OCT WATER QUALITY ACADEMY
A US Government Funded Education Contractor
An ANSI/IACET Accredited School Nationwide
Class Description Submittal to OESAC

Title: **Waterworks Safety**

☒ **New Class**, or ☐ **Class Renewal**
CEU Award requested: **0.7 CEUs**

OVERVIEW:
This is a one (1) -day foundation class in Waterworks Safety that mirrors OSHA requirements. It is a must attend session for all operators, **especially entry level operators**.

All utility operators need safety training in the following categories; Electrical Safety practice; Lock out, tag out; Trenching and cave-in danger; Competent person on site., spoil pile set back, Ladder within 25 ft., trench shields vs. shoring; Fall Protection; in the plant slippery surfaces, and while on ladders, installation of railings; Confined space training in sewers and above ground tanks. Oxygen levels below 19.5%; Proper chemical handling of acids, bases, oxidizers and gases; chlorine and ammonia; First aid and CPR; SCBA Training for entry into hazardous atmospheres; OSHA Recordkeeping and Traffic control. Chapter multiple choice quizzes

CLASS DESCRIPTION:
The purpose of the one (1) day session is to provide a basic knowledge foundation in comprehensive municipal operator safety training that will equip public works, utility, and maintenance staff with essential skills to identify workplace hazards and comply with OSHA standards.

The one-day course covers, but is not limited to, confined space entry, trenching / excavation safety, flammable explosive atmospheres, fall protection, lift station safety, hearing protection, electrical lockout/tagout procedures, PPE, to prepare attendees for the questions and problems they will encounter at work and on a water plant operator certification exam.

OUTLINE:

Course Description: Municipal Safety Compliance & Operations

- **Objective:** To reduce on-the-job injuries by fostering a culture of safety, ensuring regulatory compliance (OSHA/state-specific), and providing practical training on high-risk municipal tasks.
- **Target Audience:** Public works employees, water/wastewater operators, maintenance staff, and equipment operators.
- **Key Modules:**
    - **Confined Space Entry:** Identifying, entering, and monitoring permit-required spaces (manholes, tanks).
    - **Flammable Explosive Atmospheres.**
    - **Fall Protection.**
    - **Lift station safety.** Soil classification, shoring, sloping, and protective systems.
    - **Hearing Protection.**
    - **Traffic control.**
    - **Electrical & Safety:** Lockout/Tagout (LOTO) procedures.
- **Training Method:** Blended approach including classroom instruction, lecture and discussion, plus end of chapter quizzes.

DETAILED SUPPORTING DESCRIPTION:

1. **Confined Space Entry.**

   This comprehensive chapter on Confined Space Operator Safety Training prepares personnel to identify, evaluate, and safely work in permit-required confined spaces (e.g., tanks, silos, pits) in accordance with OSHA 1910.146. The chapter covers hazard recognition, atmospheric monitoring, entry permits, ventilation, and emergency procedures to ensure safety for entrants, attendants, and supervisors.

Fig 1. Confined Space Entry.

2. **Flammable Explosive Atmospheres.**

A flammable explosive atmosphere is a mixture of hazardous substances (gases, vapors, mists, or combustible dusts) with air under atmospheric conditions, which, when ignited, causes rapid combustion to spread throughout the mixture. These environments are common in municipal settings like oil, gas, and in chemical storage areas, requiring strict safety measures to manage explosion risks.

Fig 2. Flammable storage.

3. **Fall Protection.**

Fall protection in water/wastewater plants requires a combination of corrosion-resistant guardrails, non-slip surfaces, and personal fall arrest systems (PFAS) to mitigate risks from wet, elevated, and confined spaces. Key measures include OSHA-compliant railings, safety gates, and specialized equipment like SRLs or rescue harnesses to prevent drowning and falling into tanks or pits.

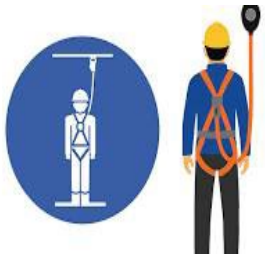

Fig 3. Fall protection.

4. **Excavating & Trenching Safety.**

Excavation is any man-made cut, cavity, or depression in the earth's surface formed by removing soil or rock, used for foundations, pools, or grading. A trench is a specific, narrow excavation where the depth is generally greater than the width used for installing utilities or pipes.

Fig 4. Trenching safety.

5. **Lift / Pump Station Safety**.

When it comes to water / wastewater lift stations and pumping equipment, safety needs to be a top priority in all phases of the system life cycle, from equipment design and selection to long-term maintenance and repair. Regular maintenance of check valves, pumps, and control panels prevents pump runtime issues and ensures safe operation.

Fig 5. Pump station safety.

6. **Hearing Protection.**

Preventing noise-induced hearing loss (NIHL) in an municipal water / wastewater plant requires a comprehensive approach, prioritizing engineering controls over relying solely on personal protective equipment (PPE). The primary goal, often guided by OSHA regulations, is to maintain sound levels below 85-90 dBA over an 8-hour shift to protect against permanent hearing damage.

Fig 6. Prevent hearing loss.

7. **Traffic Control**

Standardization of traffic control helps to reduce driver and pedestrian confusion. Everywhere in the U.S. the same signs and procedures are always used. By adapting to and implementing the Standards, the utility reduces liability. The Standards used in the U.S. for traffic control are based on the Manual for Uniform Traffic Control Devices for streets and highways (MUTCD).

Fig 7. Traffic control.

8. **Electrical Safety, Lock-Out / Tag-Out.**

Lock-Out/Tag-Out (LOTO) is a critical industrial safety procedure required by OSHA to protect personnel from hazardous energy when servicing equipment. It involves isolating all energy sources, applying physical locks and warning tags to devices and verifying "zero energy" before work begins. Compliance with LOTO prevents serious injuries, including electrocution.

Fig 8. Lock-out tag.

OBJECTIVES:

- Students will learn a selection of safety topics as they relate to every day water / wastewater plant operations.
- Students will gain a basic fundamental knowledge of all topics listed in the outline above.
- Students will have the opportunity to interact with an experienced instructor to clarify information on problems where they lack knowledge and understanding.
- Students will be prepared for state operations examinations to increase licensure in their state of residence.

TIME PRESENTATION OUTLINE:

Start Time	End Time	Instructional Time	Allotted Break Time	Chapter/Discussion/Quiz
8:00am	8:50am	50 minutes	8:50am–9:00am	Confined space entry.
9:00am	9:50am	50 minutes	9:50am–10:00am	Flammable Explosive Atmospheres.
10:00am	10:50am	50 minutes	10:50am-11:00am	Fall Protection.
11:00am	12:00pm	60 minutes	12:00pm-12:30pm	Excavating & Trenching Safety.
12:30pm	1:20pm	50 minutes	1:20pm-1:30pm	Lift station safety.
1:30pm	2:20pm	50 minutes	2:20pm-2:30pm	Hearing Protection.
2:30pm	3:20pm	50 minutes	3:20pm-3:30pm	Traffic Control.
3:30pm	4:30pm	60 minutes		Electrical Safety, Lock-out / Tage Out.
		420 minutes		

6 sessions of 50 minutes of instruction and 2 sessions of 60 minutes of instruction equals 420 minutes. 420 minutes equates to 7 hours of instruction divided by 10 which is 0.7 CEUs.

END