

# Sampling and Reporting for Sampler 1 and 2 Certification

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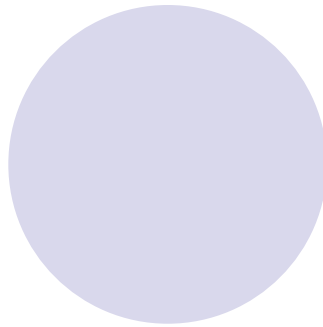
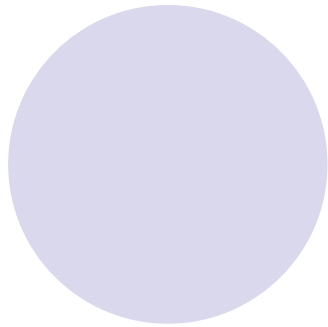
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# Chapter 1

## Introduction to Drinking Water Sampling



# Introduction to Drinking Water Sampling

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- New Mexico Water Sampling Technician Certification
- New Mexico Water Conservation Fee
- Analyses That Are Covered By The Fee
- Sample Siting Plans and Components

# New Mexico Water Sampling Technician Certification

Became Effective January 1, 2008:

**In order to perform the various types of water sampling at public water supply systems the following levels of certification shall be required:**

| <b>Type of Water Sampling</b>           | <b>Population Served</b> |                     |                        |                         |                |
|---|--------------------------|---------------------|------------------------|-------------------------|----------------|
|   | <b>25 to 500</b>         | <b>501 to 5,000</b> | <b>5,001 to 10,000</b> | <b>10,001 to 20,000</b> | <b>20,000+</b> |
| <b>Microbiology (WST1)</b>              | <b>SW or WST1</b>        | <b>WST1</b>         | <b>WST1</b>            | <b>WST1</b>             | <b>WST1</b>    |
| <b>Chemical and Radiological (WST2)</b> | <b>WST2</b>              | <b>WST2</b>         | <b>WST2</b>            | <b>WST2</b>             | <b>WST2</b>    |

# New Mexico Water Sampling Technician Certification Requirements

**Water Systems Operator certification  
can be substituted**

| <b>OPERATOR<br/>CERTIFICATION<br/>LEVEL</b> | <b>INCLUDES THESE<br/>CERTIFICATIONS</b> |
|---|--|
| <b>SW</b>                                   | <b>WST1</b>                              |
| <b>SWA</b>                                  | <b>WST1</b>                              |
| <b>WS1</b>                                  | <b>WST1</b>                              |
| <b>WS2</b>                                  | <b>WST1, WST2</b>                        |
| <b>WS3</b>                                  | <b>WST1, WST2</b>                        |
| <b>WS4</b>                                  | <b>WST1, WST2</b>                        |

# New Mexico Water Sampling Technician Certification Requirements

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- **DWB will now only collect source and entry point samples**
- **Water system now responsible for all distribution system samples: bacteriological, chlorine residual, lead, copper, DBPs – TTHMs & HAA5s, asbestos & turbidity (if GWUDI or surface water source)**
- **Labs have been instructed to reject any samples NOT collected by certified sampler or operator**

# **New Mexico Water Sampling Technician Certification Requirements**

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## **Water Sample Technician 1 requires:**

**High school diploma or GED**

**5 training credits**

**Renewal—5 training credits**

## **Water Sample Technician 2 requires:**

**High school diploma or GED**

**10 training credits**

**Renewal—10 training credits**

# **New Mexico Water Conservation Fee**

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**Water Conservation Fee Act (74-1-13 NMSA) requires that public water systems pay \$0.03 per thousand gallons water pumped**

**This fee funds the following:**

- **Compliance sample collection and testing**





# New Mexico Water Conservation Fee

- **The Water Conservation Fee DOES NOT include:**
  - Repeat microbiological sample analyses
  - Special non-compliance microbiological samples
  - Lead and Copper sample collection
  - Secondary contaminant sampling and testing
  - Any non-compliance chemical testing
  - Sampling and testing for Tribal or Federal Water Systems

# DISTRIBUTION SYSTEM SAMPLE PLANS (DSSP)

## Compliance Sampling Sites

- **Compliance sampling will either occur at:**
  - **Entry Point (EP)** —Point where treated water enters the distribution system; regulatorily defined
  - **Point-of-Use (POU)**—Location where water is drawn directly from customers' plumbing fixtures



# DSSPs

The DSSP shall, at a minimum, include the following:

- **A written description of the system**
- **A map of the water supply system showing the general layout of the system**
- **A written description of the sampling sites to be used**
- **The name of the laboratory(s) to be used**

Plan must be reviewed and approved by NMED-DWB;  
instructions & DSSP template available from:  
<https://www.env.nm.gov/dwb/RTCR.htm>

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# DSSPs

Systems need to have a DSSP for at least the following:

- **Microbiological Sampling – routine & repeat sites (RTCR)**
- **Disinfectants and Disinfection By-products**
- **Lead and Copper**
- **Asbestos**

NMED-DWB should have a copy of the DSSP on file

The Microbiological portion of the DSSP will be reviewed based on the following criteria:

- A. At least one sampling site shall be chosen for each major portion and each isolated portion of the distribution system**
- A. All sampling sites chosen should be sampled at least every four months**
- A. Site alternatives may be accepted within five connections up or down from the designated site**
- A. Public water systems, which collect six or more samples per month, shall collect them at regular time intervals throughout the month**

**What are the three parts of a Distribution System Sample Plan (DSSP)?**

Description of System; Distribution Map; Sampling point information

**What are funds from the Water Conservation Fee used for?**

Sample collection and analyses for Compliance monitoring

**What types of samples can Level 1 Water Sampling Technicians collect?**

Microbiological; Chlorine Residual; Turbidity; and Field Tests for pH, Dissolved Oxygen & Temperature

## Chapter 1 - Level 1 Sample Test Questions

- 1. How much is the Water Conservation Fee?**
  - A. \$0.03/100 gallons**
  - B. \$0.03/1000 gallons**
  - C. \$0.50/1000 gallons**
  
- 2. The Water Conservation Fee covers repeat microbiological sample analyses.**
  - A. True**
  - B. False**
  
- 3. How many hours of training credits are required for WST Level 1 certification?**
  - A. 5**
  - B. 10**
  - C. 20**
  - D. 30**

## Chapter 1 - Level 2 Study Questions

### **What information should be included in a DSSP narrative?**

Specific information about the system and sampling points. For microbiological sampling it should include the schedule and rotation (minimum of 4 sample sites).

### **What is the difference between POE and POU sample sites?**

**POE** (point of entry)—Where treated water enters the distribution system

**POU** (point of use)—Water drawn directly from consumers plumbing fixtures

### **Which samples must be collected by the PWS?**

Samples collected in Distribution system - Microbiological; Chlorine Residuals; Lead/Copper; Asbestos; DBPs; turbidity



## Chapter 1 - Level 2 Sample Test Questions



- 1. What type of sample is a lead and copper sample?**
  - A. POE**
  - B. POU**
  - C. Distribution**
  
- 2. The Water Conservation Fee covers secondary contaminant sample collection and analyses.**
  - A. True**
  - B. False**
  
- 3. How many hours of training credits are required for WST Level 2 certification?**
  - A. 5**
  - B. 10**
  - C. 20**
  - D. 30**

# Chapter 2

## Safe Drinking Water Act



# Safe Drinking Water Act

- Public Water Systems
- Primary Contaminants
- Maximum Contaminant Levels (MCL)
- Inorganic Contaminants
  - Lead and Copper Rule
  - Nitrate and Nitrite
  - Fluoride
  - Turbidity
- pH
- Dissolved Oxygen
- Temperature
- Organic Contaminants
- Radioactive Contaminants
- Bacteriological Contaminants
  - Bacteriological Violations
- Secondary Contaminants
- Monitoring and Reporting
- Sampling Schedules
- Public Notification
- Action Plans for Violations
- Variances and Exemptions
- Surface Water Rule
- Disinfectants and Disinfection By-Products Rule
- Ground Water Rule
- Consumer Confidence Reports

# Safe Drinking Water Act (SDWA)

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- **SDWA passed by Congress in 1974**  
**Primary goal of the SDWA is to set health based standards for drinking water to protect against both man-made and naturally-occurring contaminants**
- **1986, 1996 & 2016 Amendments**
  - **Requires additional protection of water sources-rivers, lakes, reservoirs, springs and groundwater wells; RTCR**

# Public Water Systems

- **“Public water system means a system for the provision to the public of water for human consumption through pipes or after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year.”**

***40 CFR 141.2 (4-16-07 edition)***

# A public water system is either

a...

- Community—“a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.”
- Non-Transient Non-Community—“a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year.” (Examples: schools, senior centers, detention centers etc.)
- Transient Non-Community—“a non-community water system that does not regularly serve at least 25 of the same persons over six months per year.” (Examples: rest stops, convenience centers, restaurants etc.)

# Primary Contaminants



**Certain substances and organisms in drinking water have been determined to cause adverse acute or chronic health effects. They are referred to as primary contaminants and are regulated by MCLs. These substances can be grouped into four major categories:**

- 1) Inorganic Contaminants
- 2) Organic Contaminants
- 3) Radiological Contaminants
- 4) Microbiological Contaminants



# 1) Inorganic Contaminants

- **These contaminants are mostly heavy metals (by RCRA definition), but also include other non carbon-based chemicals**
  - **15 contaminants**
    - **Nitrate, Nitrite, Total Nitrate/Nitrite and Asbestos are exceptions to the Standard Monitoring Framework**
  - **They may enter the water supply naturally through groundwater formations or from mining runoff and industrial discharges**



| Inorganic Contaminant                    | MCL (mg/L)   |
|--|--|
| <b>Antimony</b>                          | <b>0.006</b>   |
| <b>Arsenic</b>                           | <b>0.010</b>   |
| <b>Barium</b>                            | <b>2</b>   |
| <b>Beryllium</b>                         | <b>0.004</b>   |
| <b>Cadmium</b>                           | <b>0.005</b>   |
| <b>Chromium</b>                          | <b>0.1</b>   |
| <b>Cyanide (as free Cyanide)</b>         | <b>0.2</b>   |
| <b>Mercury</b>                           | <b>0.002</b>   |
| <b>Selenium</b>                          | <b>0.05</b>  |
| <b>Thallium</b>                          | <b>0.002</b>   |
| <b>Copper</b>                            | <b>1.3* Action level</b>                                 |
| <b>Lead</b>                              | <b>0.015* Action level</b>                               |
| <b>Nitrate (as N) – Acute (chemical)</b> | <b>10</b>  |
| <b>Nitrite (as N)</b>                    | <b>1</b>   |
| <b>Total Nitrate/Nitrite (as N)</b>      | <b>10</b>  |
| <b>Fluoride</b>                          | <b>2.0 Secondary MCLG</b><br><b>4.0 Violation</b>        |
| <b>Turbidity – Acute (physical)</b>      | <b>0.3 NTU in 95% of samples</b><br><b>1 NTU maximum</b> |
| <b>Asbestos</b>                          | <b>7,000,000 Fibers/L</b>                                |

# Lead and Copper

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- **Sampling must be conducted for lead and copper that may be present at the customer's tap. Most of the lead and copper found this way comes from the customer's plumbing**
- **The system will be responsible for treating the water to stabilize the corrosive qualities that cause the leaching of lead and copper from the customer's plumbing if the Action Levels are exceeded**

# Nitrate and Nitrite

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- **Nitrate and nitrite are the only chemical contaminants that represent an immediate health risk**
- **Pregnant women and infants under 18 months can develop a condition known as “Blue Baby Syndrome” or methemoglobinemia**

# Fluoride



- **Help prevent tooth decay**
- **The optimum dosage for fluoride is 0.8-1.2 mg/L. At higher concentrations fluoride can:**
  - create stains on teeth in children and
  - leads to brittle bones in older individuals
- **The optimum dosage for fluoride is determined by the average ambient air temperature of the system**

# Turbidity

- 
- **Turbidity is clay, silt or mud in the water.**
    - **Although turbidity does not represent a health risk by itself, it can shield harmful bacteria from disinfection processes.**
  - **Turbidity is measured in Nephelometric Turbidity Units (NTU).**
  - **The device used to measure NTU's is called a nephelometer or turbidimeter.**



# Inorganic Contaminants continued

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- **The following 3 physical parameters – pH, DO, temperature typically do not create adverse health effects though they can contribute to them**
- **They are used to evaluate water quality or are used for process control**

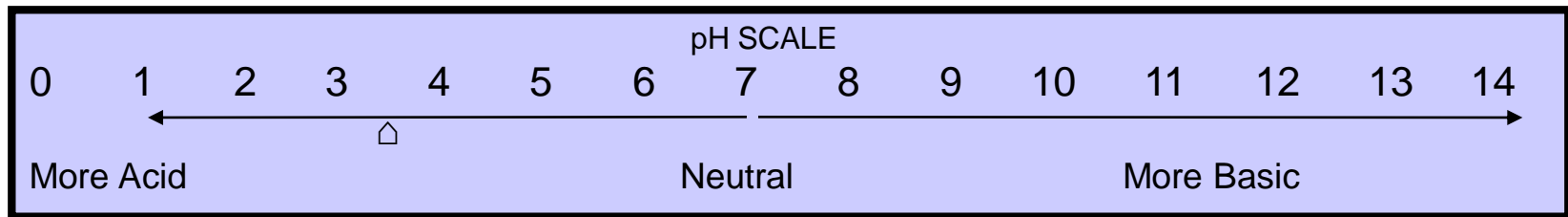
# pH – Power of Hydrogen

A decorative graphic at the top of the slide features five circles of varying shades of purple and white, arranged horizontally. Below the circles is a thick horizontal line that spans the width of the circles.

- pH is the measurement of the hydrogen ion,  $H^+$  or acid concentration of a fluid.
  - Water is considered to be acidic when it has more hydrogen ions ( $H^+$ ) than hydroxide ions ( $OH^-$ )
  - Water is considered to be basic when there are more hydroxide ions ( $OH^-$ ) than hydrogen ( $H^+$ )
    - Chemicals that add hydrogen ions ( $H^+$ ) are:  
*hydrochloric acid, (HCl), sulfuric acid, ( $H_2SO_4$ ), nitric acid, ( $HNO_3$ ), and carbonic acid, ( $H_2CO_3$ )*
    - Chemicals that add hydroxide ions ( $OH^-$ ) are:  
*sodium hydroxide, (NaOH), calcium hydroxide, ( $Ca(OH)_2$ ), and magnesium hydroxide, ( $Mg(OH)_2$ )*

# pH – Power of Hydrogen

The pH of water is measured on a scale that reads from 0 to 14, where 7 is neutral



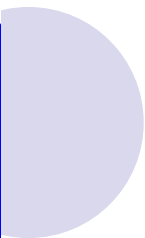
- For every whole number that the pH changes the strength of the acid or base properties of the fluid will change by a factor of ten
  - pH of 9 to a pH of 10 becomes 10 times more basic
  - pH of 5 is 10 times more acid than water at a pH of 6



Concentration of Hydrogen ions compared to distilled water

Examples of solutions at this pH

|              |         |  |
|--------------|---------|--|
| 10,000,000   | pH = 0  | Battery acid, Strong Hydrofluoric Acid       |
| 1,000,000    | pH = 1  | Hydrochloric acid secreted by stomach lining |
| 100,000      | pH = 2  | Lemon Juice, Gastric Acid<br>Vineger         |
| 10,000       | pH = 3  | Grapefruit, Orange Juice, Soda               |
| 1,000        | pH = 4  | Tomato Juice      Acid rain                  |
| 100          | pH = 5  | Soft drinking water<br>Black Coffee          |
| 10           | pH = 6  | Urine      Saliva                            |
| 1            | pH = 7  | "Pure" water                                 |
| 1/10         | pH = 8  | Sea water                                    |
| 1/100        | pH = 9  | Baking soda                                  |
| 1/1,000      | pH = 10 | Great Salt Lake<br>Milk of Magnesia          |
| 1/10,000     | pH = 11 | Ammonia solution                             |
| 1/100,000    | pH = 12 | Soapy water                                  |
| 1/1,000,000  | pH = 13 | Bleaches<br>Oven cleaner                     |
| 1/10,000,000 | pH = 14 | Liquid drain cleaner                         |



# Dissolved Oxygen, DO

- **DO determines the oxygen level in potable and non-potable waters**

## Sample Measurement

- **The DO should be measured at a representative point**
  - **Remember...DO is a gas and is affected by turbulence and temperature**
    - **Measuring DO at a point of high turbulence will not be representative**
    - **Likewise, measuring DO in shallow or quiet areas of a river will be different than in deeper and faster moving areas**
  - **A sampling plan will help define what information is needed and where the most appropriate location will be**

# Temperature

- **Accurate temperature measurements are critical to many of the tests that are performed in the laboratory and out in the field.**
- **Measurements should be made with a good mercury thermometer or digital thermometer.**
- **Use thermometers that have the sensitivity required for each test.**
  - **Typically use a thermometer with 0.1° C accuracy**

## 2) Organic Contaminants

- **There are 51 of these contaminants:**
  - **herbicides and insecticides that are primarily used in agriculture applications,**
  - **organic solvents used in industrial applications,**
  - **organic by-products of industrial processes, and**
  - **chemical by-products from chlorination of drinking water**

### **SOURCES OF CONTAMINATION INCLUDE:**

- **Runoff from agricultural spraying**
- **Industrial discharges**
- **Accidental spills**
- **Improper disposal of hazardous wastes**

## Organic Contaminants

| Contaminant                       | MCL (mg/L)            | Contaminant   | MCL (mg/L)    |
|-----------------------------------|-----------------------|---|---------------|
| <b>Acrylamide</b>                 | <b>TT<sup>1</sup></b> | <b>Lindane</b>  | <b>0.0002</b> |
| <b>Alachor</b>                    | <b>0.002</b>          | <b>Methoxychlor</b>                                   | <b>0.04</b>   |
| <b>Atrazine</b>                   | <b>0.003</b>          | <b>Oxamyl (Vydate)</b>                                | <b>0.2</b>    |
| <b>Benzene</b>                    | <b>0.005</b>          | <b>Polychlorinated</b>                                |               |
| <b>Benzo(a)pyrene</b>             | <b>0.0002</b>         | <b>byphenyls (PCBs)</b>                               | <b>0.0005</b> |
| <b>Carbofuran</b>                 | <b>0.04</b>           | <b>Pentechlorophenol</b>                              | <b>0.001</b>  |
| <b>Carbon Tetrachloride</b>       | <b>0.005</b>          | <b>Picloram</b>                                       | <b>0.5</b>    |
| <b>Chlordane</b>                  | <b>0.002</b>          | <b>Simazine</b>                                       | <b>0.004</b>  |
| <b>Chlorobenzene</b>              | <b>0.1</b>            | <b>Styrene</b>  | <b>0.1</b>    |
| <b>2,4-D</b>                      | <b>0.07</b>           | <b>Tetrachloroethylene</b>                            | <b>0.005</b>  |
| <b>Dalapon</b>                    | <b>0.2</b>            | <b>Toluene</b>  | <b>1</b>      |
| <b>DBCP</b>                       | <b>0.0002</b>         | <b>Toxaphene</b>                                      | <b>0.003</b>  |
| <b>o-Dichlorobenzene</b>          | <b>0.6</b>            | <b>Trichloroethylene</b>                              | <b>0.005</b>  |
| <b>p-Dichlorobenzene</b>          | <b>0.075</b>          | <b>2,4,5-TP (Silvex)</b>                              | <b>0.05</b>   |
| <b>1,2-Dichloroethane</b>         | <b>0.005</b>          | <b>1,2,4-Trichlorobenzene</b>                         | <b>0.07</b>   |
| <b>1,1-Dichloroethylene</b>       | <b>0.007</b>          | <b>1,1,1-Trichloroethane</b>                          | <b>0.2</b>    |
| <b>cis-1,2-Dichloroethylene</b>   | <b>0.07</b>           | <b>1,1,2-Trichloroethane</b>                          | <b>0.005</b>  |
| <b>trans-1,2-Dichloroethylene</b> | <b>0.1</b>            | <b>Vinyl chloride</b>                                 | <b>0.002</b>  |
| <b>Dichlormethane</b>             | <b>0.005</b>          | <b>Xylenes (total)</b>                                | <b>10</b>     |
| <b>1,2-Dichloropropane</b>        | <b>0.005</b>          |   |               |
| <b>Di(2-ethylhexyl) adipate</b>   | <b>0.4</b>            | <b><sup>1</sup> - TT refers to approved Treatment</b> |               |
| <b>Di(2-ethylhexyl) phthalate</b> | <b>0.006</b>          | <b>Technology rather than MCL</b>                     |               |
| <b>Dinoseb</b>                    | <b>0.007</b>          |   |               |
| <b>Dioxin</b>                     | <b>0.00000003</b>     |   |               |
| <b>Diquat</b>                     | <b>0.02</b>           |   |               |
| <b>Endothall</b>                  | <b>0.1</b>            |   |               |
| <b>Endrin</b>                     | <b>0.002</b>          |   |               |
| <b>Epichlorohydrin</b>            | <b>TT<sup>1</sup></b> |   |               |
| <b>Ethylbenzene</b>               | <b>0.7</b>            |   |               |
| <b>Ethylene dibromide</b>         | <b>0.00005</b>        |   |               |

### 3) Radiological Contaminants

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- **Most radioactive substances occur naturally in ground water and in some surface supplies**
- **Some man-made substances may also enter drinking water supplies from processing facilities, mining areas, and nuclear power plants**

# Radioactive Contaminants

The 4 contaminants include:

| <u>Contaminant</u>                | <u>MCL</u>                   |
|-----------------------------------|------------------------------|
| Radium 226 and 228                | 5 pCi/L                      |
| Gross Alpha Activity              | 15 pCi/L                     |
| Gross Beta Activity<br>(man-made) | 4 millirem/yr<br>or 50 pCi/L |
| Uranium<br>(ppb)                  | 30 $\mu$ g/L                 |

## 4) Bacteriological Contaminants

- **The total coliform group of bacteria represents the indicator organisms used in determining bacteriological contamination**
  - coliforms in water include escherichia (E. coli – **Acute biological**), citrobacter, enterobacter & klebsiella
- **Their presence indicates the possibility that some pathogenic (disease causing) organisms may also be present**



# Drinking Water Regulations

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- **Sets the number of samples a water system must submit per month (1-minimum)**
- **Larger systems require more samples each month (480-maximum)**
  - **Number of samples may be reduced by NMED-DWB**
  - **Compliance is based on routine and repeat samples**

# RTCR Monitoring Frequency

| Population Served* | Minimum Number of Samples per Month; all PWSs |
|--------------------|---|
| 25 - 1,000         | 1   |
| 1,001 – 2,500      | 2   |
| 2,501 – 3,300      | 3   |
| 3,301 – 4,100      | 4   |
| 4,101 – 4,900      | 5   |
| 4,901 – 5,800      | 6   |
| 5,801 – 6,700      | 7   |
| 6,701 – 7,600      | 8   |
| 7,601 – 8,500      | 9   |
| 8,501 – 12,900     | 10  |

\* See rule (40 CFR 141.21.a.2) for additional population categories

# National Secondary Drinking Water Regulations 40 CFR 143

## ● Secondary Maximum Contaminant Level Goals (SMCLGs) - examples:

| • Secondary Contaminants | SMCLG (mg/L) |
|--------------------------|--------------|
| • TDS                    | 500          |
| • Chloride               | 250          |
| • Sulfate                | 250          |
| • Iron                   | 0.3          |
| • Manganese              | 0.05         |
| • pH                     | 6.5-8.5      |

## ● Monitoring

✓ *Not Enforceable*

✓ *Goals or Guidelines for the States*



# Monitoring and Reporting

Water systems are responsible for:

- **Monitoring water quality and**
  - **Reporting violations to the public**
- 
- **NMED-DWB is currently collecting and submitting chemical and radiochemical samples to the laboratories**
  - **Systems are still responsible for the results of testing and any public notification that may be required**
  - **Systems are required to report to NMED-DWB within 48 hours if they fail to comply with any NM Drinking Water Regulation**

# Systems must retain records for:

- ***Bacteriological samples: 5 years***
- ***Chemical samples: 10 years***
- ***Records of actions taken to correct violations: 3 years after last action***
- ***Reports, correspondence, communications and sanitary surveys: 10 years***
- ***Variance granted to the system: 5 years following the expiration of the variance***
- ***Lead and copper samples: 12 years***
- ***Consumer Confidence Reports: 3 years***

# Sampling Schedules

A decorative graphic at the top of the slide consists of five circles of varying shades of purple and blue, arranged in a horizontal line. Below the circles is a thick horizontal line that spans the width of the circles.

## Chemical & Radiological Baseline Monitoring of Drinking Water

### Chemical Monitoring

For inorganic chemicals, monitoring frequency is dependent upon the water source and contaminant being sampled.

### Radiological Monitoring

Initial sampling of 4 quarters composited.

***ALL PWS MUST BE SAMPLED WITHIN 90  
DAYS OF COMING ON LINE***

# Sample Collection Frequency

## Ground Water

**Nitrate—Annual (If 1 sample  $\geq$  5 mg/L, 1/4ly at least 1 year) All systems; No waiver**

**Nitrite—1 time only (if result is  $<$  0.5 mg/L) All systems**

**Asbestos—Every 9 years (1st period of cycle if no waiver) CWS & NTNCWS**

**Others—Triennial - CWS & NTNCWS**

## Surface Water

**Nitrate—Quarterly (reduced to annual if none  $>$ 5 mg/L) All systems**

**Nitrite—1 time only (if result is  $<$  0.5 mg/L) All systems**

**Asbestos—Every 9 years (same as groundwater system) CWS & NTNCWS**

**Others—Annual - CWS & NTNCWS**

**A CONFIRMATION SAMPLE IS REQUIRED  
WHEN THE MCL IS EXCEEDED**

# Public Notification

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## Divided into 3 tiers

- **Takes into account the seriousness of the violation or situation and any potential adverse health effects**
- **Systems must notify the public and NMED-DWB**
  - **Certification to NMED-DWB within 10 days after public notification**



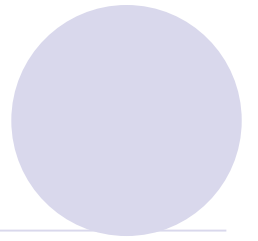
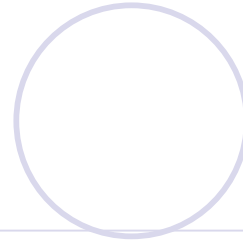
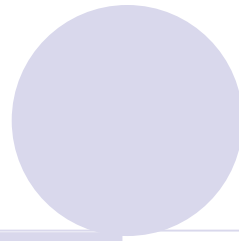
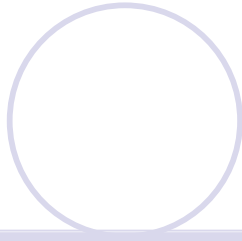


# Standards & Frequency

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**Tier 1—Significant potential health risks with short term exposure—  
24 hours**

- Radio
- TV
- Hand Delivery
- Posting
- Other methods specified by State



## **Tier 2 Potential health risks—30 days**

- **Mail or direct delivery for CWSs**
- **Mail, direct delivery or posting for NCWs**
- **No longer applies to TC+**

## **Tier 3 No potential health risks—1 year**

- **Same as Tier 2**
- **CCR**

# Action Plans for Violations

- **If a water supply exceeds the primary standards the water system must either:**
  - **cease using water from the contaminated source,**
  - **provide adequate treatment to remove the contaminants,**
  - **or locate a new source of supply that meets the standards**
- **Blending may be done under certain conditions**
  - **The blended water must enter the system from a single point of entry**

# Variations, Exemptions and Waivers

- A system may be granted a variance or exemption if the MCL is exceeded and is unable to correct the problem due to financial or technical reasons
- All requests for variations, waivers, and exemptions must be directed to and approved by the NMED-DWB
- Not allowed for acute hazards
- Waivers can be applied to sample frequencies

# Surface Water Rules

The header features five circles of varying shades of purple and blue, arranged horizontally. A horizontal line is positioned below the circles, extending across the width of the slide.

- **Any system that uses surface water must provide treatment of the supply**
- **Springs and infiltration galleries are considered surface supplies if they are found to have groundwater that is under the direct influence of surface water (GWUDI)**
  - **A speciation study of the organisms found in the suspected source of influence and the water that enters the system is used to determine whether a source is GWUDI**

# Surface Water Rules

The header features five circles in a row. From left to right: a solid light purple circle, an outlined light purple circle, a solid light purple circle, an outlined light purple circle, and a solid light purple circle. A horizontal light purple line runs below the circles, starting under the first circle and ending under the fourth circle.

- **Interim Enhanced Surface Water Treatment Rule (IESWTR) – now expired**
  - 10,000 or more population
- **Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) – now expired**
  - <10,000 population
- **Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) – now in effect**
  - Schedule 1—100,000 or more population
  - Schedule 2—50,000 to 99,999 population

# Removal or Inactivation of *Giardia*

The concerns about contamination have created the need for higher free chlorine residuals and longer disinfection contact times

- The “CT” calculation is used to determine the necessary contact time at a given chlorine residual concentration

- $C \times T =$  the CT factor

**C** is the disinfectant concentration,

**T** is the contact time in minutes,

**CT** is a temperature & pH-based constant

# Removal of *Cryptosporidium*

- **2-log reduction of the numbers found in raw water for IESWTR and LT1 systems**
  - **2-log removal or deactivation would mean that 1% of the bacteria may survive or 99% are removed**
  - **4-log removal or deactivation would mean that 0.01% of the organisms may survive or 99.99% are removed**
- **Some larger LT2 systems may be required to provide a 5.5-log removal**
- **Log removal credits are assigned to the various treatment processes**



# Disinfectants and Disinfection Byproducts Rule

- **Applies to all CWSs and NTNCWSs that add disinfectant and TNCWSs that use chlorine dioxide**
  - **Subpart H systems serving  $\geq 10,000$  people (January 1, 2002)**
  - **Subpart H systems serving  $< 10,000$  people and ground water systems that chemically disinfect (January 1, 2004)**

- **Trihalomethanes and haloacetic acids are formed when chlorine, bromine, or iodine combine with organic precursors that may be present in the source water**
  - **Recent changes have set new MCLs for several disinfection by-products**
- **Systems that use ozone as a disinfectant may also create bromates**
- **All of these chemicals are carcinogens**

The header features five circles in a row. The first circle is solid light purple and contains the text 'Stage 1 D-DBP'. The second circle is hollow with a light purple outline. The third circle is solid light purple. The fourth circle is hollow with a light purple outline. The fifth circle is solid light purple. A horizontal light purple line runs below the circles.

# Stage 1 D-DBP

- **New Maximum Residual Disinfectant Level Goals (MRDLGs) and MRDLs for 3 disinfectants (Chlorine, chloramines and chlorine dioxide)**
- **More stringent MCL for Total Trihalomethanes (TTHMs)**
- **New MCL for 5 Haloacetic Acids (HAA5s), Bromate and Chlorite (plants that use ozone and chlorine dioxide)**

## Stage 2 D-DBP

A decorative graphic at the top of the slide features three circles of varying shades of purple and blue, arranged horizontally. Below the circles is a thick horizontal line that spans the width of the circles.

- **Builds upon existing rules**
- **Identify more appropriate monitoring sites for DBPs**
  - **Initial distribution system evaluations (IDSEs) to investigate TTHM and HAA5 levels in the distribution system**
- **Improve protection of public health by reducing exposure to DBPs**



# Stage 1 and Stage 2 D-DBP

- **Stage 1 D-DBP set MCLs based on a running annual average (RAA) of samples taken in the system, rather than individual sample results**
- **Stage 2 D-DBP has changed to use the location-based running annual average (LRAA) of each individual contaminant for the calculation**

# D-DBP Rule Contaminants

| Contaminant                  | MCL (mg/L) |
|------------------------------|------------|
| Total Trihalomethanes (TTHM) | 0.080      |
| Halo Acetic Acids (HAA5)     | 0.060      |
| Bromate                      | 0.010      |
| Chlorite                     | 1          |
| Chlorine Dioxide             | 0.8        |
| Chlorine (MRDL)              | 4          |
| Chloramines                  | 4          |

# Stage 1 and Stage 2 D-DBP

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- **A system that is in violation may be required to change to a different means of disinfection or incorporate an additional process**
- **Sample results from D-DBP testing must be reported within 10 days of the end of the monitoring period**
- **Chlorine residual reports must be submitted every quarter**

# Stage 1 and Stage 2 D-DBP Chlorine Residual Report

## MONTHLY DISINFECTANT RESIDUAL REPORT

FOR PUBLIC WATER SYSTEMS

SYSTEM NAME: \_\_\_\_\_

WATER SYSTEM ID # \_\_\_\_\_

Number of Active Service

Months

Year

Connections this Month: \_\_\_\_\_

### Chlorine Residual Readings (mg/L)

| Date | Month #1 | Month #2 | Month #3 |
|------|----------|----------|----------|
| 1    |          |          |          |
| 2    |          |          |          |
| 3    |          |          |          |
| 4    |          |          |          |
| 5    |          |          |          |
| 6    |          |          |          |
| 7    |          |          |          |
| 8    |          |          |          |
| 9    |          |          |          |
| 10   |          |          |          |
| 11   |          |          |          |
| 12   |          |          |          |
| 13   |          |          |          |
| 14   |          |          |          |
| 15   |          |          |          |
| 16   |          |          |          |
| 17   |          |          |          |
| 18   |          |          |          |
| 19   |          |          |          |
| 20   |          |          |          |
| 21   |          |          |          |
| 22   |          |          |          |
| 23   |          |          |          |
| 24   |          |          |          |
| 25   |          |          |          |
| 26   |          |          |          |
| 27   |          |          |          |
| 28   |          |          |          |
| 29   |          |          |          |
| 30   |          |          |          |
| 31   |          |          |          |
| Avg  |          |          |          |
| Max  |          |          |          |
| Min  |          |          |          |

*I certify that I am familiar with the information contained in this report and that, to the best of my knowledge, the information is true, complete, and accurate.*

Operator's  
Signature: \_\_\_\_\_



# Stage 1 and Stage 2 D-DBP Chlorine Residual Report



**State of New Mexico**  
**ENVIRONMENT DEPARTMENT**  
**DRINKING WATER BUREAU**  
 PO Box 5469  
 Santa Fe, NM 87502  
 Tel. 505-476-8635 - Fax 505-476-8656  
 Toll Free 1-877-654-8720  
[www.env.nm.gov/dwb/index.htm](http://www.env.nm.gov/dwb/index.htm)



## DISINFECTANT LEVEL QUARTERLY OPERATING REPORT (DLQOR)

Quarter: \_\_\_\_\_

Year: \_\_\_\_\_

Water System Name: \_\_\_\_\_

System ID #: \_\_\_\_\_

### First Month of Quarter: Monthly Summary

|  |  |  |
|--|--|--|
| Average of all disinfectant Residuals for this month | Number of residuals collected this month | Number of readings with NO Residual for this Month |
| mg/L   | readings                                 | Readings %   |

### Second Month of Quarter: Monthly Summary

|  |  |  |
|--|--|--|
| Average of all disinfectant Residuals for this month | Number of residuals collected this month | Number of readings with NO Residual for this Month |
| mg/L   | readings                                 | Readings %   |

### Third Month of Quarter: Monthly Summary

|  |  |  |
|--|--|--|
| Average of all disinfectant Residuals for this month | Number of residuals collected this month | Number of readings with NO Residual for this Month |
| mg/L   | readings                                 | Readings %   |

### Quarterly Summary

|  |                                  |                                   |
|--|----------------------------------|-----------------------------------|
| Average of all disinfectant Residuals for this Quarter | Lowest Residual for this Quarter | Highest Residual for this Quarter |
| mg/L   | mg/L                             | mg/L                              |

### Running Annual Average Summary

Average of all disinfectant Residuals for the previous 12 Months

|      |
|------|
| mg/L |
|------|

NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

LICENSE # \_\_\_\_\_

ADDRESS: \_\_\_\_\_ CITY: \_\_\_\_\_

STATE: \_\_\_\_\_ ZIP CODE \_\_\_\_\_

PHONE # \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

**DLQORs are required to be submitted to NMED-DWB No Later than the Dates Noted Below**

| Quarter 1   | Quarter 2                                     | Quarter 3  | Quarter 4  |
|---|---|--|--|
| Disinfectant Residuals for January, February, & March | Disinfectant Residuals for April, May, & June | Disinfectant Residuals for July, August, & September | Disinfectant Residuals for October, November, & December |
| Report due by April 10th                              | Report due by July 10th                       | Report due by October 10th                           | Report Due by January 10th                               |

# Measuring Chlorine Residual

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- **Free chlorine**

- **DPD + free chlorine = pink color**
- **60 sec – 3 min; best 60 sec (worst-case)**

- **Total chlorine**

- **DPD + KI + chlorine =  $I_2$  + DPD = pink color**
- **3 – 6 min; best 3 min (worst-case)**

# Ground Water Rule

A decorative graphic at the top of the slide consists of five circles arranged horizontally. The first, third, and fifth circles are solid light purple. The second and fourth circles are white with a light purple outline. A thin horizontal line passes through the center of all five circles.

- **The Ground Water Rule (GWR) was proposed to establish a strategy for identifying ground water systems that are at high risk for fecal contamination**
- **Community water systems with outstanding performance and non-community water systems had until December 31, 2014 to complete the initial sanitary survey**
- **All other community water systems had to complete their initial survey by December 31, 2012**

# **The GWR is comprised of four major components:**

- 1) Periodic sanitary surveys (CWS every 3 yrs, NTNC every 5 yrs) to identify and evaluate significant deficiencies such as defective casings or location too close to sources of surface pollution**
- 2) Monitoring of source water for the presence of *E. coli* and other enteric organisms**
- 3) Corrective action must be taken by any system with significant deficiencies or source water contamination**

**This could include:**

- A. Correcting structural deficiencies**
  - B. Eliminating the source of contamination**
  - C. Finding an alternative source of water**
  - D. Providing treatment to achieve a 4-log inactivation or removal of viruses**
- 4) Compliance monitoring to ensure that the treatment reliably achieves a 4-log reduction or inactivation of viruses**

The header features five circles of varying shades of purple and white, arranged horizontally. A thick horizontal line is positioned below the circles, extending across the width of the slide.

# Consumer Confidence Reports

- **Applies only to community water systems**
- **Summarizes information regarding sources used (i.e., rivers, lakes, reservoirs, or aquifers)**
- **Includes any Detected contaminants**
- **Includes Compliance information**
- **Includes Educational information**

# **The report is due by:**

A decorative graphic at the top of the slide consists of five circles in a row. The first, third, and fifth circles are filled with a light purple color, while the second and fourth circles are hollow with a light purple outline. Below the circles is a horizontal line that is solid purple under the first three circles and light purple under the last two circles.

- **July 1st of each year to customers and NMED-DWB**
- **October 1st NMED-DWB must receive certification that the CCR has been distributed**
- **DWW data generator and EPA CCRiWriter (now available through EPA website)**

**What is an MCL?**

**Why is turbidity a Primary Contaminant?**

**What is a nephelometer?**

**What is a repeat sample?**

**How long must bacteriological and chemical sampling results be kept?**

*Bacteriological – 5 yrs.; Chemical – 10 yrs.; Lead and Copper – 12 yrs.*

**How often must consumer confidence reports be prepared and distributed?**



## Chapter 2 - Level 1 Sample Test Questions

A public water system is any system that serves a population greater than or equal to:

- A. 25
- B. 50
- C. 100

What is the maximum chlorine residual allowed by the Disinfectant-Disinfection By-Products Rule?

- A. 2 mg/l
- B. 4 mg/l
- C. 6 mg/l
- D. 8 mg/l





## Chapter 2 - Level 1 Sample Test Questions

What type of contaminant is iron?

- A. Primary Inorganic
- B. Primary Organic
- C. Secondary

The failure of a public water system to comply with the NM Drinking Water Regulations must be reported to NMED within:

- A. 12 Hours
- B. 48 Hours
- C. 4 Days
- D. One week

## What are the four components of the Ground Water Rule?

Sanitary Surveys; Source Monitoring; Corrective Action;  
Compliance Monitoring

## What notification is required for a Tier 1 violation?

24-hour public notice and reported to NMED w/in 24-hours

## What are the action levels for lead and copper?

Lead—0.015 mg/L; Copper—1.3 mg/L

## How often must nitrate samples be submitted?

Yearly

**The MCL for Total Trihalomethanes is:**

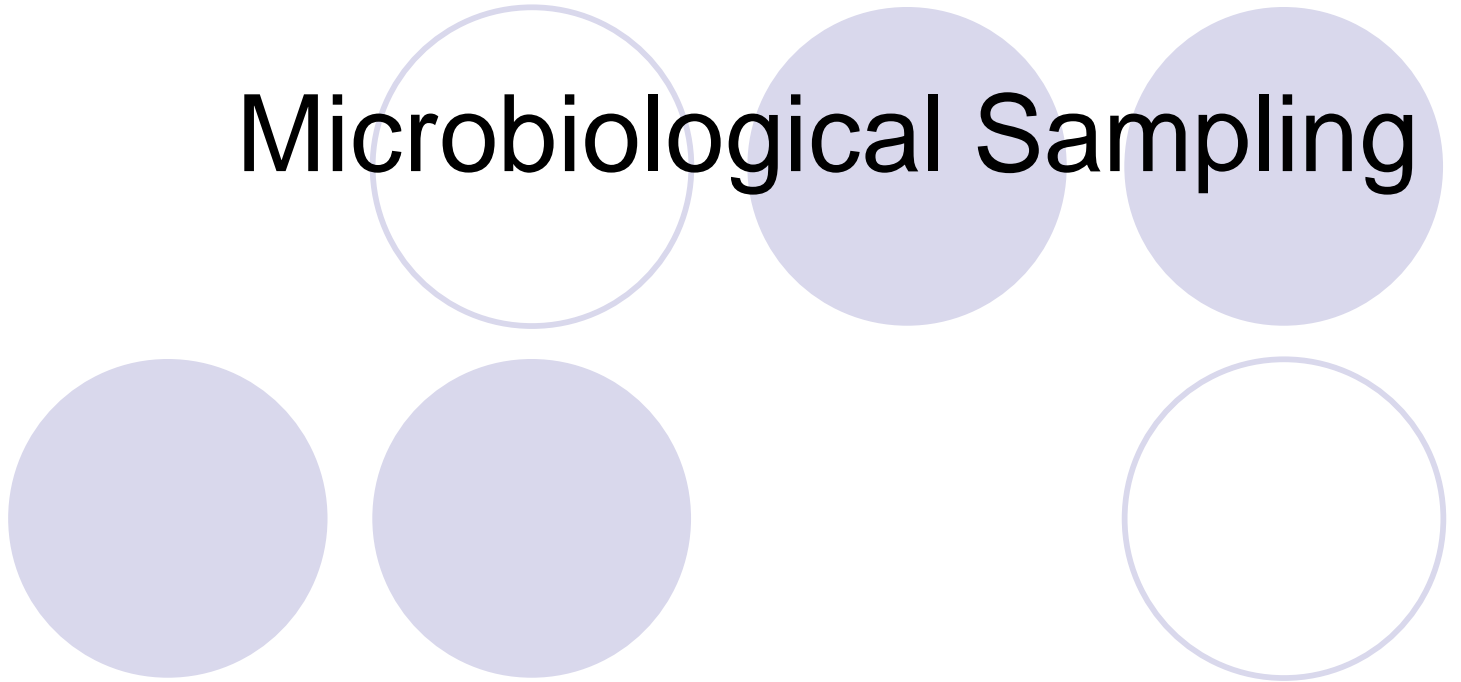
- A. 0.010 mg/l**
- B. 0.080 mg/l**
- C. 0.200 mg/l**

**The SDWA Compliance Cycle for the Standardized Monitoring Rule consists of three:**

- A. Years**
- B. Compliance Periods**
- C. Quarters**
- D. Months**

# Chapter 3

## Microbiological Sampling





# Microbiological Sampling

- Waterborne Pathogens
- Coliform Group of Bacteria
- Monthly Sampling
- The Sample Siting Plan
- The Sample Bottles
- Preparing To Collect The Sample
- Sample Collection
- Reporting & Shipping Considerations
- Repeat Samples
- Violations

# Waterborne Pathogens

## Diseases Caused By Waterborne Pathogens

All Water Sources:

**Typhoid**

**Paratyphoid (Types A & B)**

**Cholera**

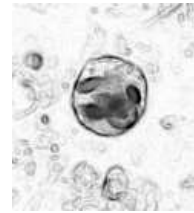
**Dysentery**

**Hepatitis (Virus)**

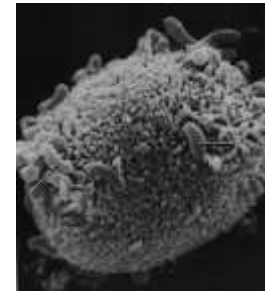
Surface Water Only:

**Cryptosporidiosis**

**Giardiasis**



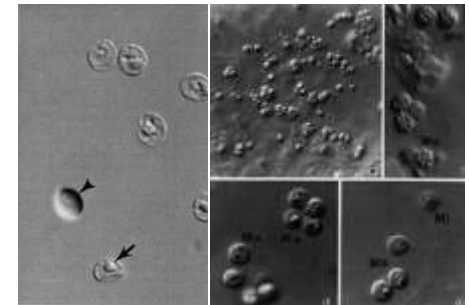
Dysentery



Cholera



Giardia



Cryptosporidium

**The protozoa that are found in surface water supplies form cysts and spores that protect them from cold temperatures and make them more difficult to kill with disinfectant chemical**

# Coliform Group of Bacteria

The header features five circles of varying shades of purple and white, arranged horizontally. A thick purple horizontal line is positioned below the circles, extending across the width of the slide.

- **Coliform bacteria are enteric bacteria. This means that they are found in the intestinal tract of warm-blooded animals, including humans.**
  - coliforms in water include escherichia (*E. coli*), citrobacter, enterobacter & klebsiella
- **These bacteria do not cause disease but are necessary for the digestion of food.**
- **The waterborne pathogens are also enteric organisms. Some of the bacterial pathogens are part of the coliform family.**

# Coliform Group of Bacteria

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- **If coliform bacteria are present in the water supply, pathogens may also be present.**
- **The coliform bacteria live longer in water and are easier to detect by laboratory testing.**
- **This is the reason the coliform group has been chosen as the indicator organism for waterborne pathogens.**
- **If coliform bacteria are not present in GW it is assumed there are no viruses present either.**



# Coliform Group of Bacteria

- The coliform family has been divided into two groups.
- Results may come back as either total coliform positive (TC positive) or fecal coliform positive (*E. coli* positive.)
- Total coliform positive means that no human coliform are present.
- Fecal coliform positive indicates the presence of *E. coli*, which means there is a greater chance of pathogens being present.
- The laboratory tests for coliform include the MPN method, the Membrane Filter test, the Colilert test, and the presence-absence test.
- Most of the certified labs in New Mexico use either the colilert or membrane filter (MF) test. These tests require  $100 \pm 2.5$  milliliters of sample.

# Monthly Sampling

A decorative graphic at the top of the slide features five circles of varying shades of purple and white, arranged horizontally. A thick horizontal line in a light purple color runs across the width of the slide, positioned below the circles.

- **Responsibility of the system to collect samples for microbiological ("Bac-T") testing**
- **Samples must be collected and tested and results reported properly**
- **If a sample becomes contaminated due to poor sampling procedures or is not sent to the testing laboratory at the proper time, the system may technically be in violation of the drinking water regulations**
  - **This may result in the system having to notify the public of violations when the water is actually safe**

# The Sample Bottles

A decorative graphic at the top of the slide features five circles of varying shades of purple and white, arranged horizontally. A thick horizontal line in a light purple color spans across the middle of these circles.

- **3 types of bottles used by NM certified labs:**
- **Nalgene - Reusable bottles**
  - Used by NM SLD and other large municipal labs
- **IDEXX – Clear plastic disposable containers**
- **Snap Lid – Hinged cap that has a snap-on type seal and a hinged latch to secure it**
  - A plastic “Key” is used to secure the latch once the sample is collected
- **Provided by the lab**
- **Sterilized prior to distribution and/or after each use**

# Preparing To Collect The Sample

- Bottles should be stored in a cool, dry place until they are needed
- Sodium thiosulphate is added to the bottle
  - Neutralizes any chlorine residual that is present
  - It may be in the form of:
    - clear liquid
    - white powder
    - white tablet

Remember...

1. Chlorine residual test kit. If system disinfects, a free chlorine residual needs to be present prior to sample collection. The residual must be recorded on the sample request form.
2. Cooler and blue ice packs (or regular ice) for sample preservation. If ice is used, plastic bags will be needed to keep the sample bottles and forms dry.
3. Alcohol, soap, or latex gloves to prevent contamination due to dirty hands.
4. Pen should be used to fill out forms. Use tape and a permanent marker to label sample bottles.
5. Extra bottles and sample request forms. Repeat samples will also require red evidentiary seal tape.
6. Never wash out a bottle or even open it until you are ready to take the sample.
7. If a sample bottle has any dirt or junk in it or in the lid, don't use it. It's better to get a new bottle than to take a bad sample. See item 5.

# Sample Collection

## 1. Select a sampling point

GOAL is to monitor the distribution system

- **Should be a faucet that is commonly taken for public use**
- **The least-used faucet at the site is preferred because there is less chance of contamination of the faucet**
- **If an indoor faucet is selected, make sure the sink and faucet are clean**
- **Inspect each potential faucet to assure its suitability**
  - **Better to reject a poor sampling point because of the implications of a positive result.**

Water taps to avoid

- **Kitchen sink faucet that swivels or single handle**
- **Leaking faucet**
- **Hoses, vacuum breakers or other attachments**
- **Hot water faucet**
- **Drinking fountains**
- **Water conditioners**

Remember...

- **Remove the aerator screen (it might be contaminated)**
- **If the sample tap is located in an open area, clean brush and other vegetation for 3-5 feet away from the sample site**



# Sample Collection

2. Disinfect the faucet with alcohol if necessary
  - **Avoid using bleach to clean the faucet. It doesn't evaporate as quickly and spills are a bigger problem to clean up**
  - **Wash your hands or put on latex gloves before collecting the sample**
3. Flush the line
  - **Open the tap and let the water run for 3-5 minutes or until the temperature changes. This will insure that the water being sampled is from the main and has not been standing in the customer's plumbing**

# Sample Collection

4. Take a chlorine residual reading
  - After flushing, throttle the flow down to an unaerated stream
  - Run a chlorine residual analysis and record the free chlorine residual
    - It must be included on the sample request form.
  
5. Mark the bottles for identification
  - Mark the disposable bottles directly
  - Use a piece of tape or other suitable label to mark and identify the reusable Nalgene bottles.
    - Label should include:
      - Address
      - Date
      - Time

If records are being data based, the computer reference number should also be included



# Sample Collection

## 6. Refrigerate the sample

- **The sample must be refrigerated to lower the temperature to 39°F or 4°C until tested**
- **Always place the sample and the form in a plastic bag if ice is being used to refrigerate the sample**
  - **This is a good practice even if blue ice is being used because condensation can occur**
  - **If the samples are wet, the lab may reject them because they can't be sure the sample didn't leak**



# Reporting & Shipping Considerations

**The final consideration for microbiological sampling is the proper completion of the sample form and delivery to the lab.**

## Microbiological Sample Request Form Data

1. System name, address, and PWSS number
2. Location of sampling site
3. Date and time sample was taken
4. Type of water sampled
  - a. Routine Sample – Compliance
  - b. Repeat Sample
  - c. Special sample – Line break/raw water
  - d. NMED monitor sample – Requested by NMED
5. Chlorine residual
6. Reference number (if it's a repeat sample)
7. Name of Collector and Operator ID Number or Water Sampler Technician ID Number

**This information must be included on the sample form**

# Other considerations

- **Special Sample—Microbiological samples not used for compliance**
  - New water lines
  - Repaired lines
  - Wells that have been disinfected should be tested
- **Sample must be tested within 30 hours after it is taken**
  - Most labs require that the sample arrive at the lab within 24 hours of collection so the testing can be done before it is 30 hours old
- **Some labs do not accept samples on Fridays**
  - It is important to take compliance samples early in the week
  - Remember... repeat samples must be taken within 24 hours of notification—Otherwise may incur a violation

# RTCR Sampling

- **What happens when a routine sample is either Total Coliform or *E.Coli* Positive?**

**All systems are required to collect repeat sampling**

**Repeat sampling will be limited to **three** repeat samples for every routine positive result. (Plus triggered source sampling to comply with the Ground Water Rule)**

**Repeat Samples do not have to be collected within 5 connections upstream or downstream.**

**RTCR allows for alternative repeat sampling locations if a PWS believes that those alternative locations are representative of pathways for contamination of the distribution system**

**Sampling from alternative locations must be approved by DWB prior to repeat sampling event by system submitting SOP to designate alternate sites**

# RTCR Sampling

- **What Violations are triggered by RTCR sampling events?**

**A PWS is in violation of the *E.Coli* MCL if:**

**A PWS has an EC+ repeat sample following a TC+ routine sample**

**A PWS has a TC+ repeat sample following an EC+ routine sample**

**A PWS fails to take all required repeat samples following an EC+ routine sample**

*E.Coli* MCLs require the PWS to issue a Tier 1 public notice which includes a Boil Water Advisory

## **Who is responsible for the developing the DSSP?**

The Water System; NMED-DWB Reviews and Approves

## **What is sodium thiosulphate used for?**

To neutralize any chlorine residual present in the sample

## **What equipment is needed to collect a microbiological sample?**

Cl<sub>2</sub> residual kit; Cooler; Ice/Packs; Plastic Bags; Soap/gloves; Bact-T bottles; Marker and Tape; alcohol squirt bottle; Lab Forms/CoC

## **Which faucets should be avoided when selecting a sampling point?**

Hinged/swivel faucets; Leaking taps; Vacuum Breakers or Attachments



## Chapter 3 - Study Questions

**Why should routine samples be collected early in the week?**

**Which samples require a red tape seal and chain of custody?**

**How are microbiological samples stored and transported?**

**How soon must repeat samples be collected after notification of positive results?**



Chapter 3 - Sample Test Questions

**Microbiological samples must be tested within \_\_\_\_ hours.**

- A. 12**
- B. 24**
- C. 30**
- D. 36**

**If a system takes one microbiological sample a month, how many repeat samples must be taken when positive result are reported?**

- A. 2**
- B. 3**
- C. 4**
- D. 5**



Chapter 3 - Sample Test Questions

**Repeat samples require upstream and downstream sampling. This must be done within how many service connections of the original sample?**

- A. 2**
- B. 3**
- C. 4**
- D. 5**

**How many milliliters of sample are required for testing?**

- A. 50**
- B. 75**
- C. 100**
- D. 125**





## Chapter 3 - Sample Test Questions

**A sample collected after a water line repair should be identified as a \_\_\_\_ on the sample request form.**

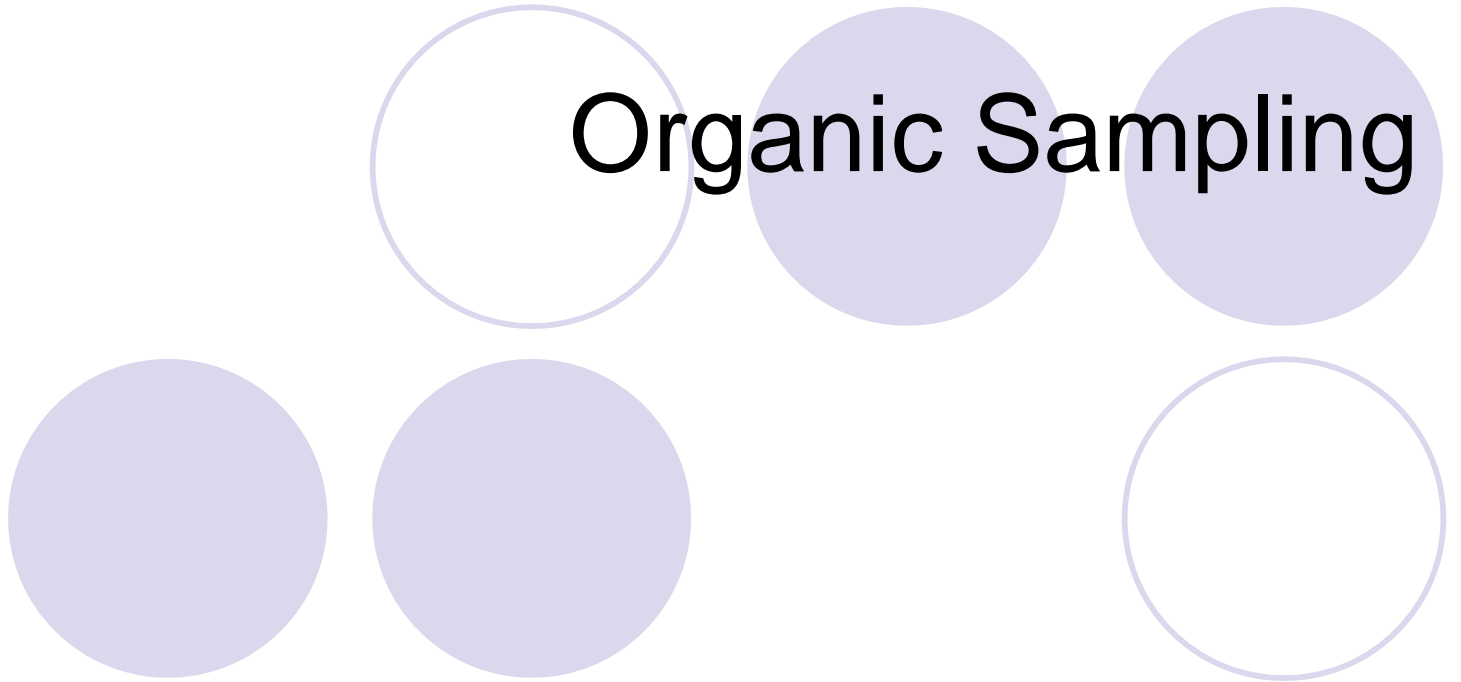
- A. Routine sample**
- B. Repeat Sample**
- C. Special sample**
- D. NMED monitoring sample**

**Systems that collect 6 or more routine microbiological samples per month must collect them at regular intervals throughout the month**

- A. True**
- B. False**

# Chapter 4

## Organic Sampling



# Organic Sampling



- Volatile and Semi-Volatile Organic Contaminants
  - Confirmation Samples
  - Increased sampling
- Preparing For Sample Collection
- Volatile and Semi-Volatile sample collection
- Disinfection By-Products Sample Kit
- Preparing Samples For Shipment

# Volatile and Semi-Volatile Organic Compounds

- **Volatile organic compounds (VOCs) are those chemicals that evaporate quickly**
  - Example: benzene, toluene, and carbon tetrachloride
- **Semi-volatile organic compounds (SOCs) are the heavier chemicals that do not evaporate**
  - Example: lindane and 2,4-D
- **Organic disinfection by-products includes total trihalomethanes (TTHM) and haloacetic acids (HAA5)**
  - TTHMs are volatile organics
  - Haloacetic acids are semi-volatile

# Confirmation Samples

- **Any VOC or SOC  $\geq$  MCL Confirmation sample is at State's discretion**
  - **If confirmation is required, the result must be averaged with the first sample for compliance determination**
- **Any VOC or SOC  $\geq$  MCL**
  - Begin quarterly sampling**
    - **Compliance based on running annual average**
    - **The system will not be considered in violation until it has completed 1 year of quarterly sampling**

# Increased Sampling

- Any VOC (except Vinyl chloride) detection > 0.005 mg/L

## Begin Quarterly Sampling

- GW systems must take a minimum of 2 consecutive quarterly samples
- SW systems must take a minimum of 4 consecutive quarterly samples
- Quarterly samples are evaluated to determine if system is reliably & consistently below the MCL
- Compliance is based on running annual average at each sampling point
- If determined to be reliably & consistently below MCL, system must sample during the quarter(s) which previous yielded the highest analytical result
- System may apply for waiver after 3 consecutive annual samples with no detection

# Increased Sampling

- **2-carbon VOC detection: (*trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene*)**

**Sample for Vinyl Chloride (degradation product)**

- **GW systems may reduce frequency to 1 per compliance period if no vinyl chloride is detected**
- **SW systems monitor as specified by State**

# Increased Sampling

- Any SOC detected  $\geq$  40 CFR 141.24(h)(18)

## Begin Quarterly Sampling

- GW systems must take a minimum of 2 consecutive quarterly samples
- SW systems must take a minimum of 4 consecutive quarterly samples
- Quarterly samples are evaluated to determine if system is reliably & consistently below the MCL
- Compliance is based on running annual average at each sampling point
- If determined to be reliably & consistently below MCL, system must sample during the quarter(s) which previous yielded the highest analytical result
- System may apply for waiver after 3 consecutive annual samples with no detection



# Preparation for Sample Collection

**Water is an excellent solvent for many organic compounds. When exposed to air, it has the ability to absorb volatile organic gases that may be present.**

**There are special precautions that must be taken to avoid contamination of organic water samples. VOC I/II and THM samples are the easiest to contaminate. They must be collected with no headspace (air) in the bottle.**

- **Check the sampling kit to make sure that all of the bottles and preservatives are present.**
- **Check the sample form(s) provided or download the sample form from the SLD website.**
- **Have a marker or pen to fill out labels and forms.**

Remember...

- **Personal hygiene issues can increase the risk of sample contamination.**
  - A. **No smoking, hairspray/mousse, cologne/perfume, or breath spray/mouthwash –These have VOCs that can be absorbed by water.**
  - B. **Latex gloves should be worn during sample collection - Change gloves at each new sampling site.**
- **Sample preservation will require refrigeration. A cooler with ice and a number of sealing plastic bags, to store sample bottles and forms, should be utilized.**
- **Make sure all vehicle or other combustion engines are off and the area is well ventilated. VOCs in engine exhaust can also contaminate the samples.**
- **Remove any aerator screens or other attachments from the faucet. Flush the faucet for 5-10 minutes to stabilize the water temperature**

## VOC Sample Collection (EPA Method 524.2)

### ✓ SAMPLE KIT:

**Two-40 ml clear glass vials with a Teflon septum in the screw cap**

### ✓ PRESERVATIVES:

**Chlorinated systems: Ascorbic acid —added to each vial at the lab**

**All systems: Hydrochloric acid (HCl)—added on site**

### ✓ REMEMBER...

- **VOC samples are collected in duplicate**
- **Never rinse the sample vials prior to collection**
- **Vials must be filled with no air bubbles or headspace**
  - prevent potential contamination from airborne VOCs and the loss of very light VOCs from the sample
- **Keep samples refrigerated during storage and transport (4°C/39°F)**

# SOC/Semi-Volatile Organic Compounds

## *Seven different sets of samples*

### Semi Volatile Organic Compounds Sample Kit

| Set      | Test Requested                       | # of Bottles | Description   |
|----------|--------------------------------------|--------------|---|
| <u>1</u> | VOC II (504.1) <sup>1</sup>          | 2            | 40 ml vial w/ preservative <sup>a</sup>                 |
| <u>2</u> | Acid Herbicides (515.2) <sup>1</sup> | 2            | 250 ml amber bottle w/ preservative <sup>b</sup>        |
| <u>3</u> | SOC (525.2) <sup>1</sup>             | 2            | 1 liter amber bottle w/ preservative <sup>b</sup>       |
| <u>4</u> | Carbamates (531.2) <sup>1</sup>      | 1            | 40 ml vial w/ preservative <sup>a &amp; d</sup>         |
| <u>5</u> | Glyphosate (547) <sup>1</sup>        | 1            | 40 ml vial w/ preservative <sup>a</sup>                 |
| <u>6</u> | Endothall (548.1) <sup>1</sup>       | 1            | 250 ml amber bottle w/ preservative <sup>a</sup>        |
| <u>7</u> | Diquat (549.2) <sup>1</sup>          | 1            | 1 liter PPE bottle w/ preservative <sup>a &amp; c</sup> |

---

<sup>1</sup> – EPA Method

<sup>a</sup> – Sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub>)      2      Mini-vials for sample preservation

<sup>b</sup> – 1:1 Hydrochloric acid (HCl)      1      20 ml vial for sample preservations

<sup>c</sup> – 1:1 Sulfuric acid (H<sub>2</sub>SO<sub>4</sub>)      1      20 ml vial for biologically active sample preservation

<sup>d</sup> – Citrate buffer      1      0.375 grams to stabilize the analytes

# SOC/Semi-Volatile Organic Compounds Collection

## ✓ PRESERVATIVES:

**Most of the bottles and vials have preservative chemicals added to them by the lab**

**Some samples require preservation with hydrochloric acid after collection—The sample bottles that require acid preservation have **yellow labels****

## ✓ REMEMBER...

- **Some tests require duplicate samples—Others only require a single sample**
- **Check holding time requirements—You should contact the lab to schedule sample submission**
- **Never rinse the sample vials prior to collection**
- **Vials must be filled with no air bubbles or headspace**
- **Keep samples refrigerated during storage and transport (4°C/39°F)**

# Disinfection By-Products Sample Kit

There are two different sets of samples:

## **Total Trihalomethanes (TTHMs) and Haloacetic Acid (HAA5)**

### ✓ **SAMPLE KIT:**

**Two 40 ml clear glass vials with a Teflon septum in the screw cap (TTHMs)**

**Two 60 ml amber glass vials with screw cap (HAA5s)**

### ✓ **PRESERVATIVES:**

**TTHMs: 3mg sodium thiosulfate —added to each vial at the lab**

**HAA5s: 6 mg ammonium chloride—added to each vial at the lab**



✓ REMEMBER...

- **Flush sample tap and reduce flow to a trickle**
- **TTHM and HAA5 samples are collected in duplicate**
- **Never rinse the sample vials prior to collection**
- **TTHM vials must be filled with no air bubbles or headspace**
- **After filling, agitate HAA5 vials to dissolve the ammonium chloride**
- **Keep samples refrigerated during storage and transport (4°C/39°F)**

# Preparing Samples For Shipment

- **Make sure the samples are properly labeled.**
- **Include a request form for each sample or sample set.**
- **Place request forms in a zip lock baggie and tape it to the inside of the cooler cover.**
- **When taking samples at multiple sites, make sure that each set of samples for a site are shipped in the same cooler. This will help the lab organize the samples.**
- **Pack the samples carefully. If not properly protected, they can be broken in shipment.**
- **Chill samples to (4°C/39°F) at the time of collection and with sufficient ice to insure that they arrive at the lab properly chilled. Do not use too many ice packs or the samples may freeze causing the glass bottles to break.**
- **Send samples in as soon as possible after sampling for analysis. Some samples must be analyzed within 7 days of collection.**



## Chapter 4 - Study Questions

**What are the personal hygiene issues that could affect VOC sample results?**

Smoking; Aerosols; Gases; Fumes; Gloves should be worn

**Organic samples should be stored at what temperature?**

4°C or 39°F

**What are the seven sets of samples included in the SLD semi volatile organic compound sample kit?**

VOCII; Acid Herbicides; SOC; Carbamates; Glyphosate; Endothall; Diquat

**Which samples must be preserved with HCl?**

VOCs; Acid Herbicides; SOCs

**What are the two sets of samples included in a disinfection by-products sample kit?**

Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5)

## Chapter 4 - Sample Test Questions

**Which samples require collection without air bubbles?**

- A. VOC samples**
- B. VOC II samples**
- C. TTHM samples**
- D. All of the above**

**Most of the organic sample bottles have preservative chemicals added to them at the lab.**

- A. True**
- B. False**

**Which of the following samples requires only one sample bottle?**

- A. SOC**
- B. Halo acetic acids**
- C. Endothall**
- D. TTHM**

**Which of these samples is preserved with citrate buffer?**

- A. VOC**
- B. Carbamates**
- C. Acid Herbicides**
- D. Glyphosate**

**SLD semi volatile samples that require the addition of HCl have:**

- A. Yellow labels**
- B. Blue labels**
- C. White labels**
- D. Green labels**

# Chapter 5

## Inorganic Sampling



# Inorganic Sampling

A decorative graphic at the top of the slide features a horizontal line. Above the line, there are five circles. The first, second, and fifth circles are solid light purple. The third and fourth circles are hollow with a light purple outline. The line is thicker under the first three circles and thinner under the last two.

- Inorganic Compounds
  - Confirmation Samples
  - Increased sampling
- SDWA Lead and Copper Sample Collection
- Sample Kits
- Preparing Samples For Shipment

# Inorganic Compounds

- Heavy metals include: *lead, copper, iron, manganese, mercury, antimony, arsenic, barium, beryllium, cadmium, chromium, nickel, selenium, and thallium*
- Non-metals include: *fluoride, cyanide, chlorite, bromate, nitrate/nitrite, chloride, sulfate, hardness (calcium and magnesium), alkalinity (carbonates, bicarbonates)*
- Other metals include: *sodium and potassium*

# Confirmation Samples



- **Nitrate or Nitrite  $\geq$  MCL**
  - **Within 24 hours of the system's receipt of notification**
  - **Must collect individual Nitrate and Nitrite samples, not a combined sample**
- **Compliance for Nitrate or Nitrite will be based on the average of the original sample and the confirmation sample**
- **All other Inorganic Compounds - confirmation sample is at State's discretion**

# Increased Sampling

- **Nitrate or Nitrite  $\geq 50\%$  of MCL**

## **Begin Quarterly Sampling**

- **GW systems may reduce frequency to annually after 4 consecutive quarterly samples are reliably & consistently below the MCL**
- **SW systems may reduce frequency to annually if all analytical results from 4 consecutive quarters are  $<50\%$  of the MCL. SW system will return to quarterly if ANY one sample is  $\geq 50\%$  of the MCL**



# Increased Sampling

- **Fluoride > 4.0 mg/L begin quarterly sampling**
  - **(MCL; 2.0 mg/L = SMCLG)**
  - **GW & SW systems may reduce frequency to annually after 4 consecutive quarterly samples are reliably & consistently below the MCL**
- **All other Inorganic Compounds > MCL monitor quarterly beginning the next quarter after the violation occurred**

# Lead and Copper Sample Collection

- **The sampling protocol for inorganic samples for SDWA Lead and Copper sampling uses a slightly different protocol than the other heavy metals**
- **Samples must be “first draw” - Water must have been standing in the customers plumbing for at least 6 hours, but not more than 18 hours. It must be drawn before any other usage takes place at the sampling site.**
- **Because the sample must be the first draw, these samples are sometimes drawn by customers**
  - **Make sure the individual understands how to properly collect the sample**
  - **May be better to let the lab add the preservative later**

## ✓ **SAMPLE KIT:**

**Heavy metal samples are a 1 liter (1 quart) sample plastic cubitainer**

**Most other inorganic samples are either 1 liter or 100 ml**

**1 liter containers are plastic cubitainers**

**100 ml bottles are either plastic or glass**

**Complete Secondary is a 4 liter plastic cubitainer**

**Major Anions/Cations Groups are a 1 liter sample**

## ✓ **PRESERVATIVES:**

**Regulated Heavy Metals including lead & copper: Nitric Acid (HNO<sub>3</sub>) - to pH <2.0**

**Nitrate/Nitrite: 2 ml Sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) - to pH <2.0  
(individual nitrite/nitrate samples not preserved – 48 hr holding times;  
preserved combined nitrite/nitrate samples have 28-day holding time)**

**Total Cyanide: Sodium hydroxide (NaOH) - to pH >12**

**Fluoride: None**

**Secondary and Major Anions/Cations: None**



✓ REMEMBER...

- **Flush sample tap and reduce flow to an unaerated stream**
  - Exception lead and copper samples
- **Remove lid and fill to the neck**
- **Add preservation if required**
- **Mark bottle**
- **Keep samples refrigerated during storage and transport (4°C/39°F)**

# Preparing Samples For Shipment

- **Make sure the samples are properly labeled.**
- **Include a request form for each sample or sample set.**
- **Place request forms in a zip lock baggie and tape it to the inside of the cooler cover.**
- **When taking samples at multiple sites, make sure that each set of samples for a site are shipped in the same cooler. This will help the lab organize the samples.**
- **Pack the samples carefully.**
- **Chill samples to (4°C/39°F) at the time of collection and with sufficient ice to insure that they arrive at the lab properly chilled. Do not use too many ice packs or the samples may freeze causing the glass bottles to break.**
- **Send samples in as soon as possible after sampling for analysis. Some samples must be analyzed within 14 days of collection.**

## Chapter 5 - Study Questions

**Which of the primary inorganic contaminants are considered to be heavy metals?**

SDWA Group 1– Antimony (Sb); Arsenic (As); Barium (Ba); Beryllium (Be); Cadmium (Cd); Chromium (Cr); Mercury (Hg); Nickel (Ni); Selenium (Se); Thallium (Tl)

**What is the name of the sampling group that includes nitrate and nitrite?**

Nutrients Group

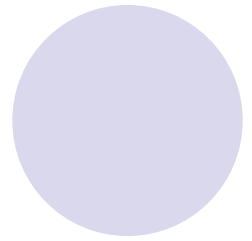
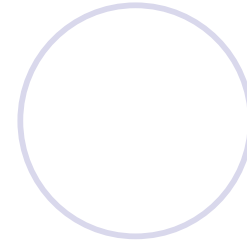
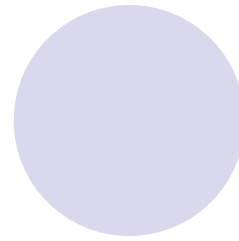
**Which sampling groups do not require preservative chemical addition?**

Secondary or Major Anions/Cations Group

## Chapter 5 - Sample Test Questions

Nitric acid ( $\text{HNO}_3$ ) is not used as a preservative in:

- A. Lead and copper samples
- B. Heavy metal samples
- C. Nitrate/nitrite samples



All inorganic samples must be refrigerated at:

- A.  $18^\circ\text{C}$
- B.  $10^\circ\text{C}$
- C.  $4^\circ\text{C}$
- D.  $0^\circ\text{C}$

Which inorganic sample is preserved with sodium hydroxide ( $\text{NaOH}$ )?

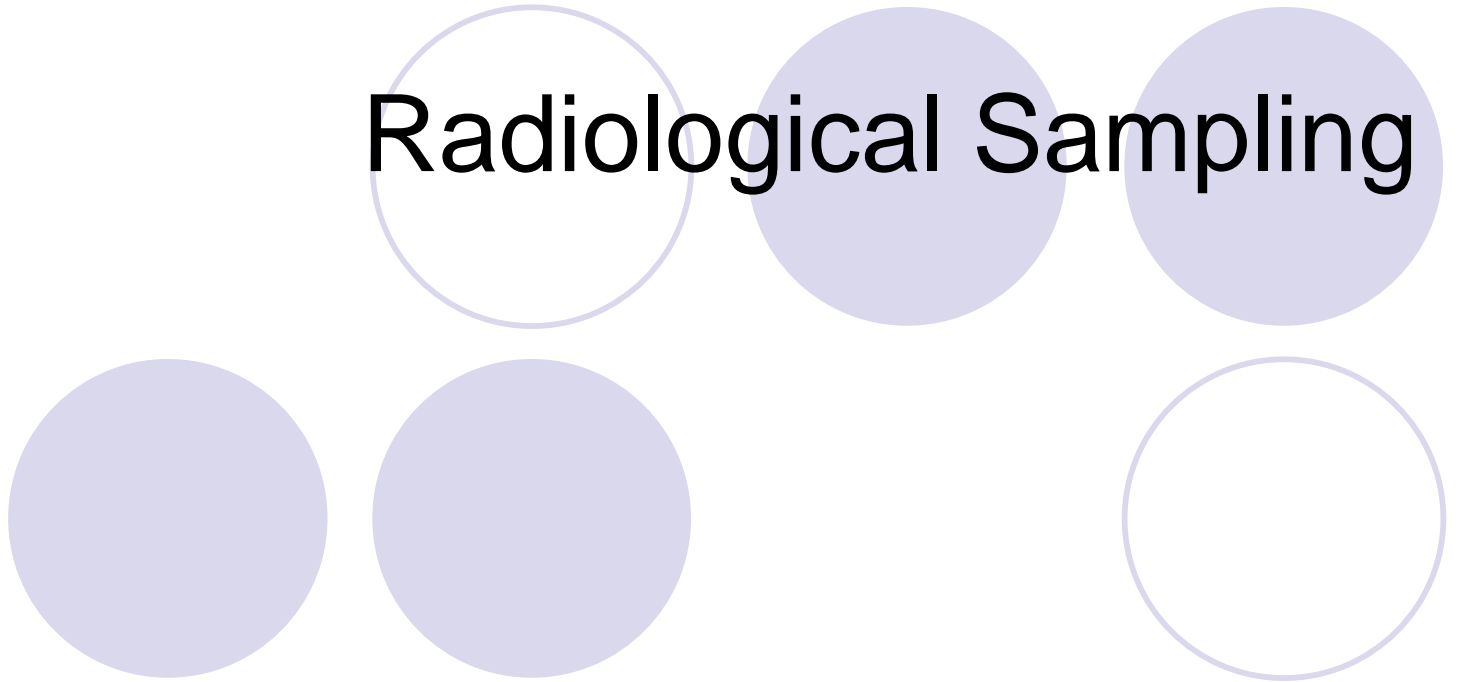
- A. Fluoride
- B. Total Cyanide
- C. Iron
- D. Alkalinity

How long must a first draw sample for lead and copper sit in the plumbing?

- A. 30-60 minutes
- B. 2-4 hours
- C. 6-18 hours
- D. 24-36 hours

# Chapter 6

## Radiological Sampling





# Radiological Sampling

The header features five circles of varying shades of purple and blue, arranged horizontally. A thick horizontal line is positioned below the first three circles, and a thin horizontal line is positioned below the last three circles.

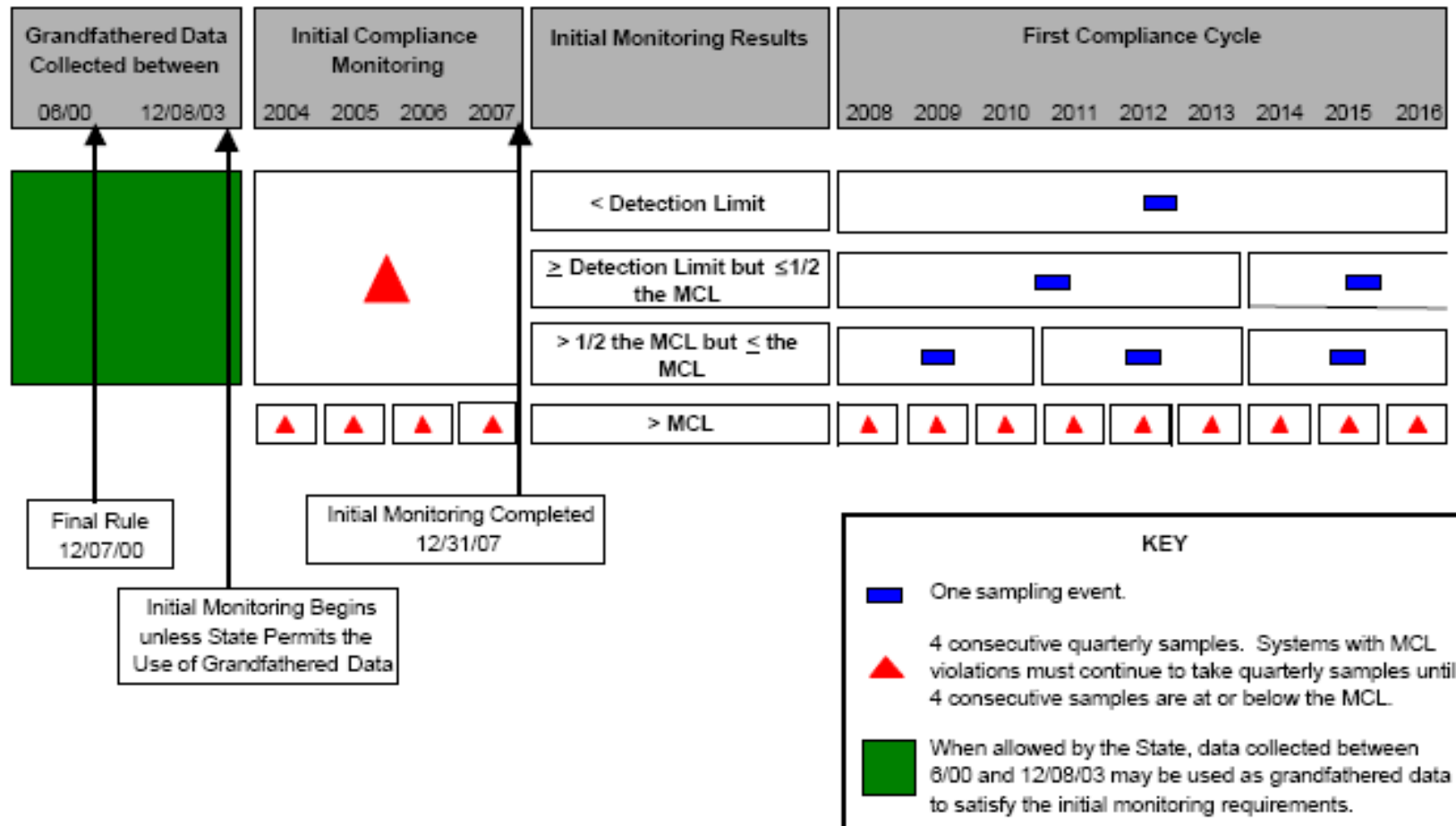
- Changes to Requirements
  - Confirmation Samples
  - Increased sampling
- Sample Kits

# Radiological Sampling



- Radiological (RAD) sampling and analysis requirements were changed in 2003. The revisions are summarized below.
- A. There is no substitution option for Radium-228 analyses.
- A. Uranium has been added. It has an MCL of 30  $\mu\text{g}/\text{L}$  (ppb) with a substitution of Gross alpha option (141.26(a)(5)).
- A. The gross alpha substitution for Ra-226 has been retained.
- A. Compositing for gross alpha, U-mass, Radium-226, & Radium-228 has been retained
- A. The monitoring frequency has been changed to follow the 3-6-9 year Standardized Monitoring Rule.

# Applicability of the Standardized Monitoring Framework to Radionuclides (Excluding the Beta Particle and Photon Emitters)



# Initial Monitoring Increased Sampling

- **Initial Monitoring for Gross Alpha particle activity, Uranium, Radium-226 & Radium-228 > MCL**

**Begin quarterly sampling**

- **Until 4 consecutive quarterly samples are  $\leq$  MCL**

**or**

- **System enters into another schedule as part of a formal compliance agreement with the State**

# Monitoring & Compliance Requirements

## Any RAD $\geq$ MCL Confirmation sample is at State's discretion

- If confirmation is required, the result must be averaged with the first sample for compliance determination
- Any RAD  $\geq$  MCL
  - Begin quarterly sampling
  - Compliance based on running annual average
  - The system will not be considered in violation until it has completed 1 year of quarterly sampling

✓ **SAMPLE KIT:**

**Radiological samples are collected in either 1-L or 4-L cubitainers**

**Sequential Flow (existing wells) – One 4-L cubitainers**

**Sequential Flow for Radium - Two 4-L cubitainers**

**Gross Alpha/Beta - One 1-L cubitainer**

**Baseline (new wells) – Two 4-L cubitainers composited with 1-L each quarter (duplicates)**

**EXCEPTION—Radon-222 samples.**

**Two- 40 ml clear glass vials**

✓ **PRESERVATIVES:**

**Sequential Flow: 5 ml Nitric Acid ( $\text{HNO}_3$ ) per gallon to a pH of  $<2.0$**

**Gross Alpha/Beta: None**

**Radon-222: None**



✓ REMEMBER...

- **Flush sample tap and reduce flow to an unaerated stream**
  - Exception Radon-222—Reduce flow to a trickle
- **Remove lid and fill to the neck**
  - Exception Radon-222—Fill with no air bubbles or headspace
- **Add preservation if required (Sequential Flow only)**
- **Mark bottle**
- **Keep samples refrigerated during storage and transport (4°C/39°F)**
  - Radon-222 has a 4-day holding time

**What was changed in 2003 regarding the monitoring schedules for radiological contaminants?**

3-6-9 year Standardized Monitoring Rule

**Which chemical was added to the radiological contaminant group in 2003?**

Uranium (MCL = 30  $\mu\text{g/L}$ )



## Chapter 6 - Sample Test Questions

**Most radiological samples are preserved using:**

- A. Hydrochloric Acid**
- B. Sodium thiosulfate**
- C. Nitric acid**
- D. Sulfuric Acid**

**Which sample must be collected with no headspace?**

- A. Gross Alpha/Beta**
- B. Radon-222**
- C. Radium-228**
- D. All of the above**

**Radon is collected in:**

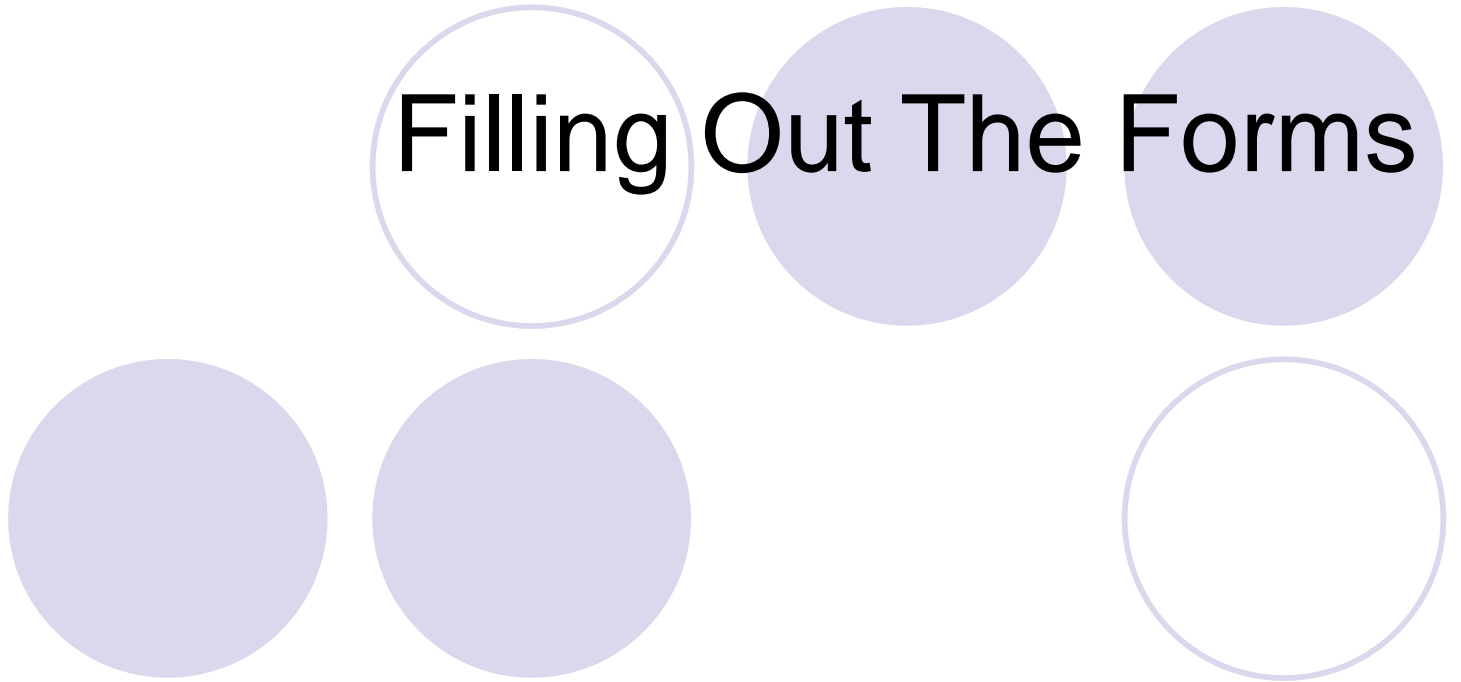
- A. 1-quart container**
- B. 1-gallon container**
- C. 150 ml container**
- D. Two 40 ml vials**

**Which sample has a 4-day holding time?**

- A. Sequential Flow Scheme**
- B. Radon-222**
- C. Gross alpha/beta**
- D. Uranium**

# Chapter 7

## Filling Out The Forms



# Filling Out The Forms

The header features five circles in a row. The first, second, and fifth circles are solid light purple. The third and fourth circles are hollow with a light purple outline. Below the circles is a horizontal line that is solid light purple under the first three circles and a thin light blue line under the last two circles.

- Microbiological Sample Request Form
  - Filling out the Form
  - Chain of Custody Documentation
- Minimum information requirements
- Using Drinking Water Watch to find Facility and Sample Point (SP) ID numbers
- Using the Secure Extranet Portal (SEP) to access PWS sample information

# Chain of Custody Documentation

- **ALL samples must be sealed with red evidentiary seal tape and include a “Chain of Custody”**
- **This document identifies who has handled the sample**
  - **The time and date are also recorded at each step of the process**
- **Failure to properly document the chain of custody will result in sample rejection**

# DWB C-o-C Form Effective January 2019

ACME Inc. Lab, 1606 University Blvd SE, Albuquerque, NM 87121, 505-444-8111  
 Test Method: SM 9223B

Lab ID# BR549

Lab Sample ID# \_\_\_\_\_

|                                 |                               |                 |                  |                   |
|---------------------------------|-------------------------------|-----------------|------------------|-------------------|
| Water Supply System Name: _____ |                               |                 |                  |                   |
| WSS Code No. (5 digits)         | NM35                          | Chlorine Yes/No | Free: _____ mg/l | Total: _____ mg/l |
| Date Collected:                 | Time Collected (24 hr): _____ |                 |                  |                   |

Please circle the "Type" of sample from one of the Six selections below and fill out the information for your selection (all shaded boxes must be filled out completely). Only one selection per sample submitted. All samples are considered "For Compliance" except for Special samples.

|   |                                       |                             |
|---|---------------------------------------|-----------------------------|
| 1. Routine                                  | Sample Point ID: RT _____             | Location: _____             |
| 2. Repeat                                   | Sample Point ID: RP _____             | Location: _____             |
|   | Original Lab Sample ID# _____         |                             |
| 3. GW Triggered Source                      | Source Facility ID# _____             | Source Facility Name: _____ |
|   | Original Lab Sample ID# _____         | Sample Point ID# SP _____ 1 |
| 4. GW Repeat (only if GW triggered was ec+) | Source Facility ID# _____             | Source Facility Name: _____ |
|   | Triggered Source Lab Sample ID# _____ | Sample Point ID# SP _____ 1 |
| 5. Special                                  | Location: _____                       |                             |
| 6. E-Coli Enumeration (LF2)                 | Facility ID# _____                    | Facility Name: _____        |
|   | Turbidity (ntu's) _____               |                             |

|  |           |                            |                   |
|--|-----------|----------------------------|-------------------|
| <b>FIELD SAMPLE DATA &amp; REMARKS</b> | pH: _____ | Conductivity (µS/cm) _____ | Temp. (°C): _____ |
| Comments: _____                        |           |                            |                   |

|                                    |                               |                     |                      |
|------------------------------------|-------------------------------|---------------------|----------------------|
| Collected By (print): _____        | Operator ID# (5 digits) _____ | Phone Number: _____ |                      |
| Relinquished by (signature): _____ | NM _____                      | Date: _____         | Time: (24 hr.) _____ |
| Received by name: _____            | Signature: _____              | Date: _____         | Time: (24 hr.) _____ |
| Relinquished by name: _____        | Signature: _____              | Date: _____         | Time: (24 hr.) _____ |
| Received by name: _____            | Signature: _____              | Date: _____         | Time: (24 hr.) _____ |

|                                 |                  |                              |                       |
|---------------------------------|------------------|------------------------------|-----------------------|
| <b>SAMPLE RECEIPT CONDITION</b> | Temp (°C): _____ | Custody Seals: Yes/ No _____ | Intact: Yes/ No _____ |
| Preservative: Ice Yes/ No _____ | Comments: _____  |                              |                       |

|        |             |                    |                                    |                |
|--------|-------------|--------------------|------------------------------------|----------------|
| Start  | Date: _____ | Time (24 hr) _____ | Volume Assayed: _____ ml           | Test Results   |
| Finish | Date: _____ | Time (24 hr) _____ | TC (P/A) _____                     | EC (P/A) _____ |
|        |             |                    | EC Enumeration: (per 100 ml) _____ | (units?) _____ |

First Analyst: \_\_\_\_\_

Date: \_\_\_\_\_ Time (24 hr) \_\_\_\_\_

## **Required Items to be Filled Out on Chain-of-Custodies by Sampler**

- Water System Name (as it appears in SDWIS)
- WSS Code (as it appears in SDWIS) ex. NM3512345
- Sample Chlorinated: Yes or No (if Yes - type and level must be filled out; if No - leave blank) DO NOT PUT N/A!!!
- Date Sample Collected
- Time Sample Collected
- Type of Sample, circle only one: Routine or Repeat, or GW Triggered Source, or GW Repeat, or Special, or E-Coli Enumeration.
- Fill out required items on lines for Sample Type selected.
- Field Sample Data Remarks (if any)
- Collected By (printed)
- Relinquished by (signed)
- New Mexico Operator ID# (5 digits total, use leading zeros if less than 5) ex. 117 becomes 00117
- Samplers Phone Number
- Date Relinquished
- Time Relinquished



## Chapter 7 - Sample Test Questions

**Which of the following numbers might be a system identification number?**

- A. 2634-208**
- B. NM35101-07**
- C. 912-44-0932**
- D. 12-041**

**Labs can use one Chain-of-Custody form for multiple microbiological analyses.**

- A. True**
- B. False**



## Chapter 7 - Sample Test Questions

**The unified sample request form cannot be used for which of these analyses?**

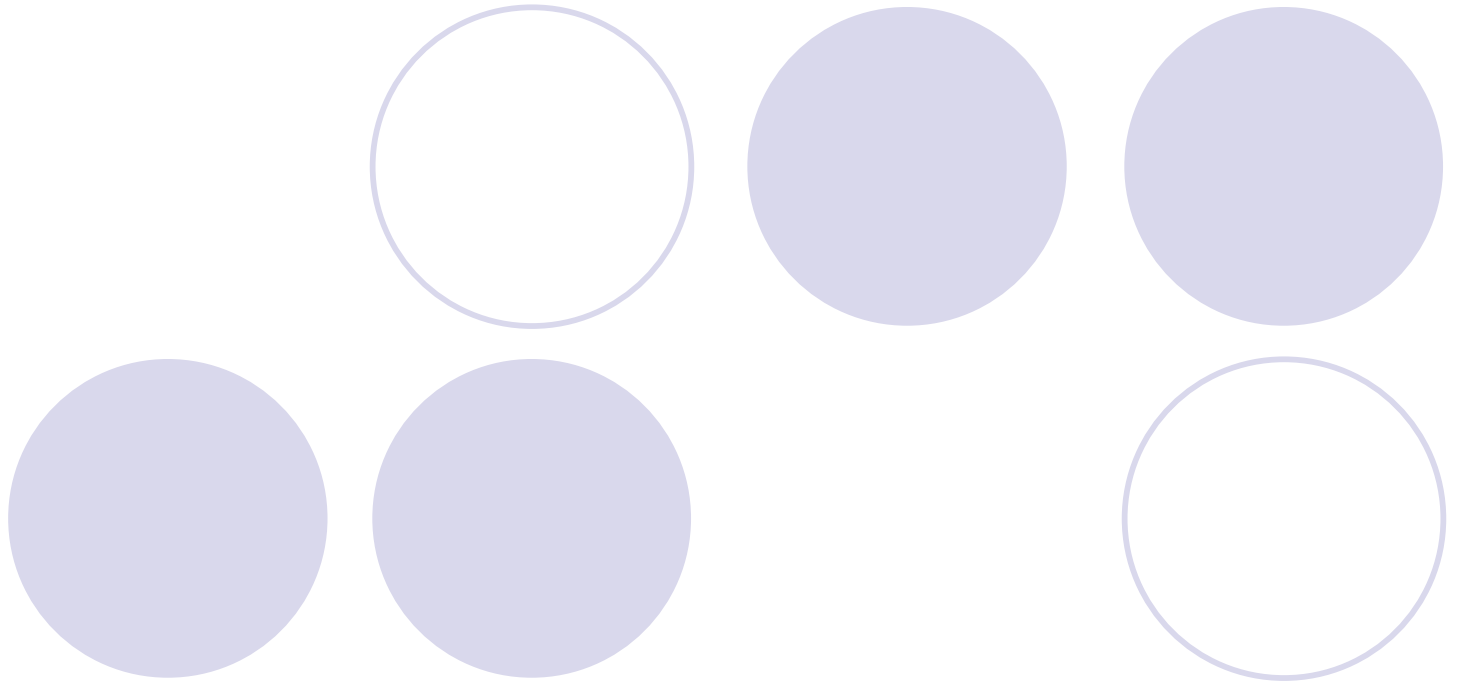
- A. Organic analyses**
- B. Radiological analyses**
- C. Microbiological analyses**
- D. Heavy metal analyses**

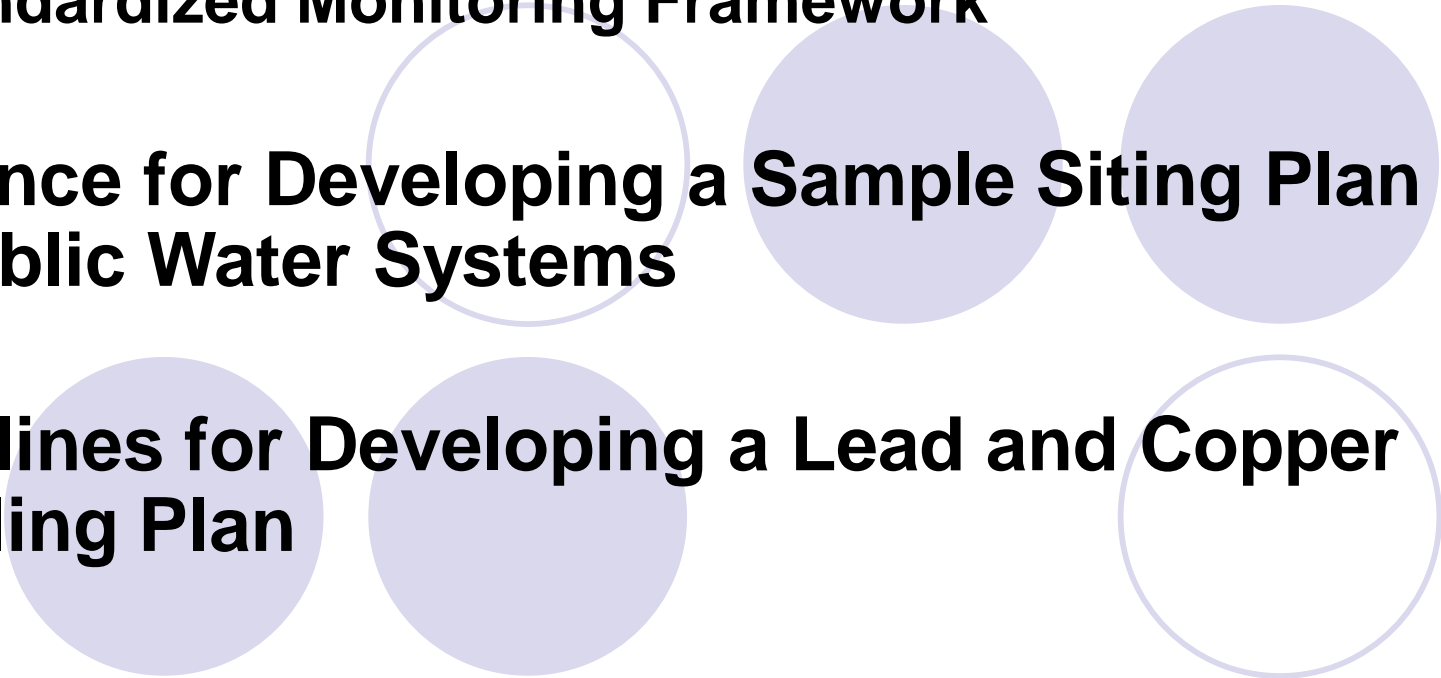
**Repeat microbiological samples must include:**

- A. Red evidentiary seal tape**
- B. Chain of custody**
- C. Positive sample reference number in request form**
- D. All of the above**



# Appendices



- **Chemical & Radiological Baseline Monitoring of Drinking Water**
    - Standardized Monitoring Framework
  - **Guidance for Developing a Sample Siting Plan for Public Water Systems**
  - **Guidelines for Developing a Lead and Copper Sampling Plan**
  - **Examples of Sampling Plans**
    - Microbiological
    - Disinfectants and Disinfection By-products
    - Lead and Copper
- 

# CHEMICAL & RADIOLOGICAL BASELINE MONITORING OF DRINKING WATER

## Chemical Monitoring

For inorganic chemicals, monitoring frequency is dependent upon the water source and contaminant being sampled.

ALL PWS MUST BE SAMPLED WITHIN 90 DAYS OF COMING ON LINE

## Inorganic chemicals

CONFIRMATION & AVERAGING REQUIRED TO DETERMINE COMPLIANCE FOR NITRATE

**PUBLIC NOTICE IS REQUIRED FOR FLOURIDE IF RESULT IS > 2 mg/L and ALL OTHER MCL EXCEEDANCES**

## Sample collection frequency

### Groundwater

|                |  |
|----------------|--|
| Nitrate-----   | Annual (If 1 sample $\geq$ 5 mg/L, 1/41y at least 1 year) All systems<br>No waiver |
| Nitrite-----   | 1 time only (if result is < .5 mg/L) All systems                                   |
| Asbestos ----- | Every 9 years (1 <sup>st</sup> period of cycle if no waiver)                       |
| Others -----   | CWS & NTNCWS Triennial - CWS & NTNCWS  |

### Surface water

|               |   |
|---------------|---|
| Nitrate-----  | Quarterly (reduced to annual if none $\geq$ 5 mg/L) All systems |
| Nitrite-----  | 1 time only (if result is < .5 mg/L) All systems                |
| Asbestos----- | Every 9 years (same as groundwater system) CWS & NTNCWS         |
| Others-----   | Annual - CWS & NTNCWS   |

**A CONFIRMATION SAMPLE IS REQUIRED IF ANY MCL IS EXCEEDED**



Sampling locations

**Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment except Asbestos (distribution – both distribution and source if source is vulnerable)**

**Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point representative of each source after treatment**

### **1 SULFATE SAMPLE FROM THE SOURCE FOR A NEW SYSTEM OR SOURCE - CWS & NTNCWS**

Organic Chemicals

**•Monitoring frequency varies depending on system size and whether contaminants are detected during initial monitoring**

**Monitoring frequencies:**

**•SOCs: 4 consecutive quarterly samples during the first compliance period (Systems >3300 with no detect can reduce to 2 quarterly samples (2 consecutive 6 month periods) in 1 year, per compliance period)**

**(Systems <3300 with no detect can reduce to 1 sample per compliance period) CWS & NTNCWS**

**•VOCs: 4 consecutive quarterly samples during the first compliance period (Groundwater systems can reduce to 1 annual if no detects in initial round, then 1 X 3 years after 3 consecutive years of no detects)**

Confirmation sample required if a DETECT of any VOC

**Detect =  $\geq 0.5$  ug/L (1/4ly sampling required if compliance & confirmation are  $\geq 0.5$  ug/L)**



Sampling locations

**Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment**

**Surface water systems shall take a minimum of one sample**

- **At every entry point to the distribution system after any application of treatment, OR**
- **In the distribution system at a point representative of each source after treatment**

**TTHM/HAA5s: Systems that disinfect**

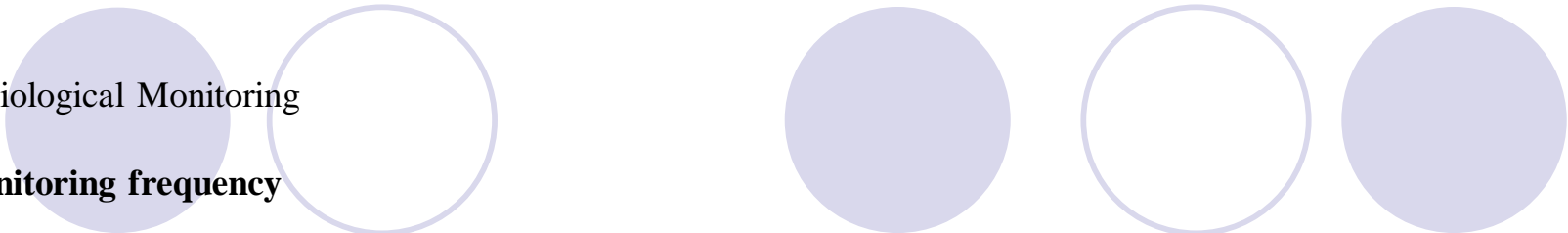
- **Groundwater systems < 10,000 population and Surface and Ground water under the influence of surface water <500 population—One sample per plant per year taken at a point in the distribution system reflecting maximum residence time during the warmest water temperature months (May thru September)**
- **Groundwater  $\geq$  10,000 population and Surface and Ground water under the influence of surface water 500-9,999 population —One sample per plant per year taken at a point in the distribution system reflecting maximum residence time during the warmest water temperature months (May thru September) Remaining samples taken at representative locations within the distribution system**
- **Additionally, groundwater sources should have one sample analyzed for maximum TTHM Potential**

**Chlorine/Chloramines**

- **All systems—Same location and frequency as TCR sampling**

**DBP Precursors**

- **Conventional filtration—Monthly for total organic carbon and alkalinity**



## Radiological Monitoring

### Monitoring frequency

- **Initial sampling consists of the analysis of an annual "Field Composite Sample" (4 consecutive quarterly samples)**
- **Thereafter, sampling according to standard monitoring framework of once every 3 years or greater depending on detection of contaminants.**

**Groundwater systems shall take samples at the entry point to the distribution system which representative of each well after treatment**

**Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or, in the distribution system at a point which is representative of each source after treatment**

### Turbidity Monitoring

**Monitoring for turbidity must be accomplished on a daily basis for surface water sources and groundwater under the influence of surface water**

- **Sampling shall be done at representative entry points to the distribution system and according to Section 500 of the Drinking Water Regulations**

### Field Log Book Record

**Written record used to trace possession and handling of samples from the moment of collection until shipment or delivery to the laboratory for analysis. All records should be done legibly in ink; Field records should be signed & dated**



# STANDARDIZED MONITORING FRAMEWORK

| EXCEPTIONS            |   | Second Cycle           |      |      |                        |      |      |                        |      |      | Third Cycle            |      |      |                        |      |      |                        |      |      |
|-----------------------|---|------------------------|------|------|------------------------|------|------|------------------------|------|------|------------------------|------|------|------------------------|------|------|------------------------|------|------|
|                       |   | 1 <sup>st</sup> Period |      |      | 2 <sup>nd</sup> Period |      |      | 3 <sup>rd</sup> Period |      |      | 1 <sup>st</sup> Period |      |      | 2 <sup>nd</sup> Period |      |      | 3 <sup>rd</sup> Period |      |      |
|                       |   | 2002                   | 2003 | 2004 | 2005                   | 2006 | 2007 | 2008                   | 2009 | 2010 | 2011                   | 2012 | 2013 | 2014                   | 2015 | 2016 | 2017                   | 2018 | 2019 |
| <b>Nitrate</b>        | CWSs & NTNCWSs  |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |
|                       | Surface Water with 4 Quarters of Results < 1/2 MCL <sup>9</sup>                                   | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    |
|                       | Groundwater Reliably and Consistently < MCL <sup>9</sup>  | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    |
|                       | > 1/2 MCL   | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** |
|                       | TNCWSs  |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |
|                       | Standard Monitoring   | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    | *                      | *    | *    |
| <b>Nitrite</b>        | < 1/2 MCL   | 02                     | 03   | 04   | 05                     | 06   | 07   | 08                     | 09   | 10   | 11                     | 12   | 13   | 14                     | 15   | 16   | 17                     | 18   | 19   |
|                       | Reliably and Consistently < MCL <sup>9</sup>  | *                      | *    | *    | *                      | #    | *    | *                      | *    | *    | *                      | *    | *    | *                      | #    | *    | *                      | *    | *    |
|                       | > 1/2 MCL or not Reliably and Consistently < MCL  | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** |
|                       |   |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |
| <b>Radio-nuclides</b> | < Detection Limit   |                        |      |      | ****                   |      |      |                        |      |      |                        | *    |      |                        |      |      |                        | *    |      |
|                       | > Detection Limit but < 1/2 MCL   |                        |      |      | ****                   |      |      |                        |      |      | *                      |      |      |                        |      |      |                        | *    |      |
|                       | > 1/2 MCL but < MCL   |                        |      |      | ****                   |      |      |                        |      |      | *                      |      | *    |                        | *    |      |                        | *    |      |
|                       | > MCL   |                        |      |      | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** |
|                       |   |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |                        |      |      |
| <b>Asbestos</b>       | Waiver  |                        | X    |      |                        | X    |      |                        | X    |      |                        | X    |      |                        | X    |      |                        | X    |      |
|                       | No Waiver, Reliably and Consistently < MCL, or vulnerable to asbestos contamination <sup>10</sup> | *                      |      |      |                        |      |      |                        |      |      | *                      |      |      |                        |      |      |                        |      |      |
|                       | > MCL   | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** | ****                   | **** | **** |

## Legend

\* = 1 sample at each entry point to distribution system (EPTDS).

\*\* = 2 quarterly samples at each EPTDS. Samples must be taken during 1 calendar year during each 3-year compliance period.

\*\*\*\* = 4 quarterly samples at each EPTDS within time frame designated by the primacy agency.

X = No sampling required unless required by the primacy agency.

# = Systems must monitor at a frequency specified by the primacy agency.

! = When allowed by the primacy agency, data collected between June 2000 and December 8, 2003 may be grandfathered to satisfy the initial monitoring requirements due in 2004 for gross alpha, radium 226/228, and uranium.

<sup>1</sup>Until January 22, 2006 the maximum contaminant level (MCL) for arsenic is 50 µg/L; on January 23, 2006 the MCL for arsenic becomes 10 µg/L.

<sup>2</sup>Based on 3 rounds of monitoring at each EPTDS with all analytical results below the MCL. Waivers are not permitted under the current arsenic requirements, however systems are eligible for arsenic waivers after January 23, 2006.

<sup>3</sup>A system with a sampling point result above the MCL must collect quarterly samples, at that sampling point, until the system is determined by the primacy agency to be reliably and consistently below the MCL.

<sup>4</sup>Samples must be taken during the quarter which previously resulted in the highest analytical result. Systems can apply for a waiver after 3 consecutive annual sampling results are below the detection limit.

<sup>5</sup>Groundwater systems must update their vulnerability assessments during the time the waiver is effective. Primacy agencies must re-confirm that the system is non-vulnerable within 3 years of the initial determination or the system must return to annual sampling.

<sup>6</sup>If all monitoring results during initial quarterly monitoring are less than the detection limit, the system can take annual samples. If after a minimum of 3 years of annual sampling with all analytical results less than the detection limit, the primacy agency can allow a system to take 1 sample during each compliance period. Systems are also eligible for a waiver.

<sup>7</sup>Primacy agencies must determine that a surface water system is non-vulnerable based on a vulnerability assessment during each compliance period or the system must return to annual sampling.

<sup>8</sup>If all monitoring results during initial quarterly monitoring are less than the detection limit, the system can take annual samples. Systems are also eligible for a waiver.

<sup>9</sup>Samples must be taken during the quarter which previously resulted in the highest analytical result.

<sup>10</sup>Systems are required to monitor for asbestos during the first 3-year compliance period of each 9-year compliance cycle. A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe must take 1 sample at a tap served by that pipe. A system vulnerable to asbestos contamination at the source must sample at each EPTDS.



# Standardized Monitoring Framework to Radionuclides

(Excluding the Beta Particle and Photon Emitters)

| Initial Monitoring Results                    | First Compliance Cycle |      |      |      |      |      |      |      |      |
|---|------------------------|------|------|------|------|------|------|------|------|
|   | 2008                   | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| < Detection Limit                             |                        |      |      |      | ■    |      |      |      |      |
| $\geq$ Detection Limit but $\leq 1/2$ the MCL |                        |      | ■    |      |      |      |      | ■    |      |
| $> 1/2$ the MCL but $\leq$ the MCL            | ■                      |      |      |      | ■    |      |      | ■    |      |
| $> \text{MCL}$                                | ▲                      | ▲    | ▲    | ▲    | ▲    | ▲    | ▲    | ▲    | ▲    |

| KEY |   |
|-----|---|
| ■   | One sampling event.   |
| ▲   | 4 consecutive quarterly samples. Systems with MCL violations must continue to take quarterly samples until 4 consecutive samples are at or below the MCL. |

# GUIDANCE FOR DEVELOPING A SAMPLE SITING PLAN FOR PUBLIC WATER SUPPLY SYSTEMS

**The SDWA requires each PWS have a written sample siting plan to follow when collecting water samples**

**This outline provides guidance for developing a plan and submitting it to the State for approval**

The sampling plan shall, at a minimum, include the following:

- **A written description of the system**
  - **PWS Code #**
  - **Name of the system**
  - **Name, address, and phone # of the owner of the system**
  - **Name, address, and Phone # of the operator of the system**
  - **Population of the system or if seasonal, indicate the months of operation during the previous year**

# GUIDANCE FOR DEVELOPING A SAMPLE SITING PLAN FOR PUBLIC WATER SUPPLY SYSTEMS

- **A map of the water supply system should include:**

- **General layout of system including:**

- Sources
- Entry points
- Treatment facilities including disinfection facilities
- Storage facilities

- **Not required for Small water supply systems such as restaurants and systems which have only one service connection**

- **Written description of the sampling sites should include:**

- Address of the site
- Location of the sampling tap at the site
- Reference to the site's location on a schematic diagram

- **The name of the laboratory(s) to be used for the system's microbiological analyses**

# GUIDELINES FOR SITE SELECTION FOR LEAD AND COPPER

- **The main objective**
  - **Protect the public from contaminants resulting from corrosion in the piping system**
    - 1. Determine number of samples needed based on population**
    - 2. Evaluate construction materials in distribution system**
    - 3. Determine Tier levels from chart and select sites**

# GUIDELINES FOR SITE SELECTION FOR LEAD AND COPPER

| <b>LCR TIER STRUCTURE</b>  |  |                                    |   |
|--|--|------------------------------------|---|
| <b>Community</b>   |  | <b>Non Transient Non-Community</b> |   |
| <b>Has copper pipes with lead solder or lead pipes and/or served by lead service lines</b> |  |                                    |   |
| <b>Tier 1</b>  | <b>Structure-Installed 1983 through 1985<br/>Single-Family Structures<br/>Or<br/>Multi-Family Structures—<br/>Make Up More Than 20% Of<br/>Total Service Connections</b> | <b>Tier 1</b>                      | <b>Any Structure-Installed From<br/>1983 through 1985</b> |
| <b>Tier 2</b>  | <b>Multi-Family Structures-<br/>Installed by 1983 and after<br/>that make up 20% or less of<br/>Total service connections</b>  | <b>Tier 2</b>                      | <b>N/A</b>  |
| <b>Tier 3</b>  | <b>Single Family Structures-<br/>Installed by 1982 or before</b>   | <b>Tier 3</b>                      | <b>Any Structure-Installed by<br/>1982 or Before</b>      |
| <b>Other</b>   | <b>Structures with other<br/>plumbing materials</b>  | <b>Other</b>                       | <b>Structures with other<br/>plumbing materials</b>       |

# LEAD AND COPPER SAMPLE SITING PLAN

- 1. Map, sketch or schematic of your distribution system.**
  - Clearly indicate the locations of the sampling sites.
- 2. Assign each sampling site an alphanumeric identifier as a location code.**
  - The code for each sampling site must consist of three digits using letters, numbers, or a combination of both (for example: ABC, 123, or 1B3).
  - Add the location code for each sampling site to the map or sketch.
- 3. Compile a listing of the sampling sites showing:**
  - Location code
  - Site address
  - Tier level
  - Description of the site
- 4. Add public water supply identification number and the name of your public water supply system to both the listing and the plan or sketch**
- 5. Submit the map or sketch and the listing of the sampling sites to the State for review**
  - **Note: Future changes to the sample siting plan must be reviewed by the State**
    - 1. Written submittal of the requested change explaining the reason**
    - 2. Submittal of revised map or sketch**
    - 3. Submittal of revised site listing**

# MICROBIOLOGICAL INFORMATION FORM

|  |                 |                           |                  |      |   |                                       |                          |                                  |      |      |      |
|--|-----------------|---------------------------|------------------|------|---|---------------------------------------|--------------------------|----------------------------------|------|------|------|
| New Mexico Environment Department  |                 |                           |                  |      | <input type="checkbox"/> Community Water Supply System  |                                       |                          |                                  |      |      |      |
| Drinking Water Bureau  |                 |                           |                  |      | <input type="checkbox"/> Nontransient Noncommunity System<br><input type="checkbox"/> Noncommunity System |                                       |                          |                                  |      |      |      |
| <b>Section A – General Information</b>   |                 |                           |                  |      | Season Begin Date (MM/DD)   |                                       |                          | Season End Date (MM/DD)          |      |      |      |
| WSS Code#: <span style="color: red;">NM35</span>                               |                 | Water Supply System Name: |                  |      | Service Area Type   |                                       | County:                  |                                  |      |      |      |
| System Location:   |                 |                           |                  |      |   |                                       | System Phone#:           |                                  |      |      |      |
| System Mailing Address:  | Street/P.O. Box |                           |                  | City |   | State                                 |                          | Zip Code                         |      |      |      |
| Name of System Owner:  |                 |                           |                  |      | Type of Owner:  |                                       | Owner Phone #:           |                                  |      |      |      |
| Owner's Mailing Address:   | Street/P.O. Box |                           |                  | City |   | State                                 |                          | Zip Code                         |      |      |      |
| Name of System Operator:   |                 |                           |                  |      | Level of Operator:  |                                       | Operator Phone #:        |                                  |      |      |      |
| Operator's Mailing Address:  | Street/P.O. Box |                           |                  | City |   | State                                 |                          | Zip Code                         |      |      |      |
| Population Served  |                 |                           | # of Connections |      |   | <b>System Serves Water to Public:</b> |                          | <b>If seasonally enter daily</b> |      |      |      |
| Detail your sampling throughout the Month (include laboratory(s) to be used)   |                 |                           |                  |      | population  |                                       | served during each month |                                  |      |      |      |
|  |                 |                           |                  |      |   | Year Round                            |                          | Seasonally                       |      |      |      |
| Jan.   | Feb.            | Mar.                      | April            | May  | June  | July                                  | Aug.                     | Sept.                            | Oct. | Nov. | Dec. |
| Description of action(s) taken when compliance or repeat samples are positive: |                 |                           |                  |      |   |                                       |                          |                                  |      |      |      |

Information Furnished By: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

Plan Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_





# SAMPLE PLAN FOR RESIDUAL DISINFECTANT MEASUREMENT

Water System Name \_\_\_\_\_

Water System Number NM 35

Water System Type \_\_\_\_\_

Water Type \_\_\_\_\_

Population Served \_\_\_\_\_

Disinfectant Used \_\_\_\_\_

Name of Operator \_\_\_\_\_

Certification Level of Operator \_\_\_\_\_

Number of Microbiological Samples /  
Residual Disinfectant Measurements  
Required

## RESIDUAL DISINFECTANT MEASUREMENT PLAN – CHLORINE & CHLORAMINES

Sampling Frequency: Monthly *This information should match your microbiological sampling plan\*\**

| Site # | Address/Description | Sample Tap Location at Site | Measurement Frequency   |
|--------|---------------------|-----------------------------|-------------------------|
| #1     |                     |                             | January, May, September |
| #2     |                     |                             | February, June, October |
| #3     |                     |                             | March, July, November   |
| #4     |                     |                             | April, August, December |

Information Furnished By: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

Plan Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

# SAMPLE PLAN FOR BYPRODUCTS (TTHMs/HAA5s) SAMPLING

Water System Name \_\_\_\_\_

Water System Number NM 35

Water System Type \_\_\_\_\_

Water Type \_\_\_\_\_

Population Served \_\_\_\_\_

Disinfectant Used \_\_\_\_\_

Name of Operator \_\_\_\_\_

| <b>Certification Level of Operator</b>    |                     |                             |   |
|---|---------------------|-----------------------------|---|
| Location of Maximum Residence Time: _____ |                     |                             |   |
| Site #                                    | Address/Description | Sample Tap Location at Site | Sampling Frequency<br>(circle one)                        |
| #   |                     |                             | <b>Quarterly</b><br><b>Yearly</b><br><b>Every 3 years</b> |
| <b>Other Locations, as needed:</b>        |                     |                             |   |
| Site #                                    | Address/Description | Sample Tap Location at Site | Sampling Frequency<br>(circle one)                        |
| #   |                     |                             | <b>Quarterly</b><br><b>Yearly</b><br><b>Every 3 years</b> |

Information Furnished By: \_\_\_\_\_

Phone: \_\_\_\_\_

Plan Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

Date: \_\_\_\_\_

# SAMPLE PLAN FOR LEAD AND COPPER SAMPLING

**Water System Name** \_\_\_\_\_

**Water System Number** NM 35

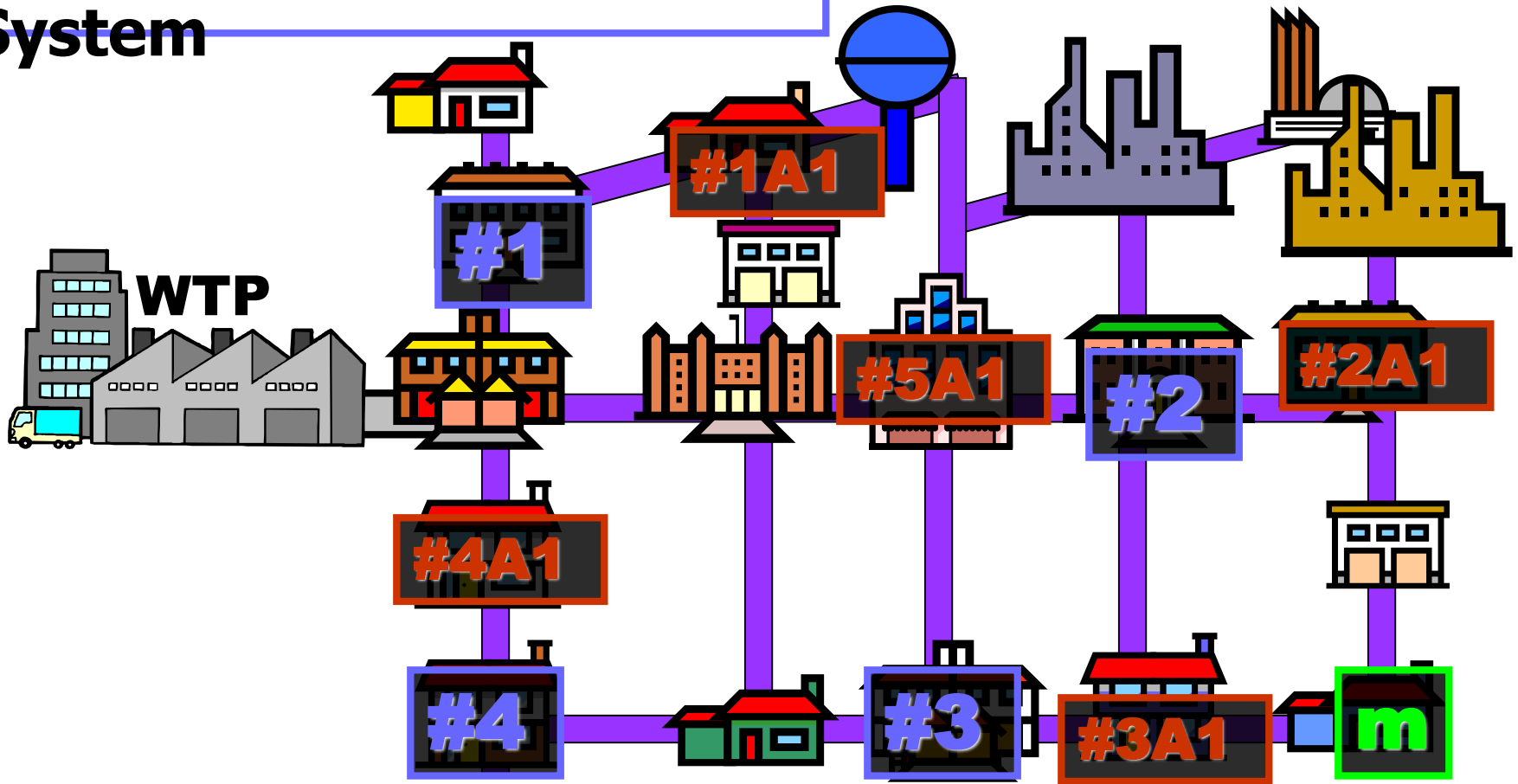
**Water System Type** \_\_\_\_\_

**Population Served** \_\_\_\_\_

**Number of Lead and Copper Samples Required** \_\_\_\_\_

| Sampling Frequency<br>(ex: ABC,<br>123, or 1B3) | Address | Description         | Tier Level |
|---|---------|---------------------|------------|
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
|   |         |                     |            |
| <b>Information Furnished By:</b> _____          |         | <b>Date:</b> _____  |            |
| <b>Phone:</b> _____                             |         | <b>Date:</b> _____  |            |
| <b>Plan Reviewed By:</b> _____                  |         | <b>Phone:</b> _____ |            |

# Map of Water Supply System



## Microbiological/ Chlorine Residual

- #1** Jan., May, Sept.
- #2** Feb., June, Oct.
- #3** Mar., July, Nov.
- #4** Apr., Aug., Dec.

## TTHMs/HAA5s

June thru Sept.

**m** = MRT

## Lead and Copper

June thru Sept.

- #1A1 #4A1**
- #2A1 #5A1**
- #3A1**

The header features five circles in a row. The first, third, and fifth circles are solid light purple. The second and fourth circles are hollow with a light purple outline. Below the circles is a horizontal line that is thicker under the first three circles and thinner under the last two.

# Additional Information

Field and Chemical Safety

Water Conservation Fee



# Field and Chemical Safety

Many samples require the addition of acid for preservation

**Always...Add acid to water, NOT water to acid**

- **Precautions to remember are:**
  - Work in ventilated area
  - Do not inhale the fumes
  - Wear skin and eye protection

# Field and Chemical Safety

- Burns—Flush under Cold Water
- Bleeding Cuts—Apply Pressure
- Spider Bites—Apply Ice & seek medical attention
- Acid on Skin or in Eyes—Wash for 15 min. with clean water & seek medical attention

## Safety Data Sheets (SDS)

- Needed when a physical hazard is present
- Employers must:
  - Provide access to SDSs
  - Ensure that Labels & other warnings are displayed
  - Provide employees with Training

\*\*\*\* MATERIAL SAFETY DATA SHEET \*\*\*\*

Hydrochloric Acid  
11155

\*\*\*\* SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION \*\*\*\*

MSDS Name: Hydrochloric Acid

Catalog Numbers:

144J212, A142 212, A142212, A142P 20, A142P-20, A142P20, A144 212  
 A144 500, A144 500LB, A144 812GAL, A144-20, A144-212, A144-500, A144-500L  
 A144-500LB, A144-812G, A144-812GAL, A144-812GL, A144212, A144500, A144500LB  
 A144500LB02, A144612GAL, A144C 212, A144C-2.5, A144C-212, A144C212,  
 A144C212001, A144FP 500, A144FP500, A144P 20, A144P 500, A144P-1GA,  
 A144P-1GAL, A144P-20, A144P20, A144P500, A144S 212, A144S 500, A144S-212,  
 A144S-500, A144S212, A144S500, A144SI 212, A144SI-20, A144SI-212, A144SI212  
 A466 1, A466 250, A466 500, A466-1, A466-2, A466-250, A466-500, A466,  
 A4662, A466250, A466500, A481 212, A481-212, A481212, A508-212, A508-500  
 A508212 001, A508212 002, A508212001, A508212002, A508212003, A508212004,  
 A508SK212, CRNA481 212, CRNA481212, S719425CMP, SA431-500, SA48-1, SA48-20,  
 SA48-4, SA48-500

Synonyms:

Chlorohydric acid, hydrogen chloride, muriatic acid, spirits of salt,

Company Identification: Fisher Scientific  
1 Reagent Lane

Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For international CHEMTREC assistance, call: 703-527-3887

\*\*\*\* SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS \*\*\*\*

| CAS#      | Chemical Name     | %      | EINECS#   |
|-----------|-------------------|--------|-----------|
| 7647-01-0 | Hydrogen chloride | 36-38% | 231-595-7 |
| 7732-18-5 | Water             | 62-64% | 231-791-2 |

Hazard Symbols: C

\*\*\*\* SECTION 3 - HAZARDS IDENTIFICATION \*\*\*\*

EMERGENCY OVERVIEW

Appearance: Clear, colorless to faintly yellow.

Danger! Corrosive. Sensitizer. Causes eye and skin burns. May cause severe respiratory and digestive tract irritation with possible burns.

Target Organs: None.

Potential Health Effects

Eye:

May cause irreversible eye injury. Vapor or mist may cause irritation and severe burns. Contact with liquid is corrosive to the eyes and causes severe burns.

Skin:

May be absorbed through the skin in harmful amounts. Contact with liquid is corrosive and causes severe burns and ulceration.

Ingestion:

May cause circulatory system failure. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause corrosion and permanent tissue destruction of the esophagus and digestive tract.

Inhalation:

Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. May cause pulmonary edema and severe respiratory disturbances.

Chronic:

Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. May cause conjunctivitis and photosensitization.

\*\*\*\* SECTION 4 - FIRST AID MEASURES \*\*\*\*

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.

Skin:

Get medical aid. Rinse area with large amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupsful of milk or water. Get medical aid immediately.

Inhalation:

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.  
 Notes to Physician:  
 Treat symptomatically and supportively.  
 No specific antidote exists.

\*\*\*\* SECTION 5 - FIRE FIGHTING MEASURES \*\*\*\*

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool.

Extinguishing Media:

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Autoignition Temperature: Not available.

Flash Point: Not available.

NFPA Rating: Not published.

Explosion Limits, Lower: Not available.

Upper: Not available.

\*\*\*\* SECTION 6 - ACCIDENTAL RELEASE MEASURES \*\*\*\*

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Large spills may be neutralized with dilute alkaline solutions of soda ash, or lime. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite.

\*\*\*\* SECTION 7 - HANDLING and STORAGE \*\*\*\*

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Do not ingest or inhale.

Storage:

Keep away from heat and flame. Do not store in direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances.

\*\*\*\* SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION \*\*\*\*

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

| Chemical Name     | ACGIH                            | NIOSH                          | OSHA - Final PELs              |
|-------------------|----------------------------------|--------------------------------|--------------------------------|
| Hydrogen chloride | C 5 ppm; C 7.5 mg/m <sup>3</sup> | C 5 ppm; C 7 mg/m <sup>3</sup> | C 5 ppm; C 7 mg/m <sup>3</sup> |
| Water             | none listed                      | none listed                    | none listed                    |

OSHA Vacated PELs:

Hydrogen chloride:

C 5 ppm; C 7 mg/m<sup>3</sup>

Water:

No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

\*\*\*\* SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES \*\*\*\*

Physical State:

Liquid

Appearance:

Clear, colorless to faintly yellow.

Odor:

Strong, pungent.

pH:

1.1 (0.1N sol).

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 SCIENTIFIC LABORATORY DIVISION

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 RGA



DATE: 05/14/97 ACCT: 584700001  
INDEX: HT1325639 CAT NO: 4508-500 PO NBR: 97031014732

Vapor Pressure: 180 mm Hg  
Vapor Density: 1.257 (Air=1)  
Evaporation Rate: 2.3 (Butyl acetate=1)  
Viscosity: Not available  
Boiling Point: 230 F  
Freezing/Melting Point: -101 F  
Decomposition Temperature: 3218.8 F  
Flashpoint: 62°F, water at 22F  
Specific Gravity/Density: 1.18-1.19 (Water=1)  
Molecular Formula: HCl  
Molecular Weight: 36.46

## \*\*\*\* SECTION 10 - STABILITY AND REACTIVITY \*\*\*\*

Chemical Stability:  
Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, light.

Incompatibilities with Other Materials:

Acetate, acetic anhydride, alcohols + hydrogen cyanide,  
2-aminopropanol, ammonium hydroxide, calcium carbide, calcium  
phosphide, calcium acrylate (acrylate), calcium carbide, chlorosulfonic  
acid, 1,1-difluoroethane, ethylene diamine, ethyleneimine,  
fluorine, lithium silicide, magnesium boride, metallic sulfide,  
oleum, perchloric acid, potassium permanganate, 3-propanolactone,  
propylene oxide, rubidium acrylate carbide, rubidium carbide, silver  
perchlorate + carbon tetrachloride, sodium, sodium hydrosulfide,  
sulfuric acid, uranium phosphide, vinyl acetate, substance  
polymerizes on contact with aldehydes or epoxides.

Hazardous Decomposition Products:

Hydrogen chloride, hydrogen gas.

Hazardous Polymerization: May occur.

## \*\*\*\* SECTION 11 - TOXICOLOGICAL INFORMATION \*\*\*\*

RTCS#

CAS# 7847-01-0: MH4029300

CAS# 7732-18-5: 2C010000

LOSL/CSO

CAS# 7732-18-5: Oral, rat: LD50 = 98 mg/kg

CAS# 7732-18-5: Oral, rat: LD50 = 98 mg/kg

Carcinogenicity:

Hydrogen chloride -

IARC: Group 3 carcinogen

Water -

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology:

No information available.

Toxicogenicity:

Embryo or Fetus: Stunted fetus, Air rat TCl4-450 mg/m<sup>3</sup>/16 Specific

Developmental Abnormalities: Teratocysts, Air rat TCl4-450 mg/m<sup>3</sup>/16.

Reproductive Effects:

No information available.

Neurotoxicity:

No information available.

Mutagenicity:

No information available.

Other Studies:

None.

## \*\*\*\* SECTION 12 - ECOLOGICAL INFORMATION \*\*\*\*

Ecotoxicity:

Fresh LC100-10 mg/L/24H Shrimp LC50-100-330 ppm Starfish

LC50-100-230mg/L/96H Shrimp LC50-240 mg/L/96H Chironia plant

Toxicity-100 ppm

Environmental Fate:

Substance will react/combine with carbonate-based components.

Physical/Chemical:

No information available.

Other:

None.

## \*\*\*\* SECTION 13 - DISPOSAL CONSIDERATIONS \*\*\*\*

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-Series Maximum Concentration of Contaminants: Not listed.

RCRA D-Series Chronic Toxicity Reference Levels: Not listed.

RCRA F-Series: Not listed.

RCRA P-Series: Not listed.

RCRA U-Series: Not listed.

Not listed as a material banned from land disposal according to RCRA.

## \*\*\*\* SECTION 14 - TRANSPORT INFORMATION \*\*\*\*

US DOT

Shipping Name: HYDROCHLORIC ACID SOLUTION

Hazard Class: 8

UN Number: UN1788

DATE: 05/14/97 ACCT: 584700001  
INDEX: HT1325639 CAT NO: 4508-500 PO NBR: 97031014732

Packing Group: 8

IMO

No information available.

IATA

No information available.

MS/MSD

No information available.

Canadian TOC

Shipping Name: HYDROCHLORIC ACID

Hazard Class: 8 (2)

UN Number: UN1788

## \*\*\*\* SECTION 15 - REGULATORY INFORMATION \*\*\*\*

FEDERAL

TSCA

CAS# 7847-01-0 is listed on the TSCA inventory.

CAS# 7732-18-5 is listed on the TSCA inventory.

Health & Safety Reporting List

Name of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

Name of the chemicals in this product are under a Chemical Test Rule.

Section 12b

Name of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

Name of the chemicals in this material have a SNUR under TSCA.

SAHA

Section 302 (RQ)

Final RQ = 5000 pounds (2270 kg)

Section 302 (TPQ)

CAS# 7847-01-0: TPQ = 300 pounds

SAHA Codes

CAS # 7847-01-0: acetic

Section 313

This material contains Hydrogen chloride (CAS# 7847-01-0,

26-36%) which is subject to the reporting requirements of Section 313

of SAHA Title II and 40 CFR Part 373.

Clean Air Act:

CAS# 7847-01-0 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class I Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 7847-01-0 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority

Pollutants under the CWA.

Name of the chemicals in this product are listed as Toxic Pollutants

under the CWA.

OSHA

CAS# 7847-01-0 is considered highly hazardous by OSHA.

STATE

Hydrogen chloride can be found on the following state right to know

lists: California, New Jersey, Florida, Pennsylvania, Minnesota,

Massachusetts,

Not present on state lists from CA, PA, MN, MA, FL, or NJ

California No Significant Risk Level

Name of the chemicals in this product are listed.

INTERNATIONAL

European Labeling in Accordance with EC Directives

Hazard Symbol: Hydrogen gas

Risk Phrases:

Safety Phrases:

1 2 Keep out of reach of children

2 26/25 Avoid contact with skin and eyes

3 25 In case of contact with eyes, rinse immediately

with plenty of water and seek medical advice

3 3/6 Keep in a cool, well-ventilated place

3 26A After contact with skin, wash immediately with

plenty of water.

Canada

CAS# 7847-01-0 is listed on Canada's OEL/MSL List

CAS# 7732-18-5 is listed on Canada's OEL/MSL List

CAS# 7847-01-0 is listed on Canada's Ingredient Disclosure List

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List

Exposure Limits:

CAS# 7847-01-0: OEL-AUSTRALIA/TWA 5 ppm (7 mg/m<sup>3</sup>); OEL-AUSTRIA/TWA 5 p

pm (7 mg/m<sup>3</sup>); OEL-BELGIUM/STEL 5 ppm (7.7 mg/m<sup>3</sup>); OEL-CANADA/STEL 5 p

pm (7 mg/m<sup>3</sup>); OEL-CHINA/STEL 5 ppm (7 mg/m<sup>3</sup>); OEL-GERMANY/STEL 5 p

pm (7.5 mg/m<sup>3</sup>); OEL-GERMANY/TWA 5 ppm (7 mg/m<sup>3</sup>); OEL-HUNGARY/STEL 5

mg/m<sup>3</sup>; OEL-JAPAN/STEL 5 ppm (7.5 mg/m<sup>3</sup>); OEL-THE NETHERLANDS/TWA 5 ppm

(7 mg/m<sup>3</sup>); OEL-THE PHILIPPINES/TWA 5 ppm (7 mg/m<sup>3</sup>); OEL-POLAND/TWA 5

mg/m<sup>3</sup>; OEL-RUSSIA/STEL 5 ppm (5 mg/m<sup>3</sup>); OEL-SWEDEN/STEL 5 ppm (8 mg/m<sup>3</sup>)

1; OEL-SWITZERLAND/TWA 5 ppm (7.5 mg/m<sup>3</sup>); OEL-UK/STEL 10 ppm (15 mg/m<sup>3</sup>); OEL-T

WALE/TWA 5 ppm (7 mg/m<sup>3</sup>); OEL-TURKEY/TWA 5 ppm (7 mg/m<sup>3</sup>); OEL-UNITED

STATES/STEL 5 ppm (7 mg/m<sup>3</sup>); OEL-UNITED STATES/TWA 5 ppm (7 mg/m<sup>3</sup>); OEL IN BULGARIA, C

OLOMBIA, JORDAN, KOREA, OCEANIA, OCEANIA/STEL 5 ppm (7 mg/m<sup>3</sup>); OEL IN BULGARIA, C

VIETNAM (short ACID TLV

## \*\*\*\* SECTION 16 - ADDITIONAL INFORMATION \*\*\*\*

DATE: 05/14/97 ACCT: 584700001  
INDEX: HT1325639 CAT NO: 4508-500 PO NBR: 97031014732

Additional Information:

No additional information available.

MSDS Creation Date: 1/25/1995 Revision #10 Date: 2/07/1997

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any kind, parts or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.



# **Water Conservation Fee**

74-1-13. Water conservation fee; imposition; definitions.

- A.** There is imposed on every person who operates a public water supply system; a water conservation fee in an amount equal to three cents (\$0.03) per thousand gallons of water produced on which the fee imposed by this subsection has not been paid.
- B.** The "water conservation fund" is created in the state treasury and shall be administered by the department of environment. The fund shall consist of water conservation fees collected pursuant to this section. Balances in the fund at the end of any fiscal year shall not revert to the general fund but shall accrue to the credit of the fund. Earnings on the fund shall be credited to the fund.
- C.** Money in the water conservation fund is appropriated to the department of environment for administration of a public water supply program to:
  - 1)** Test public water supplies for the contaminants required to be tested pursuant to the provisions of Section 1412 of the federal Safe Drinking Water Act and finalized through July 1, 1992, and collect chemical compliance samples as required by those provisions of the federal act;
  - 2)** Perform vulnerability assessments which will be used to assess a public water supply's susceptibility to those contaminants; and
  - 3)** Implement new requirements of the Utility operators Certification Act [61-1-1 to 61-1-31 NMSA 1978] and provide training for all public water supply operators.
- D.** The taxation and revenue department shall provide by regulation for the manner and form of collection of the water conservation fee. All water conservation fees collected by the taxation and revenue department shall be deposited in the water conservation fund.
- E.** The fee imposed by this section shall be administered in accordance with the provisions of the Tax Administration Act [Chapter 7, Article 1 NMSA 1978], and shall be paid to the taxation and revenue department by each person who operates a public water supply system in the manner required by the department on or before the twenty-fifth day of the month following the month in which the water is produced.
- F.** Each operator of a public water supply system shall register and comply with the provisions of Section 7-1-12 NMSA 1978 and furnish such information as may be required by the taxation and revenue department.
- G.** As used in this section:
  - 1)** "Person" means any individual or legal entity and also means, to the extent permitted by law, any federal, state or other governmental unit or subdivision or an agency, department or instrumentality thereof; and
  - 2)** "Public water supply system" means a system that provides piped water to the public for human consumption and that has at least fifteen service connections or regularly services an average of at least twenty-five individuals at least sixty days per year.

**I. 7-1-15. SECRETARY May SET Tax Reporting and Payment Intervals-The Secretary may, pursuant to regulation allow taxpayers with an anticipated tax liability of less than two hundred dollars (\$200) a month to report and pay taxes at intervals which the secretary may specify. However, unless specifically permitted by law, an interval shall not exceed six months.**

**II. QUARTERLY AND SEMIANNUAL REPORTING - WATER CONSERVATION FEE**

**Persons who are liable for reporting the water conservation fee under Section 74-1-13 and whose anticipated aggregate liability for the fee is less than \$200 a month may report and pay this fee at quarterly or semiannual intervals if the taxpayer applies for and obtains the prior approval of the secretary or the Secretary's delegate. The semiannual reporting and payment intervals shall be only for the periods of January through June and July through December of any calendar year. The quarterly reporting and payment intervals shall be only for the three- month periods ending March 31, June 30, September 30 and December 31 of any calendar year.**

**Persons who liable for reporting the water conservation fee may not change from reporting interval to another without the prior written approval of the security or the secretary's delegate except that the person may change without prior approval from quarterly or semiannual reporting to monthly if the person begins the monthly reporting with either the January or July reporting period.**

**As a condition of approving quarterly or semiannual reporting the secretary or the secretary's delegate may require the posting of a security bond or other accept able security in an appropriate amount payable to the State of New Mexico guaranteeing payment to the State of New Mexico of the TRD Regulation**

**WATER CONSERVATION FEE**

**REPORT PERIOD**

□□-□□

Beginning (mm-yy)

□□-□□

Ending (mm-yy)

□□□□□□

For Department Use Only

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Signature \_\_\_\_\_ Date \_\_\_\_\_

RPD-41109  
INT. 5/93

**Mail To: Taxation & Revenue Department, P.O. Box 25123, Santa Fe, NM 87504-5123**

CRS I.D. 0 □ □ □ □ □ □ □ □ 0 0 □ □

1. Total Gallons Subject to Fee □□□□, □□□□, □□□□, □□□□

2. Line 1 divided by 1,000 □□□□, □□□□, □□□□

3. Line 2 x .03 = Total fee due \$ □□□□, □□□□.□□

4. Penalty \$ □□□□, □□□□.□□

5. Interest \$ □□□□, □□□□.□□

6. TOTAL \$ □□□□, □□□□.□□

▼ **RETAIN THIS PORTION FOR YOUR RECORDS** ▼

RPD-41109  
INT. 5/93

**WATER CONSERVATION FEE**

**REPORT PERIOD**

□□-□□

Beginning (mm-yy)

□□-□□

Ending (mm-yy)

□□□□□□

For Department Use Only

Please print your numbers like this:  

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|

CRS I.D. 0 □ □ □ □ □ □ □ □ 0 0 □ □

1. Total Gallons Subject to Fee □□□□, □□□□, □□□□, □□□□

2. Line 1 divided by 1,000 □□□□, □□□□, □□□□

3. Line 2 x .03 = Total fee due \$ □□□□, □□□□.□□

4. Penalty \$ □□□□, □□□□.□□

5. Interest \$ □□□□, □□□□.□□

6. TOTAL \$ □□□□, □□□□.□□

**WHO MUST FILE:** Every person who operates a public water supply system with 15 service connections or regularly services an average of at least 25 individuals.

**WHEN TO FILE:** The Water Conservation Fee, Form RPD-41109, is due on or before the 25th day of the month following the month in which the water was produced.

**REPORTING PERIOD:** Reporting is on a monthly basis, from the first day of the month to the last day of the month.

Detach the top portion and submit with check made payable to: New Mexico Taxation and Revenue Department, P.O. Box 25123, Santa Fe, NM 87504-5123.

**LINE INSTRUCTIONS**

Enter your CRS identification number.

- 1) Enter the total amount of gallons of water produced in the reporting period upon which the fee is due.
- 2) Divide line 1 by 1,000, rounding to the nearest whole number.
- 3) Multiply line 2 by .03. This equals the Total Fee Due.
- 4) Penalty is calculated as 2% of line 3 per month or partial month up to 10% of the fee due or \$5.00, whichever is greater.
- 5) Interest for late filing is 1.25% of line 3 per month or partial month that this report is late.
- 6) Enter total of lines 3, 4 and 5.



# Other—Sample Test Questions

**What is the first step for bleeding wound?**

- A. Wash wound**
- B. Put pressure to wound**
- C. Wash and bandage wound**
- D. Let wound clot**

**Should you ice and get medical attention for a poisonous spider bite?**

- A. Yes**
- B. No**



# Other—Sample Test Questions

**The SDS is required for chemical that are?**

- A. A physical hazard**
- B. Volatile**
- C. A carcinogen hazard**
- D. A toxic hazard**

**What safety information should employers provide employees:**

- A. SDS**
- B. Training**
- C. Hazardous warning labels**
- D. All of the above**

# Contact Information

- **NMED Drinking Water Bureau**

- [www.nmenv.state.nm.us/dwb/dwbtop.html](http://www.nmenv.state.nm.us/dwb/dwbtop.html)

- ***Albuquerque Field Office – (505) 222-9500***

- ***Santa Fe Field Office – (505) 476-8600***

- ***Clovis Field Office – (505) 762-3728***

- ***Las Cruces Field Office – (505) 524-6300***

- **USEPA website**

- [www.epa.gov/safewater](http://www.epa.gov/safewater)

- **USEPA Safe Drinking Water Hotline**

- **(800) 426-4791**

- [hotline-sdwa@epamail.epa.gov](mailto:hotline-sdwa@epamail.epa.gov)