon §§ Revenge § Dalpon § Unipon § Dowpon § Radapon § Basinex § Ded-Weed § Dalacide § Gramevin § Crisapon § Dalpon Sodium § 2,2-Dichloropropionic Acid § SHA 28902, for sodium salt § SHA 28901, for dalapon only Propionic Acid, 2,2-Dichloro- § Sodium 2,2-Dichloropropionate § a-Dichloropropionic Acid § a,a-Dichloropropionic Acid § alpha-alpha- Dichloropropionic Acid	75990 or 75-99-0 NIOSH: UF 0690000 SAX: DGI400	Toxic	---	---	---	200  MCL	200  MCL	1.3	3
Dalapon, sodium salt §§ Dalpon § Unipon § Dowpon § Radapon § Revenge § Basinex § Ded-Weed § Dalacide § Gramevin § Crisapon § Dalpon Sodium § Sodium Dalapon § 2,2-Dichloropropionic Acid § SHA 28902, for sodium salt § SHA 28901, for dalapon only § Propionic Acid, 2,2-Dichloro- § Sodium 2,2-Dichloropropionate § alpha-alpha-Dichloropropionic Acid	127208 or 127-20-8 NIOSH: UF 1225000 SAX: DGI600	Toxic	---	---	---	200  MCL	200  MCL	1.3	3
delta-Hexachlorocyclohexane §§ --- § -BHC § delta-BHC § HCH-delta § delta-HCH § -BHC § -Lindane § delta-Lindane § Hexachlorocyclohexane § delta-Benzenehexachloride § Hexachlorocyclohexane-delta § Hexachlorocyclohexane, delta- § Cyclohexane, delta- 1,2,3,4,5,6-Hexachloro- § delta-1,2,3,4,5,6-Hexachlorocyclohexane § 1-alpha,2-alpha,3-alpha, 4- beta,5-alpha,6-beta-Hexachlorocyclohexane § Cyclohexane, delta-1,2,3,4,5,6-Hexachloro-, (1- alpha, 2-alpha, 3-alpha, 4-beta, 5-alpha, 6-beta)-	319868 or 319-86-8 NIOSH: GV 4550000 SAX: BFW500	Carcinogen	---	---	130	---	---	N/A	0.1
						PP	PP		

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Demeton §§ Systox § Bay 10756 § Bayer 8169 § Demox § Diethoxy Thiophosphoric Acid Ester of 2-Ethylmercaptoethanol § O,O-Diethyl 2-Ethylmercaptoethyl Thiophosphate § O,O-Diethyl O(and S)-2-(Ethyl-Thio)Ethyl Phosphorothioate Mixture § E 1059 § ENT 17,295 § Mercaptophos § Systemox § Systox § ULV § Demeton-O + Demeton-S	8065483 or 8065-48-3 NIOSH: TF 3150000 SAX: DAO600	Toxic	---	0.1  NPP	---	1.4  HA	1.4  HA	0.25	---
Di(2-Ethylhexyl)Phthalate (PAE) §§ Bis(2-Ethylhexyl)Phthalate § BEHP § DEHP § Octoil § Fleximel § Flexol DOP § Kodaflex DOP § Ethylhexyl Phthalate § Diethylhexyl Phthalate § 2-Ethylhexyl Phthalate § Di(Ethylhexyl)phthalate § Di(2-Ethylhexyl)phthalate § Bis (2-Ethylhexyl) Phthalate § Bis(2-Ethylhexyl)-1,2-Benzene-Dicarboxylate § 1,2-Benzenedicarboxylic Acid, Bis(2-Ethylhexyl)Ester	117817 or 117-81-7 NIOSH: TI 0350000 SAX: BJS000	Carcinogen	---	---	130	6  MCL	6  MCL	---	6
Di(2-Ethylhexyl)Adipate §§ Hexanedioic Acid § DEHA § BEHA § Bisoflex DOA § Effemoll DOA § Ergoplast AdDO § Flexol A 26 § PX-238 § Reomol DOA § Vestinol OA § Wickenol 158 § Kodaflex DOA § Monoplex DOA § NCI C54386 § Octyl Adipate § Dioctyl Adipate § Di-2-Ethylhexyl Adipate § Di (2-Ethylhexyl) Adipate § Bis(2-Ethylhexyl) Adipate § Adipic Acid, Bis(2-Ethylhexyl) Ester § Hexanedioic Acid, Bis(2-Ethylhexyl) Ester	103231 or 103-23-1 NIOSH: AU 9700000 SAX: AEO000	Carcinogen	---	---	---	300  HA	300  HA	N/A	6
Diazinon §§ ---	333-41-5	Toxic	---	---	---	0.6 HA	0.6 HA	0.25	---
Dibenz[a,h]Anthracene (PAH) §§ --- § DBA § DB(a,h)A § Dibenz(a,h)Anthracene § RCRA Waste Number U063 § Dibenzo(a,h)anthracene § 1,2:5,6-Benzanthracene § Dibenzo (a,h) Anthracene § 1,2,5,6-Dibenzanthracene § 1,2:5,6-Dibenz(a)Anthracene	53703 or 53-70-3 NIOSH: HN 2625000 SAX: DCT400	Carcinogen	---	---	30	0.038  PP	0.05 (30)  HA	N/A	0.10
Dibromochloromethane (THM) §§ Monochlorodibromomethane § CDBM § NCI C55254 § Chlorodibromomethane § Methane, Dibromochloro-	124481 or 124-48-1 NIOSH: PA 6360000 SAX: CFK500	Carcinogen	---	---	3.75	4.0 PP	4.0 PP	N/A	0.5
Dibromoethane, 1,2- §§ Ethylene Dibromide § DBE § EDB § Nephis § Kopfume § Celmid § E-D-Bee § Soilfume § Bromofume § Dowfume 40 § SHA 042002 § Pestmaster § Soilbrom-40 § Dibromoethane § Ethylene Bromide § Glycol Dibromide § 1,2-Dibromoethane § 1,2-Ethylene Dibromide § RCRA Waste Number U067	106934 or 106-93-4 NIOSH: KH 9275000 SAX: EIY500	Carcinogen	---	---	---	0.004  HA	0.004  HA	N/A	0.5

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Dibutyl Phthalate §§ --- § DPB § Celluflex DPB § Elaol § Hexaplas M/B § Palatinol C § Polycizer DBP § PX 104 § Staflex DBP § Witcizer § SHA 028001 § Butylphthalate § N-Butylphthalate § Di-n-Butylphthalate § Di-n-Butylphthalate § Dibutyl-o-Phthalate § Di-n-Butyl Phthalate § RCRA Waste Number U069 § Phthalic Acid Dibutyl Ester § Dibutyl 1,2-Benzene Dicarboxylate § 1,2-Benzenedicarboxylic Acid Dibutyl Ester § 1,2-Benzenedicarboxylic Acid, Dibutyl Ester § Benzene-o-Dicarboxylic Acid Di-n-Butyl Ester	84742 or 84-74-2 NIOSH: TI 0875000 SAX: DEH200	Toxic	---	---	89	2,000	2,000	0.25	10
Dicamba §§ Banvel § ---	1918-00-9	Toxic	---	---	---	200	200	0.28	---
Dichlorobenzene, 1,2- §§ DCB § ODB § ODCB § Dizene § Cloroben § Chloroben § Chloroden § Termitkil § Dilatin DB § Dowtherm E § Dilantin DB § o-Dichlorobenzene § Orthodichlorobenzene § ortho-Dichlorobenzene § Special Termite Fluid § Benzene, 1,2-Dichloro- § RCRA Waste Number U070	95501 or 95-50-1 NIOSH: CZ 4500000 SAX: DEP600	Toxic	---	---	55.6	420	600	0.02	10
Dichlorobenzene, 1,3- §§ Benzene, 1,3-Dichloro § M-Dichlorobenzene § m-Dichlorobenzene § meta-Dichlorobenzene § 1,3-Dichlorobenzene-	541731 or 541-73-1 NIOSH: CZ 4499000 SAX: DEP699	Toxic	---	---	55.6	320	600	0.006	10
Dichlorobenzene, 1,4- §§ Benzene, 1,4-Dichloro- § 1,4-Dichlorobenzene § PDB § PDCB § NCI C54955 § Evola § Paradi § Paradow § Persia-Perazol § Paracide § Parazene § Paramoth § Santochlor § Paranuggets § di-Chloricide § Para Chrystals § p-Dichlorobenzene § Caswell Number 632 § Paradichlorobenzene § para-Dichlorobenzene- § RCRA Waste Number U070 § RCRA Waste Number U071 § RCRA Waste Number U072 § p-Chlorophenyl Chloride § EPA Pesticide Chemical Code 061501	106467 or 106-46-7 NIOSH: CZ 4550000 SAX: DEP800	Carcinogen	---	---	55.6	75	75	N/A	10
Dichlorobenzidine, 3,3'- §§ DCB § C.I. 23060 § Curithane C126 § Dichlorobenzidine § o,o'-Dichlorobenzidine § Dichlorobenzidine Base § Benzidine, 3,3'-Dichloro- § RCRA Waste Number U073 § 3,3'-Dichloro-4,4'-Diaminodiphenyl § 3,3'-Dichloro-(1,1'-Biphenyl)-4,4'-Diamine § 1,1'-Biphenyl-4,4'-Diamine, 3,3'-Dichloro-	91941 or 91-94-1 NIOSH: DD 0524000 SAX: DEQ400	Carcinogen	---	---	312	0.21	0.21	N/A	20
Dichlorodifluoromethane (HM) §§ Freon 12 § F 12 § R 12 § FC 12 § Halon § CFC-12 § Arcton 6 § Electro-CF 12 § Eskimon 12 § Frigen 12 § Gentron 12 § Isceon 122 § Kaiser Chemicals 12 § Ledon 12 § Ucon 12 § Propellant 12 § Refrigerant 12 § Fluorcarbon-12 § RCRA Waste Number U075 § Difluorodichloromethane § Methane, dichlorodifluoro-	75718 or 75-71-8 NIOSH: PA 8200000 SAX: DFA600	Toxic	---	---	3.75	1,000	1,000	0.05	0.5

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Dichloroethane, 1,2- §§ Ethylene Chloride § EDC § Brocide § 1,2-DCE § NCI C00511 § Dutch Oil § Dutch Liquid § Dichloremulsion § Di-Chlor-Mulsion § 1,2-Bichlorethane § 1,2-Dichlorethane § Ethane Dichloride § 1,2-Bichloroethane § Ethylene Dichloride § 1,2-Dichloroethane § Ethane, 1,2-Dichloro- § RCRA Waste Number U077§ 1,2-Ethylene Dichloride § alpha,beta-Dichloroethane	107062 or 107-06-2 NIOSH: KI 0525000 SAX: DFF900	Carcinogen	---	---	1.2	3.8	4	N/A	0.5
Dichloroethene, 1,1- §§ Vinylidene Chloride § VDC § 1,1-DCE § Sconatex § NCI C54262 § 1,1-Dichloroethene § Vinylidene Chloride § 1,1-Dichloroethylene § Vinylidene Dichloride § Ethene, 1,1-Dichloro- § Vinylidene Chloride II § RCRA Waste Number U078 § Dichloroethylene, 1,1- § Ethylene, 1,1-Dichloro-	75354 or 75-35-4 NIOSH: KV 9275000 SAX: DFI000	Carcinogen	---	---	5.6	0.57	0.6	N/A	0.5
Dichloromethane (HM) §§ Methylene Chloride § R 30 § DCM § Freon 30 § Aerothene MM § NCI C50102 § Solmethine § Methylene Chloride § Methane Dichloride § Methane, Dichloro- § 1,1-Dichloromethane § Methylene Bichloride § Methylene Dichloride	75092 or 75-09-2 NIOSH: PA 8050000 SAX: MDR000	Carcinogen	---	---	0.9	5	5	N/A	0.5
Dichlorophenol, 2,4- §§ Phenol, 2,4-Dichloro § DCP § 2,4-DCP § NCI C55345 § 2,4-Dichlorophenol § RCRA Waste Number U081	120832 or 120-83-2 NIOSH: SK 8575000 SAX: DFX800	Toxic	---	---	40.7	77	77	10	10
Dichlorophenoxyacetic Acid, 2,4- §§ Dichlorophenoxyacetic Acid § 2,4-D § Salvo § Phenox § Farmco § Amidox § Miracle § Agrotect § Weedtrol § Herbidal § Ded-Weed § Lawn-Keep § Fernimine § Crop Rider § Aqua-Kleen § 2,4-Dichlorophenoxy Acetic Acid § Dichlorophenoxyacetic Acid, 2,4- § Acetic Acid, (2,4-Dichlorophenoxy)- § 2,4-Dichlorophenoxyacetic Acid, salts and esters	94757 or 94-75-7 NIOSH: AG 6825000 SAX: DFY600	Toxic	---	---	---	70	70	0.02	1
Dichloropropane, 1,2- §§ Propylene Chloride § 1,2-Dichloropropane § NCI C55141 § Propylene Dichloride § Caswell Number 324 § Propane, 1,2-Dichloro- § a,b-Propylene Dichloride § alpha,beta-Dichloropropane § RCRA Waste Number U083 § EPA Pesticide Chemical Code 029002	78875 or 78-87-5 NIOSH: TX 9625000 SAX: DGF600	Carcinogen	---	---	4.11	5.0	5		0.5
Dichloropropene, 1,3- §§ Telone II § Telone § NCI C03985 § Vidden D § Dichloropropene § a-Chloroallyl Chloride § g- Chloroallyl Chloride § 1,3-Dichloropropene § 1,3-Dichloropropylene § 1,3-Dichloro-2- Propene § Propene, 1,3-Dichloro- § Telone II Soil Fumigant § 3-Chloropropenyl Chloride § alpha,gamma-Dichloropropylene	542756 or 542-75-6 NIOSH: UC 8310000 SAX: CEF750	Carcinogen	---	---	1.91	3.4	4	N/A	0.5

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
<b>Dieldrin</b> §§ --- § Alvit § Quintox § Octalox § Illoxol § Dieldrex § NCI C00124 § Dieldrite § SHA 045001 § RCRA Waste Number P037 § 1,4:5,8-Dimethanonaphthalene § Hexachloroepoxyoctahydro-endo,exo-Dimethanonaphthalene § 3,4,5,6,9,9-Hexachloro- 1a,2,2a,3,6,6a,7,7a-Octahydro-2,7:3,6-Dimethanonaphth(2,3-b)Oxirene § 2,7:3,6- Dimethanonaphth(2,3-b)Oxirene, 3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-Octahydro- § 1,2,3,4,10,10-Hexachloro-6,7-Epoxy-1,4,4a,5,6,7,8,8a-Octahydro-Endo, Exo-1,4:5,8- Dimethanonaphthalene	60571 or 60-57-1 NIOSH: IO 1750000 SAX: DHB400	Carcinogen	0.24	0.056	4,670	0.00052	0.02	N/A	0.02
			PP	PP		PP	HA		
<b>Diethyl Phthalate</b> §§ --- § Anozol § Neantine § Solvanol § NCI C60048 § Placidole E § Ethyl Phthalate § Diethylphthalate § Diethyl-o-Phthalate § RCRA Waste Number U088 § 1,2-Benzenedicarboxylic Acid, Diethyl Ester	84662 or 84-66-2 NIOSH: TI 1050000 SAX: DJX000	Toxic	---	---	73	17,000	17,000	0.25	10
						PP	PP		
<b>Dimethoate</b> §§ ---	60-51-5	Toxic	---	---	---	7	7	---	---
						HA	HA		
<b>Dimethrin</b> §§ ---	70-38-2	Toxic	---	---	---	2,000	2,000	---	---
						HA	HA		
<b>Dimethyl Phthalate</b> §§ --- § DMP § NTM § ENT 262 § Mipax § Avolin § Fermine § Solvanom § Solvarone § Palatinol M § Methyl Phthalate § Dimethylphthalate § Phthalic Acid, Dimethyl Ester § Dimethyl Benzene-o-Dicarboxylate § Dimethyl 1,2-Benzenedicarboxylate § 1,2- Benzenedicarboxylic Acid, Dimethyl Ester	131113 or 131-11-3 NIOSH: TI 1575000 SAX: DTR200	Toxic	---	---	36	270,000	270,000	0.04	10
						PP	PP		
<b>Dimethylphenol, 2,4-</b> §§ Phenol, 2,4-Dimethyl- § m-Xylenol § 2,4-Xylenol § 4,6-Dimethylphenol § Caswell Number 907A § 2,4-Dimethyl Phenol § RCRA Waste Number U101 § 1-Hydroxy-2,4-Dimethylbenzene § 4-Hydroxy-1,3-Dimethylbenzene § EPA Pesticide Chemical Code 086804	105679 or 105-67-9 NIOSH: ZE 5600000 SAX: XKJ500	Toxic	---	---	93.8	380	380	10	10
						PP	PP		
<b>Dinitro-o-Cresol, 4,6-</b> §§ Dinitrocresol § Detal § Sinox § DNOC § Arborol § Capsine § Dinitrol § Trifocide § Antinonin § Winterwash § Dinitro-o-Cresol § Caswell Number 390 § 2,4-Dinitro-o-Cresol § 4,6-Dinitro-o-Cresol § o-Cresol, 4,6-dinitro- § RCRA Waste Number P047 § 2-Methyl-4,6-Dinitrophenol § 4,6-Dinitro-2-Methylphenol § 2,4-Dinitro-6-Methylphenol § 3,5-Dinitro-2-Hydroxytoluene § Phenol, 2-Methyl-4,6-Dinitro-	534521 or 534-52-1 NIOSH: GO 9625000 SAX: DUT400	Toxic	---	---	5.5	13	13	---	50
						PP	PP		
<b>Dinitrophenol, 2,4-</b> §§ Phenol, 2,4-Dinitro § Nitro § Kleenup § Aldifen § 2,4-Dinitrophenol § 2,4-DNP § Chemox PE § Maroxol-50 § Solfo Black B § alpha-Dinitrophenol § Dinitrophenol, 2,4- § Tertrosulphur Black PB § RCRA Waste Number P048 § 1-Hydroxy-2,4-Dinitrobenzene	51285 or 51-28-5 NIOSH: SL 2800000 SAX: DUZ000	Toxic	---	---	1.5	69	69	13	50
						PP	PP		

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Dinitrotoluene, 2,4- §§ Toluene, 2,4-Dinitro § 2,4-DNT § NCI C01865 § 2,4-Dinitrotoluol - § RCRA Waste Number U105 § Benzene, 1-Methyl-2,4-Dinitro-	121142 or 121-14-2 NIOSH: XT 1575000 SAX: DVH000	Carcinogen	---	---	3.8	0.5 HA	0.5 HA	N/A	10
Dinitotoluene, 2,6- §§ Toluene-dinitro § 2,4-DNT § Methyl-1,3-Dinitrobenzene § RCRA Waste Number U106	606202 or 606-20-2 NIOSH: XT 1925000 SAX: DVH400	Carcinogen	---	---	---	0.5 HA	0.5 HA	0.01	---
Dinoseb §§ --- § DNBP § DBNF § Aretit § Basanite § Caldon § Sparic § Kiloseb § Spurge § Premerge § Dinitro § Hel-Fire § SHA 037505 § Dow General § Sinox General § RCRA Waste Number P020 § Dow General Weed Killer § Vertac General Weed Killer § 2-sec-Butyl-4,6-Dinitrophenol § Dinitro-Ortho-Sec-Butyl Phenol § 2-(1-Methylpropyl)-4,6-Dinitrophenol § 4,6-Dinitro-2-(1-Methyl-n-Propyl)Phenol § Phenol, 2-(1-Methylpropyl)-4,6-Dinitro-	88857 or 88-85-7 NIOSH: SJ 9800000 SAX: BRE500	Toxic	---	---	---	7 MCL	7 MCL	0.19	1.5
Dioxin --Chlorinated Dibenzo-p-dioxins and Chlorinated Dibenzofurans Dioxins and congeners expressed as equivalent concentration of 2,3,7,8, Tetrochlorodibenzo-p-dioxin (TCDD) based on the method described in Table 5, page 787, of van den Berg, M; Bosveld, ATC; et al. (1998) Toxicity equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environ Health Perspect 106(12):775- 792.	Various	Carcinogen	---	---	5,000	0.0000005 (10) PP	0.000002 (10) HA	N/A	footnote 10
Diphenamid §§ ---	957-51-7	Carcinogen	---	---	---	200 HA	200 HA	N/A	---
Diphenylhydrazine, 1,2- §§ Hydrazine, 1,2-Diphenyl- § Hydrazobenzene § NCI C01854 § N,N'-Bianiline § Benzene, Hydrazodi- § RCRA Waste Number U109 § (sym)-Diphenylhydrazine § 1,2-Diphenylhydrazine	122667 or 122-66-7 NIOSH: MW 2625000 SAX: HHG000	Carcinogen	---	---	24.9	0.36 PP	0.36 PP	N/A	10
Diquat §§ --- § Actor § Feglox § Deiquat § Reglone § Aquacide § Dextrone § Paraquat § Preeglove § SHA 032201 § Weedtrine-D § Diquat Dibromide § Ethylene Dipyridylum Dibromide § 1,1-Ethylene 2,2-Dipyridylum Dibromide § 5,6-Dihydro- Dipyrido(1,2a,1c)Pyrazinium Dibromide § 9,10-Dihydro-8a,10a-Diazoniaphenanthrene(1,1'- Ethylene-2,'-Bipyridylum)Dibromide	85007 or 85-00-7 NIOSH: JM 5690000 SAX: DWX800	Toxic	---	---	---	20 MCL	20 MCL	0.44	10
Disulfoton §§ --- § Disyston	298-04-4	Toxic	---	---	---	0.3 HA	0.3 HA	0.07	---
Diuron §§ --- § Karmex	330-54-1	Toxic	---	---	---	10 HA	10 HA	1	---

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Endosulfan §§ --- § NCI C00566 § Malixv § Ensure § Beosit § Endocel § Thiodan § Cyclodan § Crisulfan § Benzoepin § Thiosulfan § SHA 079401 § Chlorthiepin § RCRA Waste Number P050 § Endosulfan (mixed isomers) § Hexachlorohexahydromethano 2,4,3- Benzodioxathiepin-3-Oxide § 1,4,5,6,7,7-Hexachloro-5-Norbornene-2,3-Dimethanol Cyclic Sulfite § 5-Norbornene-2, 3-Dimethanol, 1,4,5,6,7,7-Hexachloro Cyclic Sulfite § 6,7,8,9,10,10- Hexachloro-1,5,5a,6,9,9a-Hexahydro-6,9-Methano-2,4,3-Benzodioxathiepin-3-Oxide § 6,9- Methano-2,4,3-Benzodioxathiepin, 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-Hexahydro-, 3-Oxide	115297 or 115-29-7 NIOSH: RB 9275000 SAX: BCJ250	Toxic	0.11  PP	0.056  PP	270	110  PP	110  PP	0.014	see Cis and trans isomers
Endosulfan, I §§ --- § Thiodan I § Endosulfan-I § Alpha-Endosulfan § alpha-Endosulfan	959988 or 959-98-8 NIOSH: --- SAX: ---	Toxic	0.22  PP	0.056  PP	270	62  PP	62  PP	---	0.015
Endosulfan, II §§ --- § Thiodan II § Endosulfan-II § Beta-Endosulfan § beta-Endosulfan	33213659 or 33213- 65-9 NIOSH: --- SAX: ---	Toxic	0.22  PP	0.056  PP	270	62  PP	62  PP	0.004	0.024
Endosulfan Sulfate §§ --- § 6,9-Methano-2,3,4-Benzodioxathiepin, 6,7	1031078 or 1031-07-8 NIOSH: --- SAX: ---	Toxic	0.22  PP	0.056  PP	270	62  PP	62  PP	0.05	0.05
Endothal §§ --- § Hydout § Hydrothal-47 § Aquathol § SHA 038901 § Accelerate § Tri-Endothal § Endothal Hydout § RCRA Waste Number P088 § 3,6-Endooxohexahydrophthalic Acid § Phthalic Acid, Hexahydro-3,6-endo-Oxy- § 7-Oxabicyclo(2,2,1)Heptane-2,3-Dicarboxylic Acid § 1,2-Cyclohexanedicarboxylic Acid, 3,6-endo-Epoxy-	145733 or 145-73-3 NIOSH: RN 7875000 SAX: EAR000	Toxic	---  PP	---  PP	---	100  MCL	100  MCL	1	8
Endrin §§ --- § NCI C00157 § Endrex § Mendrin § Nendrin § Hexadrin § SHA 041601 § Compound 269 § RCRA Waste Number P051 § 1,2,3,4,10,10-Hexachloro-6,7-Epoxy- 1,4,4(a)5,6,7,8,8a-Octahydro-endo § 3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-Octahydro-2, 7:3,6-Dimethanonaphth[2,3-b]oxirene § 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-Hexachloro 6,7-Epoxy-1,4,4a,5,6,7,8,8a-Octahydro-Endo,Endo-	72208 or 72-20-8 NIOSH: IO 1575000 SAX: EAT500	Toxic with BCF >300	0.086  PP	0.0036  PP	3,970	0.059  PP	2  MCL	N/A	0.3
Endrin Aldehyde §§ ---	7421934 or 7421-93-4 NIOSH: --- SAX: ---	Toxic with BCF >300	---  PP	---  PP	3,970	0.29  PP	0.29  PP	N/A	0.025
Epichlorohydrin §§ --- § ECH § Epoxy Propane § -Epichlorohydrin § Chloromethyloxirane § RCRA Waste Number U041 § γ-Chloropropyleneoxide § 2-Chloropropylene Oxide § Glycerol Epichlorhydrin § 2,3-Epoxypropyl Chloride § 1-Chlor-2,3-Epoxypropane § 3-Chlor- 1,2-Epoxypropane	106898 or 106-89-8 NIOSH: TX 4900000 SAX: CGN750	Carcinogen	---  PP	---  PP	---	30  HA	30  HA	N/A	---
<i>Escherichia coli</i> (Bacteria)	N/A	Harmful	---	---	---	(13)	Less than 1 (6)	1 per 100ml	1 per 100ml

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Ethylbenzene §§ --- § EB § NCI C56393 § Ethylbenzol § Phenylethane § Ethyl Benzene § Benzene, Ethyl	100414 or 100-41-4 NIOSH: DA 0700000 SAX: EGP500	Toxic	---	---	37.5	530	700	0.002	0.5
Fenamiphos §§ --- § Nemacur	22224-92-6	Toxic	---	---	---	2	2	N/A	---
Fluometuron §§ --- § Flo-Met	2164-17-2	Carcinogen	---	---	---	90	90	N/A	---
Fluoranthene §§ --- § Idryl § Benzo(jk)Fluorene § Benzo(j,k)Fluorene § 1,2-Benzacenaphthene § RCRA Waste Number U120 § 1,2-(1,8-Naphthylene)Benzene § Benzene, 1,2-(1,8-Naphthalenediyl)-	206440 or 206-44-0 NIOSH: LL 4025000 SAX: FDF000	Toxic with BCF >300	---	---	1,150	130	130	N/A	10
Fluorene (PAH) §§ --- § 9H-Fluorene § Diphenylenemethane § o-Biphenylenemethane § 2,2'-Methylenebiphenyl	86737 or 86-73-7 NIOSH: --- SAX: ---	Toxic	---	---	30	1,100	1,100	0.25	0.25
Fluoride §§ Flourine § Fluoride § Fluoride(1-) § Perfluoride § Fluoride Ion § Fluorine, Ion § Soluable § Fluoride § RCRA Waste Number P056 § Hydrofluoric Acid, Ion(1-)	16984488 or 16984-48-8 NIOSH: LM 6290000 SAX: FEX875	Toxic	---	---	---	4,000	4,000	5	100
Fonofos §§ --- § Dyfonate	944-22-9	Toxic	---	---	---	10	10	---	---
Gamma Emitters (11) §§ ---	Multiple	Carcinogen / Radioactive	---	---	---	0.4 mrem /yr MCL	0.4 mrem /yr MCL	N/A	---
gamma-Chlordane §§ --- § Chlordane, beta-Isomer	5103742 or 5103-74-2 NIOSH: --- SAX: ---	Carcinogen	---	---	14,100	0.0080	1	N/A	0.4
gamma-hexachlorocyclohexane §§ Lindane § BHC § -BHC § Gamene § Lintox § Lentox § Hexcide § Aparsin § Agrocide § Afcide § BHC-gamma § gamma-BHC § HCH-gamma § gamma-HCH § Hexachlorocyclohexane § gamma-Hexachlorobenzene § gamma-Benzenehexachloride § gamma-Benzene Hexachloride § Hexachlorocyclohexane-gamma § Hexachlorocyclohexane (gamma) § Benzene Hexachloride-gamma-isomer § gamma-1,2,3,4,5,6-Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, gamma-isomer § 1,2,3,4,5,6-Hexachlorocyclohexane, gamma-isomer § 1-alpha,2-alpha,3-beta,4-alpha, 5-alpha,6-beta-Hexachlorocyclohexane § Cyclohexane, 1,2,3,4,5,6-Hexachloro-, (1-alpha, 2-alpha, 3-beta, 4-alpha, 5-alpha, 6-beta)	58899 or 58-89-9 NIOSH: GV 4900000 SAX: BBQ500	Carcinogen	0.95	---	130	0.2	0.2	N/A	0.1
Gases, dissolved, total-pressure (20) §§ ---	Multiple	Toxic	110% of saturation	---	---	---	---	---	---

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Glyphosate §§ --- § Jury § Honcho § Rattler § Weedoff § Roundup § Glifonox § n-(Phosphonomethyl)-Glycine § Glycine, n-(Phosphonomethyl)- § Glyphosate plus inert ingredients § MON 0573	1071836 or 1071-83-6 NIOSH: MC 1075000 SAX: PHA500	Toxic	---	---	---	700  MCL	700  MCL	6	50
Glyphosate Isopropylamine Salt §§ --- § SHA 103601	38641940 or 38641-94-0 NIOSH: --- SAX: ---	Toxic	---	---	---	700  HA	700  HA	6	50
Guthion §§ --- § DBD § NCI C00066 § Carfene § Gothnion § Azinphos § Crysthion § Gusathion § Bay 17147 § Methylazinphos § Methyl Guthion § Methyl-Guthion § Azinphos-Methyl § Azinphos Methyl § Caswell Number 374 § EPA Pesticide Chemical Code 058001 § o,o-Dimethylphosphorodithioate S-Ester § 3- Mercaptomethyl)-1,2,3-Benzotriazin-4(3H)-One § Benzotriazinedithiophosphoric Acid Dimethoxy Ester § 3-Dimethoxyphosphinotiomethyl-1,2,3-Benzotriazin-4(3H)-One  § Phosphorodithioic Acid, O,O-Dimethyl Ester, S-Ester with 3-(Mercaptomethyl)-1,2,3- Benzotriazin-4(3H)-One	86500 or 86-50-0 NIOSH: TE 1925000 SAX: ASH500	Toxic	---	0.01  NPP	---	---	---	---	---
Heptachlor §§ --- § NCI C00180 § Drinox § Heptamul § Agroceris § Heptagran § SHA 04481 § Rhodiachlor § Velsicol-104 § RCRA Waste Number P059 § 3,4,5,6,7,8,8a- heptachlorodicyclopentadiene § Dicyclopentadiene, 3,4,5,6,7,8,8a-Heptachloro- § 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-Tetrahydro-4,7-Methanol-1H-Indene § 4,7-Methano-1H- Indene, 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-Tetrahydro- § 1(3a),4,5,6,7,8,8-Heptachloro-3a(1),4,7,7a-Tetrahydro-4,7-Methanoindene	76448 or 76-44-8 NIOSH: PC 0700000 SAX: HAR000	Carcinogen	0.52  PP	0.0038  PP	11,200	0.00079  PP	0.08  HA	N/A	0.2
Heptachlor Epoxide §§ --- § HCE § Velsicol 53-CS-17 § Epoxyheptachlor § 1,4,5,6,7,8,8-Heptachloro-2,3-Epoxy- 2,3,3a,4,7,7a-Hexahydro-4,7-Methanoindene § 2,5-Methano-2H-Indeno[1,2b]Oxirene, 2,3,4,5,6,7,7-Heptachloro-1a,1b,5,5a,6,6a-Hexahydro- (alpha, beta, and gamma isomers)	1024573 or 1024-57-3 NIOSH: PB 9450000 SAX: EBW500	Carcinogen	0.26  PP	0.0038  PP	11,200	0.00039  PP	0.04  HA	N/A	0.1
Hexachlorobenzene §§ --- § HCB § Amatin § Smut-Go § Sanocide § Anticarie § Bunt-Cure § Bunt-No-More § Perchlorobenzene § Phenyl Perchloryl § No Bunt Liquid § Julin's Carbon Chloride § Co-op Hexa § Hexa C.B. § Benzene, Hexachloro-	118741 or 118-74-1 NIOSH: DA 2975000 SAX: HCC500	Carcinogen	---	---	8,690	0.0028  PP	0.2  HA	N/A	0.2
Hexachlorobutadiene §§ --- § HCB § Dolan-Pur § Perchlorobutadiene § RCRA Waste Number U128 § 1,3-Hexachlorobutadiene § 1,3-Butadiene, Hexachloro- § 1,1,2,3,4,4-Hexachloro-1,3- Butadiene § 1,3-Butadiene, 1,1,2,3,4,4-Hexachloro-	87683 or 87-68-3 NIOSH: EJ 0700000 SAX: PCF000	Carcinogen	---	---	2.78	4.4  PP	5  HA	N/A	10

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Hexachlorocyclohexane §§ --- § BHC § DBH § HCH § HCCH § HEXA § Hexylan § Hexachlor § Gammexane § Hexachloran § Compound 666 § Benzenhexachloride § Benzene Hexachloride	608731 or 608-73-1 NIOSH: GV 3150000 SAX: BBP750	Carcinogen	---	---	130	0.039	0.039	N/A	0.1
Hexachlorocyclopentadiene §§ --- § HEX § HCP § PCL § C-56 § HCCPD § NCI C55607 § Hexachloropentadiene § RCRA Waste Number U130 § Perchlorocyclopentadiene § 1,3-Cyclopentadiene, 1,2,3,4,5,5-Hexachloro-	77474 or 77-47-4 NIOSH: GY 1225000 SAX: HCE500	Toxic	---	---	4.34	40	50	1	5
Hexachloroethane §§ --- § Avlotane § Distokal § Distopan § Distopin § Egitol § Falkitol § Fasciolin § NCI C04604 § Phenohep § Mottenhexe § Perchloroethane § Hexachloroethylene § Ethane, Hexachloro- § Carbon Hexachloride § Ethane Hexachloride § Ethylene Hexachloride § RCRA Waste Number U131 § 1,1,1,2,2,2- Hexachloroethane	67721 or 67-72-1 NIOSH: KI 4025000 SAX: HCI000	Carcinogen	---	---	86.9	14	30	N/A	10
Hexazinone §§ ---	51235-04-2	Toxic	---	---	---	400	400	1	---
Hydrogen Sulfide §§ --- § Stink Damp § Sulfur Hydride § Hydrogen Sulphide § Dihydrogen Sulfide § Hydrosulfuric Acid § Sulfurated Hydrogen § RCRA Waste Number U135 § Dihydrogen Monosulfide § Hydrogen Sulfuric Acid	7783064 or 7783-06-4 NIOSH: MX 1225000 SAX: HIC500	Toxic	---	2	---	---	---	NA	---
Imazamethabenz-methyl §§ Assert § ---	81405-85-8	Toxic	---	---	---	400	400	N/A	---
Imazapyr §§ Arsenal § ---	81334-34-1	Toxic	---	---	---	21,000	21,000	N/A	---
Indeno(1,2,3-cd)pyrene (PAH) §§ --- § o-Phenylene-pyrene § 2,3-Phenylene-pyrene § 2,3-o-Phenylene-pyrene § RCRA Waste Number U137 § Indeno (1,2,3-cd) Pyrene § 1,10-(o-Phenylene)Pyrene § 1,10- (1,2-Phenylene)Pyrene	193395 or 193-39-5 NIOSH: NK 9300000 SAX: IBZ000	Carcinogen	---	---	30	0.038	0.5 (30)	N/A	0.10
Iron §§ Fe § Ancor EN 80/150 § Carbonyl Iron § Armco Iron	7439896 or 7439-89-6 NIOSH: NO 4565500 SAX: IGK800	Harmful (aquatic life)	---	1,000	---	(23)	(23)	N/A	50
Isophorone §§ --- § Isoforon § NCI C55618 § Isoacetophorone § alpha-Isophorone § 1,1,3-Trimethyl-3- Cyclohexene-5-One § 3,5,5-Trimethyl-2-Cyclohexene-1-One § 3,5,5-Trimethyl-2-Cyclohexone	78591 or 78-59-1 NIOSH:GW 7700000 SAX: IHO000	Carcinogen	---	---	4.38	350	400	N/A	10

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Lead §§ Pb § C.I. 77575 § C.I. Pigment Metal 4 § Glover § Lead Flake § Lead 22 § Omaha § Omaha & Grant § SI § SO	7439921 or 7439-92-1 NIOSH: OF 7525000 SAX: LCF000	Toxic	13.98 @ 25 mg/l hardness (12) PP	0.545 @ 25 mg/l hardness (12) PP	49	15  PP	15  PP	0.1	0.5
m-Xylene §§ --- § m-Xylol § 1,3-Xylene § meta-Xylene § m-Dimethylbenzene § m-Methyltoluene § 1,3-Dimethylbenzene § 1,3-Dimethyl Benzene	108383 or 108-38-3 NIOSH: ZE 2275000 SAX: XHA000	Toxic	---	---	1.17	10,000  MCL	10,000  MCL	0.5	1.5
Malathion §§ --- § Formal § Sumitox § Emmatos § Celthion § Forthion § Malacide § Kop-Thion § Calmathion § Carbethoxy § NCI C00215 § Carbethoxy Malathion § SHA 057701 § Phosphothion § S-1,2-Bis(Ethoxycarbonyl)Ethyl-O,O-Dimethyl Thiophosphate § O, O- Dimethyl-S-(1,2-Dicarbethoxyethyl) Dithiophosphate § O,O-Dimethyl S-1,2- Di(Ethoxycarbonyl)Ethyl Phosphorodithioate § Succinic Acid, mercapto-, diethyl ester, S-Ester with O,O-Dimethyl Phosphorodithioate	121755 or 121-75-5 NIOSH: WM 8400000 SAX: CBP000	Toxic	---	0.1  NPP	---	100  HA	100  HA	---	---
Manganese §§ Mn § Colloidal Manganese § Magnacat § Tronamang	7439965 or 7439-96-5 NIOSH: OO 9275000 SAX: MAP750	Harmful	---	---	---	(24)	(24)	N/A	5
MCPA §§ 4-chloro-2 methylphenoxy acetic acid	94-74-6	Toxic	---	---	---	4 HA	4 HA	N/A	---
MCPP §§ Mecoprop § (+)-2-(4-chloro-2-methylphenoxy)-propanoic acid	7085-19-0	Toxic	---	---	---	7  I	7  I	---	---
Mercury §§ Hg § Colloidal Mercury § Mercury, Metallic § NCI C60399 § Quick Silver § RCRA Waste Number U151	7439976 or 7439-97-6 NIOSH: OV 4550000 SAX: MCW250	Toxic with BCF >300	1.7  PP	0.91  PP	5,500	0.05  PP	2  MCL	N/A	0.01
Metalaxyl § Ridomil § ---	57837-19-1	Toxic	---	---	---	420  I	420  I	3.5	---
Methamidophos §§ Monitor § ---	10265-92-6	Toxic	---	---	---	0.35  I	0.35  I	---	---
Methomyl §§ Lannate § ---	16752-77-5	Toxic	---	---	---	200  HA	200  HA	1	---
Methoxychlor §§ --- § DMDT § Metox § Moxie § Methoxcide § NCI C00497 § Methoxy-DDT § Dimethoxy-DDT § RCRA Waste Number U247 § 1,1,1-Trichloro-2,2-Bis(p- Methoxyphenyl)Ethane § Benzene, 1,1'-(2,2,2-Trichloroethylidene)Bis[4-Methoxy- § 1,1'-(2,2,2- Trichloroethylidene)Bis[4-Methoxybenzene] § Ethane, 1,1,1-Trichloro-2,2-Bis(p- Methoxyphenyl)-	72435 or 72-43-5 NIOSH: KJ 3675000 SAX: DOB400	Toxic	---	0.03  NPP	---	40  MCL	40  MCL	---	1

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Metsulfuron Methyl §§ Ally § ---	74223-64-6	Toxic	---	---	---	1,750 I	1,750 I	0.1	---
Methyl Chloride §§ Chloromethane § Arctic § Monochloromethane § RCRA Waste Number U045	74873 or 74-87-3 NIOSH: PA 6300000 SAX: CHX500	Toxic	---	---	3.75	30 HA	30 HA	0.08	---
Metolachlor §§ Dual § ---	51218-45-2	Carcinogen	---	---	---	100 HA	100 HA	N/A	---
Metribuzin §§ Sencor § ---	21087-64-9	Toxic	---	---	---	200 HA	200 HA	10	---
Mirex §§ --- § NCI C06428 § Dechlorane § Bichlorendo § Ferriamicide § Perchloropentacyclodecane § Dodecachloropentacyclodecane § Hexachlorocyclopentadiene Dimer § Cyclopentadiene, Hexachloro-, Dimer § Perchloropentacyclo(5.2.1.0[ <sup>sup</sup> 2,6].0[ <sup>sup</sup> 3,9].0[ <sup>sup</sup> 5,8])Decane § Dodecachlorooctahydro- 1,3,4-Metheno-2H-Cyclobuta (c,d)Pentalene § 1,1a,2,2,3,3a,4,5,5,5a,5b,6-Dodecachlorooctahydro- 1,3,4-Metheno-1H-Cyclobuta(cd) Pentalene § 1,3,4-Metheno-1H-Cyclobuta[cd]Pentalene, 1,1a,2,2,3,3a,4,5,5,5a,5b,6,-Dodecachlorooctahydro-	2385855 or 2385-85-5 NIOSH: PC 8225000 SAX: MQW500	Carcinogen	---	0.001 NPP	---	14 I	14 I	0.01	0.1
MTBE §§ Methyl Tertiary-Butyl Ether	1634-04-4	Harmful	---	---	---	30 (21)	30 (21)	---	---
N-Nitrosodimethylamine §§ Dimethylnitrosamine A707 § DMN § NDMA § DMNA § Nitrosodimethylamine § Dimethylnitrosoamine § N-Nitrosodimethylamine § RCRA Waste Number P082 § N,N-Dimethylnitrosamine § Methylamine, N-Nitrosodi- § Dimethylamine, N-Nitroso- § N-Methyl-N-Nitrosomethanamine § Methamine, N-Methyl-N-Nitroso- § Methanamine, N-Methyl-N-Nitroso-	62759 or 62-75-9 NIOSH: IQ 0525000 SAX: DSY400	Carcinogen	---	---	0.026	0.0069 PP	0.0069 PP	N/A	10
N-Nitrosodiphenylamine §§ --- § NDPA § NDPhA § Vultrol § Curetard A § NCI C02880 § Redax § TJP § Retarder J § Vulcalent A § Vulcatard § Vultrol § Nitrosodiphenylamine § Diphenylnitrosamine § N,N-Diphenylnitrosamine § N-Nitroso-N-Phenylaniline § Diphenylamine, N-Nitroso- § Benzenamine, N-Nitroso-N-Phenyl-	86306 or 86-30-6 NIOSH: JJ 9800000 SAX: DWI000	Carcinogen	---	---	136	33 PP	33 PP	N/A	10
n-Dioctyl Phthalate §§ --- § DNOP § PX-138 § Vinicizer 85 § Dinopol NOP § n-Octyl Phthalate § Octyl Phthalate § Dioctyl Phthalate § Di-n-Octyl Phthalate § Di-sec-Octyl Phthalate § RCRA Waste Number U107 § 1,2-Benzenedicarboxylic Acid, Dioctyl Ester	117840 or 117-84-0 NIOSH: TI 1925000 SAX: DVL600	Carcinogen	---	---	---	---	---	N/A	10

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
N-Nitrosodi-N-Propylamine §§ --- § DPN § DPNA § NDPA § Dipropylnitrosamine § N-Nitrosodipropylamine § Di-n-Propylnitrosamine § RCRA Waste Number U111 § Dipropylamine, N-Nitroso- § N-Nitrosodi-n-propylamine § N-Nitroso-di-n-propylamine § 1-Propanamine, N-Nitroso-n-Propyl-	621647 or 621-64-7 NIOSH: JL 9700000 SAX: DWU600	Carcinogen	---	---	1.13	0.05  PP	0.05  PP	N/A	10
N-Nitrosopyrrolidene §§ --- § NPYR § NO-pyr § N-N-pyr § 1-Nitrosopyrrolidene § Pyrrolidine, 1-Nitroso- § RCRA Waste Number U180 § Tetrahydro-N-Nitrosopyrrole § Pyrrole, Tetrahydro-N-Nitroso-	930552 or 930-55-2 NIOSH: UY 1575000 SAX: NLP500	Carcinogen	---	---	0.055	0.16  PP	0.16  PP	N/A	10
Naphthalene §§ Moth Balls § Mighty 150 § NCI C52904 § Naphthene § White Tar § Naphthalin § Tar Camphor § Caswell Number 587 § RCRA Waste Number U165 § EPA Pesticide Chemical Code 055801	91203 or 91-20-3 NIOSH: QJ 0525000 SAX: NAJ500	Carcinogen	---	---	10.5	100  HA	100  HA	0.04	10
Nickel §§ Ni § C.I. 77775 § Ni 270 § Nickel 270 § Ni 0901-S § Ni 4303T § NP 2 § Raney Alloy § Raney Nickel	7440020 or 7440-02-0 NIOSH: QR 5950000 SAX: NCW500	Toxic	145@25mg/l hardness (12)  PP	16.1 @ 25 mg/l hardness (12)  PP	47	100  HA	100  HA	0.5	10
Nicosulfuron §§ Accent § ---	111991-09-4	Toxic	---	---	---	8,750  I	8,750  I	0.01	---
Nitrate (as Nitrogen[N]) §§ NO3	14797558 or 14797-55-8 NIOSH: --- SAX: ---	Toxic	(8)	(8)	---	10,000  MCL	10,000  MCL	10, surface water 5000, ground water, see ARM 17.30.715	10
Nitrate plus nitrite (as Nitrogen[N]) §§ NO <sub>3</sub> + NO <sub>2</sub>	See nitrate and nitrite NIOSH: --- SAX: ---	Toxic	(8)	(8)	---	10,000  MCL	10,000  MCL	10, surface water 5000, ground water, see ARM 17.30. 715	10
Nitrite (as Nitrogen[N]) §§ NO <sub>2</sub>	14797650 or 14797-65-0 NIOSH: --- SAX: ---	Toxic	(8)	(8)	---	1,000  MCL	1,000  MCL	4	10
Nitrobenzene §§ --- § NCI C60082 § Mirbane Oil § Nitrobenzol § Oil of Mirbane § Benzene, Nitro- § Essence of Myrbane § RCRA Waste Number U169	98953 or 98-95-3 NIOSH: DA 6475000 SAX: NEX000	Toxic	---	---	2.89	17  PP	17  PP	1.9	10

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			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Nitrogen, total inorganic (as Nitrogen[N]) §§ the sum of ammonia, nitrite, and nitrate	See ammonia, nitrate, and nitrite	Nutrient	(8)	(8)	---	---	---	10	10
Nitrophenol, 4- §§p-Nitrophenol (DOT) § 4-Hydroxynitrobenzene § NCI C55992 § RCRA Waste Number U170	100027 or 100-02-7 NIOSH: SM 2275000 SAX: NIF000	Toxic	---	---	3.31	60 HA	60 HA	2.4	---
o-Nitrophenol §§ --- § 2-Nitrophenol § 2-Hydroxynitrobenzene	88755 or 88-75-5 NIOSH: SM 2100000 SAX: NIE500	Toxic	---	---	2.33	---	---	0.45	---
o-Xylene §§ --- § o-Xylo § 1,2-Xylene § ortho-Xylene § o-Methyltoluene § o-Dimethylbenzene § 1,2-Dimethylbenzene § 1,2-Dimethyl Benzene	95476 or 95-47-6 NIOSH: ZE 2450000 SAX: XHJ000	Toxic	---	---	1.17	10,000 MCL	10,000 MCL	0.5	1.5
Oxamyl §§ --- § D-1410 § DPX 1410 § Insecticide-Nematicide 1410 § Vydate § Thioxamyl § Methyl 2-(Dimethylamino)-N- § Vydate L, Insecticide/Nematicide § ([Methylamino]Carbonyl)Oxy)-2-Oxoethanimidothioate § 2-Dimethylamino-1- (Methylthio)Glyoxal O-Methylcarbamoylmonozime § S-Methyl 1-Dimethylcarbamoyl)-N ([Methylcarbamoyl]Oxy)Thioformimidate § Methyl N',N'-Dimethyl-N-([Methylcarbamoyl]Oxy)- 1-Thiooxamimidate § N',N'-Dimethyl-N-([Methylcarbamoyl]oxy)-1-Methylthiooxamimidic Acid	23135220 or 23135-22-0 NIOSH: RP 2300000 SAX: DSP600	Toxic	---	---	---	200 MCL	200 MCL	1	1
Oxydemeton Methyl §§ Metasystox R § ---	301-12-2	Toxic	---	---	---	3.5 I	3.5 I	1.4	---
Oxygen, dissolved (20) §§ O2 § Oxygen, Compressed § Oxygen, Refrigerated Liquid	7782447 or 7782-44-7 NIOSH: RS 2060000 SAX: OQW000	Toxic	(15)	(15)	---	---	---	---	50
p,p'-Dichlorodiphenyldichloroethylene §§ DDE § DDE § p,p'-DDE § 4,4'-DDE § NCI C00555 § Dichlorodiphenyldichloroethylene § Dichlorodiphenyldichloroethylene, p,p'- § 2,2'-bis(4-Chlorophenyl)-1,1-Dichloroethylene § 1,1'- (Dichloroethenylidene)bis(4-Chlorobenzene) § 2,2'-bis(p-Chlorophenyl)-1,1-Dichloroethylene § Benzene, 1,1'-(Dichloroethenylidene)bis[4-Chloro-	72559 or 72-55-9 NIOSH: KV 9450000 SAX: BIM750	Carcinogen	---	---	53,600	0.0022 PP	0.0022 PP	N/A	0.01
p,p'-Dichlorodiphenyltrichloroethane §§ DDT § DDT § 4,4'-DDT § Agritan § Anoflex § Arkotine § Azotox § Bosan Supra § Boveridmol § Chlorophenothane § Chlorophenothane § Chlorophenotoxum § Citox § Clorfenotane § Dedelo § Chlorophenothane § Diphenyltrichloroethane § Dichlorodiphenyltrichloroethane § 4,4'-Dichlorodiphenyltrichloroethane § Dichlorodiphenyltrichloroethane, p,p'- § 1,1,1-Trichloro-2,2,-bis(p-Chlorophenyl) Ethane § 1,1,1-Trichloro-2,2,-bis(p-Chlorophenyl)Ethane § 1,1,1-Trichloro-2,2,-Di(4-Chlorophenyl)- Ethane § 1,1-Bis-(p-Chlorophenyl)-2,2,2-Trichloroethane § 2,2-Bis-(p-Chlorophenyl)-1,1,1- Trichloroethane § Benzene, 1,1'-(2,2,2-Trichloroethylidene)Bis(4-Chloro-) § alpha,alpha-Bis(p- Chlorophenyl)-beta,beta,beta-Trichloroethane	50293 or 50-29-3 NIOSH: KJ 3325000 SAX: DAD200	Carcinogen	1.1 PP	0.001 PP	53,600	0.0022 PP	0.0022 PP	N/A	0.06

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
p,p'-Dichlorodiphenyldichloroethane §§ DDD § TDE § Dilene § NCI C00475 § Rothane § Rhothane § 4,4'-DDD § p,p'-DDD § p,p'-TDE § 4',4'-D-DDD § RCRA Waste Number U060 § Tetrachlorodiphenylethane § Dichlorodiphenyldichloroethane § Dichlorodiphenyl Dichloroethane § 2,2-bis(4-Chlorophenyl)-1,1-Dichloroethane § 1,1-Dichloro-2,2-bis(p- Chlorophenyl) Ethane § 1,1-bis(4-Chlorophenyl)-2,2-Dichloroethane § 2,2-bis(p-Chlorophenyl)- 1,1-Dichloroethane § Benzene, 1,1'(2,2-Dichloroethylidene)Bis[4-Chloro-	72548 or 72-54-8 NIOSH: KI 0700000 SAX: BIM500	Carcinogen	---	---	53,600	0.0031	0.0031	N/A	0.01
p-Bromodiphenyl Ether §§ Benzene, 1-Bromo-4-Phenoxy- § p-Bromodiphenyl Ether § 4-Bromophenoxybenzene § 4-Bromodiphenyl Ether § 1-Bromo-4-Phenoxybenzene § p-Bromophenylphenyl Ether § 4- Bromophenyl Phenyl Ether	101553 or 101-55-3 NIOSH: --- SAX: ---	Toxic with BCF >300	---	---	1,640	---	---	N/A	10
p-Chloro-m-Cresol §§--- § PCMC § Parol § Aptal § Baktol § Baktolan § Ottafact § Raschit § Rasen-Anicon § Parmetol § Candasetpic § Chlorocresol § Preventol CMK § RCRA Waste Number U039 § Parachlorometra Cresol § 4-Chloro-3-methylphenol § 2-Chloro-Hydroxytoluene § Phenol, 4-Chloro-3-methyl- § Chlorophenol, 4-, methyl, 3-	59507 or 59-50-7 NIOSH: GO 7100000 SAX: CFE250	Harmful	---	---	---	3,000	3,000	N/A	20
p-Xylene §§ --- § p-Xylol § Chromar § Scintillar § 1,4-Xylene § para-Xylene § p-Methyltoluene § p- Dimethylbenzene § 1,4-Dimethylbenzene § 1,4-Dimethyl Benzene	106423 or 106-42-3 NIOSH: ZE 2625000 SAX: XHS000	Toxic	---	---	1.17	10,000	10,000	0.5	1.5
Paraquat Dichloride §§ ---	1910-42-5	Toxic	---	---	---	30 HA	30 HA	0.8	---
Parathion §§ --- § DNTP § Niran § Phoskil § Paradust § Stathion § Strathion § Pestox Plus § Nitrostigmine § Parathion Ethyl § Parathion-ethyl § Ethyl Parathion § Diethylparathion § Caswell Number 637 § RCRA Waste Number P089 § EPA Pesticide Chemical Code 057501 § Diethyl 4-Nitrophenylphosphorothioate § Diethyl para-Nitrophenol Thiophosphate § Diethyl-p-Nitrophenyl Monothiothiophosphate § O,O-Diethyl O-4-Nitrophenyl Thiophosphate § Phosphorothioic Acid, O,O-Diethyl O-(4-Nitrophenyl) Ester	56382 or 56-38-2 NIOSH: TF 4920000, dry TF 4950000, liquid SAX: PAK250, dry	Carcinogen	0.065	0.013	---	---	---	---	1
Pentachlorobenzene §§ Benzene, Pentachloro- § QCB- § RCRA Waste Number U183	608935 or 608-93-5 NIOSH: DA 6640000 SAX: PAV500	Toxic with BCF >300	---	---	2,125	1.4	1.4	N/A	0.1
						PP	PP		

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Pentachlorophenol §§ Penta § PCP § Durotox § Weedone § Chem-Tol § Lauxtol A § NCI C54933 § NCI C55378 § NCI C56655 § Permite § Dowcide 7 § Permacide § Penta-Kil § Permagard § Penchlorol § Chlorophen § Pentachlorophenol § Pentaclorofenolo § Thompson's Wood Fix § Phenol, Pentachloro- § 2,3,4,5,6-Pentachlorophenol § 1-Hydroxy- 2,3,4,5,6-Pentachlorobenzene	87865 or 87-86-5 NIOSH: SM 6300000 SAX: PAX250	Carcinogen	5.3 @ pH of 6.5 (14)	4 @ pH of 6.5 (14)	11	1	1	N/A	0.05
pH §§ ---	N/A	Harmful	(13)	(13)	---	(18)	(18)	N/A	---
Phenanthrene (PAH) §§ --- § Phenantrin	85018 or 85-01-8 NIOSH: SF 7175000 SAX: PCW250	Toxic	---	---	30	---	---	0.01	0.25
Phenol §§ --- § Baker's P and S Liquid and Ointment § NCI C50124 § Benzenol § Monophenol § Oxybenzene § Phenic Acid § Carbohic Acid § Phenylic Acid § Hydroxybenzene § Hydroxybenzene § Phenyl Alcohol § Phenyl Hydrate § Phenylic Alcohol § Phenyl Hydroxide § Benzene, Hydroxy- § Monohydroxybenzene § RCRA Waste Number U188	108952 or 108-95-2 NIOSH: SJ 3325000 SAX: PDN750	Harmful	---	---	1.4	300	300	100	10
Phosphorus, inorganic (20) §§ --- § Ortho-phosphorus § phosphorus, Ortho- § reactive phosphorus	14265442 or 14265-44-2 NIOSH: --- SAX: ---	Nutrient	(8)	(8)	---	---	---	1	1
Picloram §§ Tordon § ATCP § K-Pin § Borolin § Amdon Grazon § NCI C00237 § Tordon 10K § Tordon 22K § Tordon 101 Mixture § 3,5,6-Trichloro-4-Aminopicolinic Acid § 4-Amino-3,5,6-Trichloropicolinic Acid	1918021 or 1918-02-1 NIOSH: TJ 7525000 SAX: AMU250	Toxic	---	---	---	500	500	0.14	1
Polychlorinated Biphenyls, (sum of all homolog, all isomer, all congener or all Aroclor analyses) §§ PCB's § Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1268, 2565, 4465 § Chlophen § Chlorextol § Chlorinated Biphenyl § Chlorinated Diphenyl § Chlorinated Diphenylene § Chloro Biphenyl § Chloro-1,1-Biphenyl § Clophen § Dykanol § Fenclor § Inerteen § Kanechlor 300, 400, 500 § Montar § Noflamol § PCB (DOT) § Phenochlor § Polychlorobiphenyl § Pyralene § Pyranol § Santotherm § Sovol § Therminol FR-1	Multiple	Carcinogen	---	0.014	31,200	0.00064	0.5	N/A	1
Primisulfuron Methyl §§ Beacon § Exceed	86209-51-0	Toxic	---	---	---	42	42	0.1	---
Prometon §§ Pramitol § ---	1610-18-0	Toxic	---	---	---	100	100	0.3	---
Pronamide §§ Kerb § ---	23950-58-5	Carcinogen	---	---	---	50	50	N/A	---

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Propachlor §§ Ramrod § ---	1918-16-7	Toxic	---	---	---	90 HA	90 HA	0.5	---
Propane, 1,2-Dibromo-3-Chloro- §§ Dibromochloropropane § 1,2-Dibromo-3-Chloropopane § Fumagon § Fumazone § NCI C00500 § Nemabrom § Nemafume § Nemagon § Nemagone § Nemagone Soil Fumigant § Nemanax § Nemapaz § Nemaset § Nematocide § Nematox § OS 1897 § OXY DBCP § SD 1897 § Caswell Number 287 § RCRA Waste Number U066§ 1-Chloro-2,3-Dibromopropane § DBCP § EPA Pesticide Chemical Code 011301	96128 or 96-12-8 NIOSH: TX 8750000 SAX: DDL800	Carcinogen	---	---	---	0.2  MCL	0.2  MCL	N/A	0.05
Propazine §§ ---	139-40-2	Carcinogen	---	---	---	10 HA	10 HA	N/A	---
Propham §§ ---	122-42-9	Toxic	---	---	---	100 HA	100 HA	0.13	---
Propoxur §§ Baygon § ---	114-26-1	Carcinogen	---	---	---	3 HA	3 HA	N/A	---
Pyrene (PAH) §§ --- § β-Pyrine § beta-Pyrene § Benzo(def)Phenanthrene § Benzo[def]Phenanthrene	129000 or 129-00-0 NIOSH: UR 2450000 SAX: PON250	Toxic	---	---	30	830 PP	830 PP	0.25	0.25
Radium 226 §§ ---	Radium 226 13982636 or 13982-63-6 NIOSH: --- SAX: ---	Carcinogen / Radioactive	---	---	---	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	N/A	---
Radium 228 §§ ---	Radium 228 15262201 or 15262-20-1 NIOSH: --- SAX: ---	Carcinogen / Radioactive	---	---	---	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	5 picocuries/liter Note: The sum of Radium 226 and 228. MCL	N/A	---
Radon 222 §§ ---	14859677 or 14859-67-7 NIOSH: --- SAX: ---	Carcinogen / Radioactive	---	---	---	15 picocuries/ liter HA	15 picocuries/ liter HA	N/A	---
Selenium §§ Se § C.I. 77805 § Colloidal Selenium § Elemental Selenium § Selenium Alloy § Selenium Base § Selenium Dust § Selenium Elemental § Selenium Homopolymer§ Selenium Metal Powder, Non-Pyrophoric § Vandex	7782492 or 7782-49-2 NIOSH: VS 7700000 VS 8310000, colloidal SAX: SBO500 SAX: SBP000, colloidal	Toxic	20 PP	5 PP	4.8	50 MCL	50 MCL	0.6	1
Silver §§ Ag § Argentum § C.I. 77820 § Shell Silver § Silver Atom	7440224 or 7440-22-4 NIOSH: VW 3500000 SAX: SDI500	Toxic	0.374 @ 25 mg/l hardness(12) PP	---	0.5	100 HA	100 HA	0.2	0.5

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Simazine §§ --- § CDT § Herbex § Framed § Bitemol § Radokor § A 2079 § Batazina § Cat (Herbicide) § CET § G 27692 § Geigy 27,692 § Gesaran § Gesatop 50 § Simazine 80W § Symazine § Taphazine § W 6658 § Zeapur § Princep § Aquazine § Herbazin § Tafazine § 2,4-bis(Ethylamino)-6-Chloro-s-Triazine § 1-Chloro, 3,5-Bisethylamino-2,4,6-Triazine § 2-Chloro-4,6-Bis(Ethylamino)-1,3,5-Triazine § 6-Chloro-N,N'-Diethyl-1,3,5-Triazine-2,4-Diylidamine	122349 or 122-34-9 NIOSH: XY 5250000 SAX: BJP000	Carcinogen	---	---	---	4       MCL	4       MCL	N/A	0.3
Strontium §§ ---	7447246 NIOSH: --- SAX: ---	Toxic	---	---	---	4,000  HA	4,000  HA	100	---
Styrene §§ --- § Styrol § Cinnamol § Cinnamene § Cinnamenol § NCI C02200 § Styrole § Strolene § Styron § Stropor § Vinylbenzol § Phenethylene § Phenylethene § Vinylbenzene § Ethenylbenzene § Phenylethylene § Benzene, Vinyl- § Stryene, Monomer	100425 or 100-42-5 NIOSH: WL 3675000 SAX: SMQ000	Carcinogen	---	---	---	100    HA	100    HA	N/A	0.5
Sulfometuron Methyl §§ Oust § ---	74222-97-2	Toxic	---	---	---	1,750  I	1,750  I	0.01	---
Tebuthiuron §§ --- § Spike	34014-18-1	Toxic	---	---	---	500  HA	500  HA	2	---
Temperature §§ ---	N/A	Harmful	(13)	(13)	---	---	---	N/A	---
Terbacil §§ Sinbar § ---	5902-51-1	Toxic	---	---	---	90  HA	90  HA	2.2	---
Terbufos §§ Counter § ---	13071-79-9	Toxic	---	---	---	0.9  HA	0.9  HA	0.5	---
Tetrachlorobenzene, 1,2,4,5- §§ Benzene, 1,2,4,5-Tetrachloro- § RCRA Waste Number U207 § 1,2,4,5-Tetrachlorobenzene	95943 or 95-94-3 NIOSH: DB 9450000 SAX: TBN750	Toxic with BCF >300	---	---	1,125	0.97  NPP	0.97  NPP	N/A	0.1
Tetrachloroethane, 1,1,2,2- §§ Tetrachloroethane § TCE § Cellon § Westron § Bonoform § sym-Tetrachloroethane § RCRA Waste Number U209 § Acetylene Tetrachloride § 1,1,2,2-Tetrachloroethane § Ethane, 1,1,2,2-Tetrachloro- § 1,1- Dichloro-2,2-Dichloroethane	79345 or 79-34-5 NIOSH: KI 8575000 SAX: ACK500	Carcinogen	---	---	5	1.7    PP	2.0    HA	N/A	0.5

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Tetrachloroethylene §§ Perchloroethylene § NCI C04580 § PCE § Perk § PERC § ENMA § Dow-Per § Perchlor § Perclene § Perklone § Didakene § Tetra Cap § Percosolve § Perchloroethylene § Tetrachloroethene § Carbon Bichloride § Carbon Dichloride § RCRA Waste Number U210 § Ethylene Tetrachloride § Ethylene, Tetrachloro- § 1,1,2,2-Tetrachloroethylene	127184 or 127-18-4 NIOSH: KX 3850000 SAX: TBQ250	Carcinogen	---	---	30.6	5          MCL	5          MCL	N/A	0.5
Thallium §§ Tl § Ramor	7440280 or 7440-28-0 NIOSH: XG 3425000 SAX: TEI000	Toxic	---	---	119	0.24    PP	2    MCL	0.3	0.2
Thifensulfuron Methyl §§ --- § Pinnacle	79277-27-3	Toxic	---	---	---	910   I	910   I	1	---
Toluene §§ --- § Antisal 1a § NCI C07272 § Toluol § Tolu-Sol § Methacide § Methylbenzol § Methylbenzene § Phenylmethane § Phenyl-Methane § Methyl-Benzene § Benzene, Methyl § RCRA Waste Number U220	108883 or 108-88-3 NIOSH: XS 5250000 SAX: TGK750	Toxic	---	---	10.7	1,000    MCL	1,000    MCL	0.01	0.5
Toxaphene §§ --- § Attac 4-2 § Alltox § Alltex § Attac 6 § Toxakil § Agricide § Chem-Phene § Clor Chem T-590 § Compound 3956 § Crestoxo § Estonox § Geniphene § Gy-Phene § Hercules 3956 § Melipax § Motox § PCC § Phenacide § Phenatox § Toxadust § Camphechlor § Maggot Killer (F) § Toxaphene mixture § Chlorinated-Camphene § Camphene, Octachloro- § RCRA Waste Number P123	8001352 or 8001-35-2 NIOSH: XW 5250000 SAX: THH750	Carcinogen	0.73    PP	0.0002    PP	13,100	0.0028    PP	0.3    HA	N/A	1
Tralkoxydim (28) §§ Achieve	87820-88-0	Carcinogen	---	---	---	20 HA	20 HA	N/A	---
trans-1,2-Dichloroethylene §§ --- § trans-Dichloroethylene § RCRA Waste Number U079 § trans-1,2-Dichloroethane § trans- 1,2-Dichloroethene § Dichloroethylene, trans- § trans-Acetylene Dichloride § 1,2-trans- Dichloroethylene § Ethene, 1,2-Dichloro-, (E)- § 1,2-Dichloroethylene, trans-	156605 or 156-60-5 NIOSH: KV 9400000 SAX: DFI600	Toxic	---	---	1.58	100    MCL	100    MCL	0.05	0.5
trans-1,3-Dichloropropene §§ Telone II § 1,3-Dichloropropene § 1,3-Dichloropropylene § (E)-1,3-Dichloropropene § trans-1,3-Dichloropropylene § 1-Propene, 1,3-Dichloro-, (E)-	10061026 or 10061-02-6 NIOSH: UC 8320000 SAX: DGH000	Carcinogen	---	---	1.91	2   HA	2   HA	N/A	0.5
trans-Nonachlor (Chlordane component) §§ --- § Chlordane, trans-Isomer	39765805 or 39765-80-5 NIOSH: --- SAX: ---	Carcinogen	---	---	14,100	0.0080   PP	1   HA	N/A	0.4
Triasulfuron §§ Amber	82097-50-5	Toxic	---	---	---	70 I	70 I	1	---
Tribenuron Methyl §§ Express	101200-48-0	Carcinogen	---	---	---	8 I	8 I	0.1	---

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Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Tributyltin (TBT)	56573-85-4	Toxic	0.46 NPP	0.072 NPP	---	---	---	N/A	---
Trichlorobenzene, 1,2,4- §§ Benzene, 1,2,4-Trichloro- § unsym-Trichlorobenzene § 1,2,4-Trichlorobenzene	120821 or 120-82-1 NIOSH: DC 2100000 SAX: TIK250	Toxic	---	---	114	35  PP	70  MCL	0.02	0.5
Trichloroethane, 1,1,2- §§ Vinyl Trichloride § 1,1,2-Trichloroethane § β-T § Ethane Trichloride § beta-Trichloroethane § 1,2,2-Trichloroethane § RCRA Waste Number U227 § NCI C04579 § Ethane, 1,1,2-Trichloro- § Caswell Number 875A [NLM] § EPA Pesticide Chemical Code 081203 [NLM]	79005 or 79-00-5 NIOSH: KJ 3150000 SAX: TIN000	Carcinogen	---	---	4.5	3  HA	3  HA	N/A	0.5
Trichloroethane, 1,1,1- §§ Methyl Chloroform § -T § Strobane § Inhibisol § 1,1,1-TCE § Tri-Ethane § Solvent 111 § Aerothene TT § Chloroethene § Chlorten § NCI C04626 § Methylchloroform § Chloroform, Methyl- § 1,1,1-Trichloroethene § alpha-Trichloroethane § Methyltrichloromethane § RCRA Waste Number U226 § 1,1,1-Trichloroethane § Ethane, 1,1,1-Trichloro-	71556 or 71-55-6 NIOSH: KJ 2975000 SAX: TIM750	Toxic	---	---	5.6	200  MCL	200  MCL	0.5	0.5
Trichloroethylene §§ --- § TCE § Triad § Vitran § Algylen § Dow-Tri § Lanadin § Vestrol § Anamenth § Benzinol § Tri-Plus § Tri-Clene § Trichlorethene § Trichloroethene § Trichloroethane § Trichlorethylene § Tetrachloroethene § Ethene, Trichloro- § Ethylene Trichloride § Ethylene, Trichloro- § Acetylene Trichloride § 1,1,2-Trichloroethylene § 1,2,2-Trichloroethylene § 1-Chloro-2,2-Dichloroethylene § 1, 1-Dichloro-2-Chloroethylene	79016 or 79-01-6 NIOSH: KX 4550000 SAX: TIO750	Carcinogen	---	---	10.6	5  MCL	5  MCL	N/A	0.5
Trichlorofluoromethane (HM) §§ Freon 11 § F 11 § FC 11 § Arcton 9 § Eskimon 11 § Halocarbon 11 § Algofrene Type 1 § RCRA Waste Number U121 § Fluorocarbon Number 11 § NCI C04637 § Isotron 11 § Fluorotrichloromethane § Isceon 131 § Monofluorotrichloromethane § Ucon Refrigerant 11 § Trichloromonofluoromethane	75694 or 75-69-4 NIOSH: PB 6125000 SAX: TIP500	Toxic	---	---	3.75	10,000  PP	10,000  PP	0.07	0.5
Trichlorophenol, 2,4,5- §§ Dowcide B § 2,4,5-Trichlorophenol § Nurelle § Dowcide 2 § Collunosol § Preventol 1 § RCRA Waste Number U230 § NCI C61187	95954 or 95-95-4 NIOSH: SN 1400000 SAX: TIV750	Harmful	---	---	110	7  I	7  I	10	10
Trichlorophenol, 2,4,6- §§ Phenachlor § 2,4,6-Trichlorophenol § Dowcide 2S § RCRA Waste Number U231 § Omal § Phenol, 2,4,6-trichloro- § NCI C02904	88062 or 88-06-2 NIOSH: SN 1575000 SAX: TIW000	Carcinogen	---	---	150	14  PP	30  HA	N/A	10

**CIRCULAR DEQ-7, MONTANA NUMERIC WATER QUALITY STANDARDS<sup>(9)</sup>**

Except where indicated, values are listed as micro-grams-per-liter ( µg/L). A '---' indicates that a Standard has not been adopted or information is currently unavailable. A '( )' indicates that a detailed note of explanation is provided.

Pollutant Element / Chemical Compound or Condition	CASRN, NIOSH and SAX Numbers	Category (1) (2)	Aquatic Life Standards (16)		Bioconcentration Factor (BCF) (5)	Human Health Standards (17) (3)		Trigger Value (22)	Required Reporting
			Acute (3)	Chronic (4)		Surface Water	Ground Water		
Trichlorophenoxy Propionic Acid, 2 (2,4,5-) §§ Fenoprop § 2 (2,4,5-Trichlorophenoxy) Propionic Acid § Kuran § Propon § Silvex § Aqua-Vex § Ded-Weed § Sta-Fast § 2,4,5-TP § Color-Set § Weed-B-Gon § Double Strength § RCRA Waste Number U233 § 2,4,5-Trichlorophenoxypropionic Acid § (2,4,5- Trichlorophenoxy)Propionic Acid § 2-(2,4,5-Trichlorophenoxy)-Propionic Acid § (+/-)-2-(2,4,5- Trichlorophenoxy)propanoic Acid	93721 or 93-72-1 NIOSH: UF 8225000 SAX: TIX500	Toxic	---	---	---	10  NRWQC	50  MCL	0.075	0.1
Trichlorophenoxyacetic Acid §§ Brush-Rhap § 2,4,5-T (Brush-Rhap)	93-76-5	Toxic	---	---	---	70  HA	70  HA	N/A	---
Triclopyr - amine salt §§ Garlon § ---	55335-06-3	Toxic	---	---	---	350  I	350  I	0.25	---
Trifluralin §§ Treflan § Buckle	1582-09-8	Carcinogen	---	---	---	5  HA	5  HA	N/A	---
Trihalomethanes, total §§ --- § TTHMs	Multiple	Carcinogen	---	---	---	100  MCL	100  MCL	N/A	2
Turbidity (20) §§ ---	N/A	Harmful	(13)	(13)	---	---	---	N/A	1 NTU
Uranium, natural §§ U § Uranium Metal, Pyrophoric	7440611 or 7440-61-1 NIOSH: YR 3490000 SAX: UNS000	Carcinogen / Radioactive	---	---	---	30  MCL	30  MCL	0.03	---
Vinyl 2-Chloroethyl Ether §§ Vinyl β-Chloroethyl Ether- § (2-Chloroethoxy)Ethene § RCRA Waste Number U042 § 2-Chloroethyl Vinyl Ether	110758 or 110-75-8 NIOSH: KN 6300000 SAX: CHI250	Carcinogen	---	---	0.557	---	---	N/A	---
Vinyl Chloride §§ --- § VC § VCM § Chlorethene § Chloroethene § Chlorethylene § Chloroethylene § Ethylene, Chloro- § Monochloroethylene § Ethylene Monochloride § RCRA Waste Number U043 § Vinyl Chloride Monomer § Vinyl C Monomer § Trovidur	75014 or 75-01-4 NIOSH: KU 9625000 SAX: VNP000	Carcinogen	---	---	1.17	0.25  PP	0.2  HA	N/A	0.5
Xylenes §§ --- § Xylol § Violet 3 § Mixed Xylenes § Methyl Toluene § Dimethylbenzene § RCRA Waste Number U239 § NCI C55232 § Total equals the sum of meta, ortho, and para.	1330207 or 1330-20-7 NIOSH: ZE 2100000 SAX: XGS000	Toxic	---	---	1.17	10,000  MCL	10,000  MCL	0.5	1.5
Zinc §§ Zn § Blue Powder § C.I. 77945 § C.I. Pigment Black 16 § C.I. Pigment Metal 6 § Emanay Zinc Dust § Granular Zinc § Jasad § Merrillite § Pasco § Zinc, Powder or Dust, non-Pyrophoric § Zinc, Powder or Dust, Pyrophoric	7440666 or 7440-66-6 NIOSH: ZG 8600000 SAX: ZBJ000	Toxic	37 @ 25mg/l hardness(12)  PP	37 @ 25 mg/l hardness (12)  PP	47	2,000  HA	2,000  HA	5	10

- (1) Based on EPA's categories and include parameters determined to be toxic (toxin), carcinogenic (carcinogen), or harmful. Harmful parameters include nutrients, biological agents, and those parameters which cause taste and/or odor effects or physical effects.
- (2) Carcinogens are chemicals classified by EPA as carcinogens for an oral route of exposure in the drinking water regulations and health advisories (EPA 822-B-96-002) and those listed as carcinogens in the EPA priority pollutants list. Carcinogens include those parameters in classifications A (Human Carcinogens), B1 or B2 (Probable Human Carcinogens), and C (Possible Human Carcinogen).
- (3) No surface water or ground water sample concentration shall exceed these values.
- (4) No surface water or ground water average concentration shall exceed these values based upon a four-day (96-hour) or longer period.
- (5) All bioconcentration factors (BCF's) were developed by the EPA as part of the Standards development as mandated by Section 304(a) of the federal Clean Water Act. National Recommended Water Quality Criteria: 2002 Human Health Criteria Calculation Matrix (EPA-822-R-02-012).
- (6) The 24 hour geometric mean value must not exceed these values.
- (7) Freshwater Aquatic Life Standards for total ammonia nitrogen (mg/l NH<sub>3</sub>-N plus NH<sub>4</sub>-N).

Because these formulas are non-linear in pH and temperature, the Standard is the average of separate evaluations of the formulas reflective of the fluctuations of flow, pH, and temperature within the averaging period; it is not appropriate to apply the formula to average pH, temperature and flow.

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed the CMC (acute criterion) calculated using the following equations.

Where salmonid fish are present:

$$\text{CMC} = \frac{0.275}{1 + 10^{7.204 - \text{pH}}} + \frac{39.0}{1 + 10^{\text{pH} - 7.204}}$$

Or where salmonid fish are not present:

$$\text{CMC} = \frac{0.411}{1 + 10^{7.204 - \text{pH}}} + \frac{58.4}{1 + 10^{\text{pH} - 7.204}}$$

2. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed the CCC (chronic criterion) calculated using the following equations.

When fish early life stages<sup>1</sup> are present:

$$\text{CCC} = \left( \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times \text{MIN} (2.85, 1.45 \times 10^{0.028 \times (25 - T)})$$

When fish early life stages<sup>1</sup> are absent:

$$\text{CCC} = \left( \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times 1.45 \times 10^{0.028 \times (25 - \text{MAX} (T,7))}$$

<sup>1</sup> Includes all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.

3. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

Table 1. pH-Dependent Values of the CMC (Acute Criterion) Ammonia Standard.

<b>CMC, total ammonia nitrogen (mg/l NH<sub>3</sub>-N plus NH<sub>4</sub>-N)</b>		
<b>pH</b>	<b>Salmonids Present</b>	<b>Salmonids Absent</b>
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Table 2. Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Present

and for Fish Early Life Stages Absent.

pH	CCC for Fish Early Life Stages Present, total ammonia nitrogen (mg/l NH <sub>3</sub> -N plus NH <sub>4</sub> -N)										CCC for Fish Early Life Stages Absent, total ammonia nitrogen (mg/l NH <sub>3</sub> -N plus NH <sub>4</sub> -N)									
	Temperature, C										Temperature, C									
	0	14	16	18	20	22	24	26	28	30	0-7	8	9	10	11	12	13	14	15*	16*
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46	10.8	10.1	9.51	8.92	8.36	7.8	7.35	6.89	6.46	6.06
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	3.37	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.53	1.33	1.17	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

\*At 15 C and above, the criterion for fish ELS absent is the same as the criterion for fish ELS present

(8) A plant nutrient, excessive amounts of which may cause violations of Administrative Rules of Montana (ARM) 17.30.637 (1)(e).

(9) Approved methods of sample preservation, collection, and analysis for determining compliance with the standards set forth in DEQ-7 are found in the surface water quality standards (ARM17.30.601, et seq.) and the ground water rules (ARM 17.30.1001, et seq.).

Standards for metals (except aluminum) in surface water are based upon the analysis of samples following a "total recoverable" digestion procedure (Section 9.4, "Methods of Analysis of Water and Wastes", 1983, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, EPA-600/4-79-020, or equivalent). Standards for alpha emitters, beta emitters and gamma emitters in surface waters are based upon the analysis of unfiltered samples and appropriate EPA approved analysis methods.

Standards for metals in ground water are based upon the dissolved portion of the sample (after filtration through a 0.45 µm membrane filter, as specified in "Methods for Analysis of Water and Wastes" 1983, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, EPA-600/4-79-020, or equivalent). Standards for alpha emitters, beta emitters and gamma emitters in ground water are based upon the analysis of filtered samples and appropriate EPA approved analysis methods.

Standard for organic parameters in surface water and ground water are based on unfiltered samples.

(10) Calculation of an equivalent concentration of 2,3,7,8-TCDD is to be based on congeners of CDDs/CDFs and the toxicity equivalency factors (TEF) in Table 5 page 787 of van den Berg, M: Bosveld, ATC: et al. (1998) Toxicity equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environ Health Perspect 106(12):775-792. The analysis method to be used is EPA Method 1613, Revision B, Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS), EPA Method 8290, or other method approved by the department on case by case basis. The Required Reporting Value(s) (RRV) for Dioxin and congeners are to be the lowest detection level for the analysis method approved by the Department.

(11) Radionuclides consisting of alpha emitters, beta emitters and gamma emitters are classified as carcinogens. Alpha emitters means the total radioactivity due to alpha particle emission. Beta emitters means the total radioactivity due to beta particle emission. Gamma emitters means the total radioactivity due to gamma particle emission. The emitters covered under this Standard include but are not limited to:

Cesium, radioactive Iodine, radioactive Strontium -89 and -90, radioactive Tritium Gamma photon emitters

(12) Freshwater Aquatic Life Standards for these metals are expressed as a function of total hardness (mg/l, CaCO3). The values displayed in the chart correspond to a total hardness of 25 mg/l. The hardness relationships are:

	<b>Acute = exp.{ma[ln(hardness)]+ba}</b>		<b>Chronic = exp.{mc[ln(hardness)]+bc}</b>	
	<b>ma</b>	<b>ba</b>	<b>mc</b>	<b>Bc</b>
<b>cadmium</b>	<b>1.0166</b>	<b>-3.924</b>	<b>0.7409</b>	<b>-4.719</b>
<b>Copper</b>	<b>0.9422</b>	<b>-1.700</b>	<b>0.8545</b>	<b>-1.702</b>
<b>chromium (III)</b>	<b>0.819</b>	<b>3.7256</b>	<b>0.819</b>	<b>0.6848</b>
<b>Lead</b>	<b>1.273</b>	<b>-1.46</b>	<b>1.273</b>	<b>-4.705</b>
<b>Nickel</b>	<b>0.846</b>	<b>2.255</b>	<b>0.846</b>	<b>0.0584</b>
<b>Silver</b>	<b>1.72</b>	<b>-6.52</b>	<b>-----</b>	<b>-----</b>
<b>Zinc</b>	<b>0.8473</b>	<b>0.884</b>	<b>0.8473</b>	<b>0.884</b>

Note: If the hardness is <25mg/L as CaCO3, the number 25 must be used in the calculation. If the hardness is greater than or equal to 400 mg/L as CaCO3, 400 mg/L must be used in the calculation.

(13) This standard is based upon Water-Use Classifications. See Administrative Rules of Montana (ARM), title 17, Chapter 30 - Water Quality, Sub-Chapter 6 - Surface Water Quality Standards.

(14) Freshwater Aquatic Life Standard for pentachlorophenol with pH. Values displayed in the chart correspond to a pH of 6.5 and are calculated as follows:

$$\text{Acute} = \exp[1.005(\text{pH}) - 4.869] \quad \text{Chronic} = \exp[1.005(\text{pH}) - 5.134]$$

(15) Freshwater Aquatic Life Standard for dissolved oxygen in milligrams per liter are as follows:

	Standards for Waters Classified A-1, B-1, B-2, C-1, and C-2		Standards for Waters Classified B-3, C-3, and I	
	Early Life Stages <sup>1,2</sup>	Other Life Stages	Early Life Stages <sup>2</sup>	Other Life Stages
<b>30 Day Mean</b>	N/A <sup>3</sup>	<b>6.5</b>	N/A <sup>3</sup>	<b>5.5</b>
<b>7 Day Mean</b>	<b>9.5 (6.5)</b>	N/A	<b>6.0</b>	N/A
<b>7 Day Mean Minimum</b>	N/A <sup>3</sup>	<b>5.0</b>	N/A <sup>3</sup>	<b>4.0</b>
<b>1 Day Minimum<sup>4</sup></b>	<b>8.0 (5.0)</b>	<b>4.0</b>	<b>5.0</b>	<b>3.0</b>

1 These are water column concentrations recommended to achieve the required inter-gravel dissolved oxygen concentrations shown in parentheses. For species that have early life stages exposed directly to the water column, the figures in parentheses apply.

2 Includes all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.

3 N/A (Not Applicable).

4 All minima should be considered as instantaneous concentrations to be achieved at all times.

(16) Aquatic Life Standards apply to surface waters only and are based upon the analysis of samples following a "total recoverable" digestion procedure (Section 9.4, "Methods for Analysis of Water and Wastes", 1983, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, EPA-600/4-79-020, or equivalent).

(17) Source of the criteria used to derive the standard:

PP = priority pollutant criteria

NPP = non-priority pollutant criteria

MCL = Maximum contaminate level from the drinking water regulations

SMCL =secondary maximum contaminate level

HA = health advisory all from EPA's "Drinking Water Standards and Health Advisories" (October 1996)

I = standard derived from data obtained from federal data sources available on the Internet.

NRWQC = National Recommended Water Quality Criteria

(18) The Narrative Standards are located in the Administrative Rules of Montana (ARM) 17.30.601 et seq. and ARM 17.30.1001 et seq.

(19) The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the department unless otherwise specified in a permit, approval or authorization issued by the department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of commercial, university, or governmental laboratories using EPA approved methods or methods approved by the department.

(20) Applicable to surface waters only.

(21) Based on taste and odor thresholds given in EPA 822-f-97-008 December 1997.

(22) Trigger Values are used to determine if a given increase in the concentration of toxic parameters is significant or non-significant as per the non-degradation rules ARM 17.30.701 et seq. The acronym "N/A" means "not applicable".

(23) The concentration of iron must not reach values that interfere with the uses specified in the surface and ground water standards (17.30.601 et seq. and 17.30.1001 et seq.) The Secondary Maximum Contaminant Level of 300 micrograms per liter which is based on aesthetic properties such as taste, odor, and staining may be considered as guidance to determine the levels that will interfere with the specified uses.

(24) The concentration of manganese must not reach values that interfere with the uses specified in the surface and ground water standards (17.30.601 et seq. and 17.30.1001 et seq.). The Secondary Maximum Contaminant Level of 50 micrograms per liter which is based on aesthetic properties such as taste, odor, and staining may be considered as guidance to determine the levels that will interfere with the specified uses.

(25) CASRN is an acronym for the American Chemical Society's Chemical Abstracts Service Registry Number.

(26) The NIOSH RTECS number is a unique number used for identification in the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances.

(27) SAX number in the format AAA123 is a unique number for identification of materials in the Dangerous Properties of Industrial Materials, authors N. Irving Sax and Richard J. Lewis, publisher Van Nostrand Reinhold.

(28) The sum of the concentrations of tralkoxydim and its breakdown products shall not exceed the standards listed. For a list of known breakdown products, see EPA memorandum "EFED's Section 3 Review for Tralkoxydim (Chemical #121000; Case # 060780; DP Barcodes 0234682, 0234752, 0238697, 0235723 & 0239519)," and the associated "Environmental Fate Assessment for Tralkoxydim."

(29) The Human Health water quality standard for Arsenic is as follows:

For surface water through January 22 2006 18 ug/L, Health Advisory based

For ground water through January 22 2006 20 ug/L, Health Advisory based

For surface water from **January 23 2006 10** ug/L, Maximum Contaminant Level based

For ground water from **January 23 2006 10** ug/L, Maximum Contaminant Level based

(30) Ground water human health standard is based on the relative potency for selected PAH compounds listed in Table 8 of the EPA "Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons" July 1993, EPA/600/R-93/089.