

## Water Classes

### **Water Distribution & Disinfection – DEP Course ID# 2262 - Approved for 6 Water Contact Hours**

The purpose of this course is to introduce the treatment facility operator to the basics of disinfection such as its purposes, influencing factors, types of disinfection, regulatory requirements, disinfection processes and equipment, contact time computations and maintenance issues. Also, the section on distribution systems provides the participants with a general understanding of the operations and maintenance issues within a distribution system that are necessary to provide safe and reliable water service to system customers. By the end of the class you will be able to:

- Identify the key components of a distribution network and describe the primary purpose or function of each component
- Relate how pressures and flows are used to gauge distribution system performance
- Understand how bacteria, viruses and parasites contaminate drinking water and know types of disinfectants used to inactivate them.

### **Water Distribution Systems – DEP Course ID# 2599 – Approved for 3 Water Contact Hours**

The purpose of this course is to provide the participants with a general understanding of the operations and maintenance issues within a distribution system that are necessary to provide safe and reliable water service to system customers. Distribution network components, storage, water quality and monitoring will be discussed. By the end of the class you will be able to:

- Identify the key components of a distribution network and describe the primary purpose or function of each
- Relate how pressures and flows are used to gauge distribution system performance
- Identify the three types of distribution system water quality issues.

### **Water Operator Math – DEP Course ID# 2605 – Approved for 6 Water Contact Hours**

The purpose of this course is to train water operators the math formulas and calculations needed to properly operate and maintain a treatment facility. Since most operators don't use math formulas or calculations on a daily basis, a review is often needed to refresh an operator on the proper math calculations needed for proper process control. Circumference, perimeter & area, volume, flow, detention time, percentages, pressure and head, dosages, and horsepower will be discussed. By the end of this class you will be able to:

- Understand the proper formulas used to calculate water treatment questions
- Calculate the proper math questions needed for process control
- Realize the different methods used in water process control calculations

### **Water Quality and Characteristics – DEP Course ID# 2606 - Approved for 3 Water Contact Hours**

The purpose of this course is to introduce water quality classifications, water quality parameters for treatment, and water quality sampling and analysis to operators. It also provides a historical perspective of water quality issues and standards in the U.S. Water quality and characteristics, drinking water standards and water quality classifications will be discussed. By the end of this class you will be able to:

- Realize the various water quality classifications
- Understand water quality parameters for treatment
- Identify water quality sampling and analysis methods and techniques

### **Ground Water Sources of Supply and Protection – DEP Course ID# 2602 – Approved for 3 Water Contact Hours**

The purpose of this course is to acquaint the participants with the hydrologic cycle, groundwater aquifers, well development and use of groundwater as a potable water supply. Introduction to groundwater, aquifers, source development, construction and source water protection will be discussed. By the end of this class you will be able to:

- Logically explain the hydrologic cycle
- Understand groundwater aquifers
- Protect and use groundwater as a potable water supply

### **Surface Water Sources of Supply and Protection – DEP Course ID# 2601 – Approved for 3 Water Contact Hours**

The purpose of this course is to provide an overview of the sources of surface water supply, required considerations for use related to each type, and source water protection. The Introduction to surface water, the hydrologic cycle, considerations for the use of surface water, data availability and importance, source water assessment and drought contingency planning will be discussed. By the end of this class you will:

- Indicate the purpose of hydrologic cycle and define types of surface water
- Understand all the considerations when choosing a source of supply
- Understand the importance of source water assessments, protection and drought contingency planning.

### **The New Water Treatment Facility Operator – DEP Course ID# 2692 - Approved for 3 Water Contact Hours**

The purpose of this course is to provide a brief outline of the public water system, including the responsibilities of the operator, public water system classifications, federal and state regulations, and water treatment processes. Most often operators start out by learning as they go. This class will teach them the very basics of their responsibilities within the water treatment field. Public water supply system classifications, federal and state regulations and an overview of the water treatment processes will be discussed. By the end of this class you will be able to:

- Describe the responsibilities of the water supply facility and the treatment facility operator
- State the roles of federal, state, and other government agencies regarding drinking water
- Identify the maximum contaminant levels and monitoring and reporting requirements for regulated contaminants

### **Conventional Filtration - DEP Course ID# 2689 - Approved for 6 Water Contact Hours**

The purpose of this class is to introduce the conventional filtration process commonly used to treat drinking water. Often times a new operator starts working at a filter facility with little or limited knowledge of conventional filtration. This class will cover the information needed to allow the operator to properly operate and maintain a conventional filter. Conventional water treatment, mixing, coagulation, flocculation, sedimentation/clarification, filtration and the operation of conventional filtration facilities will be discussed. By the end of this class you will be able to:

- Follow the typical process flow diagram and identify the four major conventional filtration processes
- List the major chemicals used in the coagulation process and explain their importance to the process
- Calculate detention time, surface loading rate, mean flow velocity, and weir loading rate

### **Organics Removal – DEP Course ID# 2677 - Approved for 5 Water Contact Hours**

The purpose of this course is to inform operators about the concerns involved with organics in drinking water and wastewater, and the common methods for removing organics. This class will teach the participants that knowing what is entering the facility has a large impact on how the facility will operate. Also, many options are demonstrated showing how to reduce the organics once they enter the system. Background and overview of organics, source control, air stripping and adsorption will be discussed. By the end of this class you will be able to:

- Name the four properties of organics that affect their ability to be treated
- Identify and explain each of the five components of source control
- Identify different types of aeration equipment and aeration system components found in the air stripping process.

### **Corrosion Control & Sequestering Accelerated Training – DEP Course ID# 7460 – Approved for 10 Water Contact Hours**

The primary purpose of the course is to provide accelerated corrosion control training to operators so they can obtain subclass 7 on their PADEP water certification. This course will introduce operators to several corrosion control chemicals and methods to reduce corrosion. The course begins with explaining the Lead and Copper Rule, sampling techniques and action level exceedance guidance. Next corrosion principles and theory are discussed to provide operators the chemistry principles as to how corrosion occurs. Moving on, pH adjustments and corrosion inhibiting chemicals are discussed. Liquid and dry chemical feed systems are described as well as chemical feed dosage calculations are performed. Chemical safety, including the importance of personal protective equipment, is reviewed using Safety Data Sheets. The pump manufacturers operation and maintenance manuals are reviewed as well as a hands-on demonstration on how to rebuild a chemical feed pump with operator participation. Onsite hands-on pump calibrations, with operator participation, will be completed using the "Tech Brief" from the National Environmental Services Center. Finally, we will be analyzing the PADEP Permit & Engineers Specs/Reports to confirm requirements related to corrosion control, such as sampling frequency and chemical dosages.

- Understand the Lead & Copper Rule
- Be aware of corrosion principles, treatment options & have the ability to calculate chemical dosages
- Be able to rebuild and calibrate a chemical feed pump