

Drinking Water Laws and Regulations

Public Service Commission Personnel Training

Division of Water

Department for Environmental Protection



To Protect and Enhance Kentucky's Environment

Kentucky
UNBRIDLED SPIRIT™

Drinking Water Regulations

- Federal level
- State level
- Related laws and regulations

Federal Safe Drinking Water Act

- United States Environmental Protection Agency is the federal agency responsible for protecting the United States' drinking water
 - Since 1990, EPA has passed 19 drinking water regulations
 - Currently regulates 90 contaminants
 - Requires compliance with contaminant levels, monitoring, reporting and notification



Federal Safe Drinking Water Act--Goal

- Primary goal of the Safe Drinking Water Act is to protect human health by regulating the treatment and distribution of drinking water
 - Compliance with maximum limits for contaminants
 - Monitoring and reporting requirements
 - Public notification and awareness requirements
 - Technical/managerial/financial aspects
 - Operator certification

Federal Safe Drinking Water Act

- Every 6 years the EPA reviews the existing regulations to see if changes are needed
 - Example: Revised Total Coliform Rule will replace the original 1989 Rule
- EPA maintains the “Contaminant Candidate List” (CCL) of potential drinking water contaminants
- EPA also directly administers “Unregulated Contaminant Monitoring Rules” to determine the extent of selected contaminants
 - Water systems have monitored for UCMR 1 and 2
 - UCMR 3 is pending

Kentucky Drinking Water Regulations

- Kentucky's Division of Water administers and enforces the Safe Drinking Water Act
 - EPA develops a new drinking water regulation
 - KY then adopts the federal regulation
 - The KY regulation must be presented at a public meeting and must be approved by 2 legislative committees
 - EPA approves KY's regulation and program (this is known as “primacy”)

Kentucky Drinking Water Regulations

- KY has Statutes (laws) that give the state the authority to regulate drinking water systems
 - KRS 151, 223 and 224
- Regulations are then developed to implement these laws
 - 401 KAR Chapter 8: Public Water Supply
 - 401 KAR Chapter 11: Operator Certification

Drinking Water Compliance Terms

- Turbidity: Clarity of the water
- MOR: Monthly Operating Report that includes turbidity and disinfection information
- “Bacts” Coliform samples
- Chlorine residual: Amount of chlorine detected in the plant or distribution system to control disease-causing organisms
- “Chems” Chemical contaminants

Drinking Water Compliance Terms

- DBPs: Disinfection by-products (primarily THMs and HAAs) formed when chlorine reacts with organic matter
- THMs: Trihalomethanes
- HAAs: Haloacetic acids
- PN: Public notification
- NOV: Notice of violation
- LOW: Letter of warning
- M&R: Monitoring and Reporting

Drinking Water Compliance Terms

- CCR: Consumer Confidence Report
- BWA: Boil Water Advisory (issued for potential or confirmed microbiological contamination)
- Sanitary Survey: Comprehensive inspection of the entire water system covering 8 areas
- Capacity:
 1. Approved rated flow
 2. Technical, managerial and financial ability to meet the SDWA
- AWOP Area-Wide Optimization Program

Drinking Water Compliance Terms

- **Infrastructure:** The tangible “concrete and steel” parts of the system
- **Sustainable Infrastructure:** Maintaining/improving drinking water “concrete and steel”

Defining a Water System

- Public Water System
 - Over 15 connections or over 25 people served
- Community Water System
 - Over 15 connections or over 25 people served for at least 6 months a year
- Non-community Water System
 - Non-transient: same people for 6 months
 - Transient: variable population
- Semi-public Water System
 - Less than 15 connections or less than 25 people served
- Bottled Water System

Water System “Capacity”

- A public water system should demonstrate “capacity” to meet the SDWA requirements
 - Technical
 - Managerial
 - Financial
- TMF capacity is inter-related
 - Without finances a plant cannot operate
 - Without sound management, finances cannot be obtained and system operation cannot be maintained
 - Without technical ability, safe water cannot be provided to expand the system to provide additional customers and income

Water System “Capacity”

- Capacity Development Assessment
 - Key components needed to successfully obtain and maintain TMF capacity
 - This assessment is incorporated into the Sanitary Survey process
- Managerial and financial areas are difficult to measure but critical to water system operation
 - Planning (asset management, contingency)
 - Decision making
 - Organizational structure
 - Budgets (operational, capital, short/long term)
 - Rates
 - Water loss

Source Water Quality and Quantity

- Raw source water must meet “Drinking Water Standards” set by KY regulations
 - These are set at the finished drinking water limits established by the Safe Drinking Water Act
 - Raw water quality also regulated by the Clean Water Act through “designated uses”
 - In KY the classification is “Domestic Water Supply”
- 263 Water Treatment Plants (55.4% of the public water systems)
 - 163 surface water treatment plants
 - 106 groundwater treatment plants

Source Water Quality and Quantity

- 401 KAR 4:010 “Water Withdrawal”
 - Any withdrawal from rivers, impoundments or wells above 10,000 gallons per day must have a withdrawal permit
- Source water and Wellhead Protection Plans
 - Identify contaminants in the area around the source and solutions to controlling those contaminants.
- Water Shortage Plans
 - Tend to focus on droughts
 - Should be expanded to all types of water shortages (power outages, tank failures, plant upsets, pandemics, etc)

Drinking Water Regulations

- Over 19 different drinking water “rules” in 401 KAR Chapter 8:
 - Coliforms (bacteriological)
 - Inorganics
 - Lead and copper
 - Volatile organics
 - Synthetic organics
 - Radionuclides
 - Turbidity (surface water treatment)
 - Disinfection by-products
 - Disinfection residuals
 - Cryptosporidium, Giardia & viruses
 - Reports and notifications

Drinking Water Regulations

- There are 90 regulated contaminants
 - 6 microbiological
 - 1 turbidity
 - 3 disinfectants
 - 4 disinfectant by-products
 - 1 disinfection by-product precursor
 - 16 inorganics (metals and nutrients)
 - 53 volatile and synthetic organics
 - 4 radiological
 - 2 lead and copper

KY Drinking Water Reports and Data

- All drinking water data must be analyzed in labs certified by KY or EPA
 - The KY Division of Water audits and certifies all in-state drinking water labs
 - In KY there are
 - 44 certified microbiological laboratories and
 - 18 certified chemistry laboratories
 - There are 44 certified chemistry and radiological labs located in other states
 - 2 full-time staff are involved with lab certification
 - Microbiological, chemical, Crypto and radiological

Drinking Water Compliance

- Compliance is based on
 - Maximum contaminant levels (MCL)
 - Most contaminants
 - Treatment techniques (TT)
 - Difficult-to-measure contaminants that are easily controlled by treatment (turbidity, Crypto, Giardia, viruses)
 - Action levels (AL)
 - For lead and copper

Finished Drinking Water Quality

- Monitoring and Reporting
 - Monitoring can occur as frequently as every 4 hours or as long as every 3 years
 - Acute contaminants are monitored more frequently such as microbiological and turbidity
 - Chronic contaminants or those not often detected are monitored less frequently such as organic contaminants and radiologicals
 - Monitoring occurs in the water treatment plant and in the distribution system
 - Compliance data reports are submitted at least on a monthly basis

KY Drinking Water Reports and Data

- Data is reported in different ways
 - Milligrams per liter (mg/L) is the same as parts per million (ppm)
 - 1 in a million (1,000,000)
 - Sometimes it is reported in micrograms per liter (ug/L)
 - 1 in a billion (1,000,000,000)
 - Other units such as
 - NTU = Nephelometric Turbidity Units
 - SU = Standard Units (pH)
 - pCi/L = Picocuries per liter (radionuclide)
- State developed report forms for all contaminants

KY Drinking Water Reports and Data

- KY has 475 public water systems
 - Over 6000 microbiological results are submitted to the Division of Water each month
 - Approximately 20,000 turbidity results are submitted each month
 - 475 Monthly Operating Reports that vary from 4 to 20 pages in length are received each month
 - On an annual basis, over 1million analytical results are submitted for compliance
- 7 staff are involved with compliance data

Drinking Water Technical Assistance

- Compliance with the SDWA regulations is challenging—period
 - DOW has 6 staff state-wide that provide technical assistance to help systems stay in compliance
 - One-on-one assistance to systems
 - Small group training
 - Presentations to large audiences
 - Coordinate the nationally-recognized Area-Wide Optimization Program (AWOP) that encourages systems to improve treatment to produce even safer water

Drinking Water Evaluations

- SDWA now requires all water systems to undergo a “sanitary survey” every 3 years that covers 8 areas from source water to management to recordkeeping to treatment to distribution
 - Jointly conducted by DOW Capacity Development section and the Compliance/Technical Assistance Branch (primarily the Regional Office staff)
 - Approximately 120-130 per year
- Also the DOW Regional Offices conduct inspections annually for all water systems not scheduled for a sanitary survey
 - Not as comprehensive as a sanitary survey

KY Drinking Water Reports and Data

- SDWIS = Safe Drinking Water Information System
 - State database for tracking and running compliance
 - Now at version 3.0
 - Compatible with Federal database
 - KY developed data entry files to help with entering the data into SDWIS
- SDWIS will no longer be supported by EPA in several years
 - Moving through EPA Region-type support then to a “cloud” environment

Drinking Water Watch

- Public access to SDWIS
 - <http://dep.gateway.ky.gov/DWW>

The screenshot shows a Microsoft Internet Explorer browser window displaying the Drinking Water Watch website. The browser's address bar shows the URL <http://dep.gateway.ky.gov/DWW>. The website features a header with the title "Drinking Water Watch" and a navigation menu. Below the header, there are two main sections: "Public Water Supply Systems Search Parameters" and "Sample Search Parameters".

Public Water Supply Systems Search Parameters

- Water System No.
- Water System Name
- Principal County Served
- Water System Type
- Primary Source Water Type
- Point of Contact Type

Sample Search Parameters

- Sample Class
- Sample Collection Date Range (The Sample Search always produces results for the last 2 years, unless you provide a specific date range.) To

At the bottom of the search area, there are four buttons: "Search For Water Systems", "Search For Samples", "Review Consumer Confidence Data", and "Clear". A "Glossary" link is also present. Below the search area, there is a link: [Click Here for the County Map of KENTUCKY](#).

The browser's taskbar at the bottom shows several open applications: "start", "Inbox - Microsoft Out...", "TEMPO Administrator", "2010 PSC Trainings", "Drinking Water Learn P...", and "Drinking Water Branc...". The system tray shows the date and time as 9:02 AM on 9/28/2008.

DW Enforcement Response Policy (ERP)

- New EPA initiative to track chronic non-compliance
- Replaces the old Significant Non-compliance (SNC) list
- Combination of points assigned to acute and chronic violations as well as monitoring and reporting violations
 - Certain score requires “formal” enforcement
 - In KY this means an Agreed Order

Consumer Notification

- The public must be notified of
 - Safe Drinking Water Act violations
 - Potential health issues such as lead
- Through the Consumer Confidence Report (CCR), water system customers receive an annual report that provides information on the water system, including violations, detected contaminants and health effects
- Other notices include Boil Water Advisories

Operator Staffing and Certification

- Water treatment plants and distribution systems must be staffed by properly certified personnel in direct responsible charge (401 KAR 8:030)
 - Plant classification and staffing based on source water and rated design capacity
 - Surface waters require the most attention due to its variability and each shift must be staffed
 - Distribution is based on population served
- Alternate staffing plans

Operator Staffing and Certification

- Division of Compliance Assistance
 - 401 KAR Chapter 11
- Combination of education and experience
- Operator-in-training concept
- Certified operators must obtain Continuing Education Units (CEUs) to maintain a license
 - Every 2 years
 - Amount of CEUs required based on classification level
- Ethics language in regulation

Engineering Plans Review

- States must have a process for assuring water treatment plants and distribution systems are designed per current engineering standards
 - 401 KAR 8:100
 - Kentucky Design Criteria
 - 10 States Standards
- Overlap with Department for Public Health and Division of Plumbing on determining “potable” water needs
 - Food establishments
 - Restrooms with sinks

Related Drinking Water Regulations

- Any discharges back to receiving streams or lakes (Clean Water Act permit)
 - Water treatment plant discharges (KPDES KYG64)
- Construction in a floodplain, dredging a stream or impacting water quality standards
 - 401 and 404 permits (Corps of Engineers and DOW)
- Disposal of any solid material removed during treatment (such as filtration)
 - Special Waste disposal permit (Division of Waste Management)

Related Drinking Water Regulations

- Air quality (Clean Air Act)
 - Potential chlorine gas releases
- Occupational health and safety of workers (OSHA)
 - Includes chlorine gas safety, confined space entry, lockout/tag out, Process Safety Management, respiratory protection
- Emergency preparedness

Questions?? Comments??

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