

# ESSENTIALS OF SURFACE WATER TREATMENT TRAINING

*Note: 6 hours total (0.6 CEUs) not including breaks & lunch*

**9 am**

## **Intro/Overview**

- Background of SWTRs
- Source Water Considerations
- Watershed Control
- Intakes and Pumps
- Raw Water Quality Factors
- Waterborne Disease Outbreaks
- Types of Pathogens

## **Filtration**

- Conventional rapid sand
- Direct
- Diatomaceous earth
- Alternative (slow sand, membrane, cartridge)
- Methods of filter cleaning (depending on filtration type)

**10:15 am**

**Break (15 minutes)**

**10:30 am**

## **Disinfection**

- What is disinfection?
- Types of disinfectants
- Forms of Chlorine
- NSF/ANSI Standard 60
- Disinfection requirements for surface water
- CTs
- Tracer Studies and Contact Time
- Impact of chlorine on organics

### ***Exercise #1: Tracer studies***

#### **Operations**

- Proper treatment plant sampling locations
  - Turbidity
  - Chlorine residual
  - TOC

### ***Exercise #2: Work in groups to determine proper sampling locations given blank WTP diagrams***

**12 noon**

**Lunch**

- 1 pm**            **Operations (continued)**
- Instrument calibration
    - Turbidimeters
    - Chlorine analyzers
    - Chemical feed pumps
  - Operations & Maintenance Manuals

***Exercise #3: Create a pump curve using made-up data points***

**Reporting Requirements**

- How to fill out the monthly SWTR reports
  - How often to record turbidities
  - Highest turbidity of the day
  - Peak hourly demand flow

***Exercise #4: Calculate peak hourly demand flow based on SCADA data***

**2:15 pm**        **Break (15 minutes)**

**2:30 pm**        **Reporting Requirements (continued)**

- CT calculations

***Exercise #5: Using EPA CT tables to calculate CTs required***

- Common mistakes
- What to do when things go wrong

***Exercise #6: Filling out the monthly surface water quality operating report***

**Emerging Issues**

- Climate change
- Harmful algae blooms
- On-line Resources

**Resources for operators**

**4:30 pm**        **End**