

Distribution System Operator Need-to-Know

Water Supply

- Types, characteristics, and quality of water supplies
 - Surface water
 - Ground water
 - Ground water under the influence of surface water
 - Mixed (surface and groundwater)
- Source water protection
- Types of surface water intakes
- Types of ground water pumps

Storage facilities

- Purpose of storage facilities
- Types of storage facilities
- Selection and location of storage facilities
- Proper operation of storage facilities
- Proper maintenance of storage facilities
 - Inspection
 - Painting
 - Cleaning
 - Testing
- Purpose and maintenance of altitude valves
- Types of altitude valves and pressure switches
- Types of level indicators
- Corrosion control methods
- Cathodic protection
- Security
- Methods of disinfecting storage facilities
- Chlorine disinfection system components
- Maintenance records
- Safety
- Proper ventilation

Pumps and Motors

- Types of distribution system pumps
- Configuration of pumps
 - Series
 - Parallel
- Pump components
- Proper maintenance of pumps and motors
- Proper start-up procedures
- Factors that influence type of pump to use
- Types and correct locations of pressure gauges
- Maintenance records
- Improper operation

Distribution System Operator Need-to-Know

- Cavitation
- Head
 - Dynamic
 - Pressure
 - Static
 - Minor losses
 - Net positive suction head

Distribution System Piping

- Design of distribution system
 - Dead ends
 - Looping
- Types of distribution piping
- Fittings
- Characteristics and sizes of each type of distribution piping material
- Proper pipe installation
- Proper backfilling procedures
- Pipe protection
- Types of service piping
- Characteristics and sizes of each type of service piping material
- Pressures association with each type of piping material
- Types of joints used to connect piping
- Types of fittings used with each type of piping material
- Tapping procedures
- Equipment used for tapping
- Leak detection and reporting
- Cross connection and backflow prevention
- Pipe repair procedures and equipment

Distribution System Components

- Valves
 - Types
 - Components
 - Maintenance
 - Proper selection of valve type
 - Replacement
 - Locations
 - Types of valve boxes and vaults
- Air release valves
 - Types
 - Maintenance
 - Protection
 - Location

Distribution System Operator Need-to-Know

- Meters
 - Types
 - Components
 - Installation
 - Operation
 - Maintenance
 - Proper meter selection
 - Testing
- Trust blocking
 - Sizing
 - Purpose
 - Placement
 - Material used
- Backflow devices
 - Types
 - Components
 - Installation
 - Maintenance
 - Testing
- Fire hydrants
 - Types
 - Components
 - Maintenance
 - Operation
 - Placement

Piping System Operation and Maintenance

- Pressure problems
- Pressure testing
 - Purpose
 - Equipment
 - Proper procedure
- Disinfection
 - Purpose
 - Regulatory requirements
 - Methods
 - Chlorination
 - Types of chlorine compounds
 - Equipment used
 - Chlorine residual testing
 - Chlorine safety
 - Leak detection
 - Amount of chlorine needed
 - Application methods

Distribution System Operator Need-to-Know

- Cleaning
 - Types of mechanical devices
 - Flushing
 - Purpose
 - Proper procedure
 - Frequency
 - Required flow
 - Customer notification
 - Uni-directional flushing
- Pipe and valve locating
 - Locating equipment
 - Proposes for locating
 - Mapping
 - Identifying
- Corrosion control
 - Purposes
 - Methods
 - Chemicals used

Management

- Provisions of the Safe Drinking Water Act (SDWA)
 - Definition of a public water system
 - Entity responsible for enforcing provisions of the SDWA
 - Maximum contaminant level (MCL) definition
 - MCL for
 - Total coliform bacteria
 - Nitrate
 - Chlorine
 - Fluoride
 - Total coliform bacteria MCL violation requirements
 - Definition and requirements of Action Level (AL)
 - AL for
 - Lead
 - Copper
 - Pressure in System
- Mutual aid agreements
- Public Relations

Safety

- Proper trenching and shoring procedures
- Confined space entry
- Manhole safety
- Location of underground utilities
- Chlorine safety
- Traffic safety

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Operators and Laboratory Analysts

Distribution System Operator Need-to-Know

- Electrical safety including overhead power lines
- Lock-out/tag-out
- First aid
- Use of Self Contained Breathing Apparatus (SCBA)
- Fire extinguishers
- Proper storage of chemicals, including lubricants and fuels

Laboratory

- Tests
 - Total coliform bacteria
 - Chlorine residual
 - Turbidity
 - pH
 - Fluoride
- Sampling
 - Proper sampling technique
 - Proper sampling locations
 - Proper sample labeling
- Chain-of-Custody

Mathematics

- Area
- Volume
- Velocity and flow
- Chlorine dosage rates
- Flow conversions

Definitions

- Coliform bacteria
- Cross-connection
- Electrical terms
 - Amp
 - Ohm
 - Volt
 - Watt
- Grab sample
- Indicator organism
- Pathogen
- Velocity