

Contractor Facility Safety Awareness Training

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Contractor Safety Awareness Training

- Originally created to satisfy RMP/PSM requirements
- Provides contractors working w/o escort reasonable personal protection awareness
- Highlights:
 - Establishes control & boundaries
 - Provides water treatment process overview
 - Awareness of facility alarms (lights & horns)
 - Evacuation plan & muster points
 - Fire extinguisher location and proper usage
 - Danger of chemical exposure
 - First Aid exposure to liquid & gaseous chemical; MSDS
 - General housekeeping (i.e., no guns or alcohol)
 - Provides documentation that contractor received training

Chemical Properties & Personal Protection

Sodium Hypochlorite

- Color Code: **Yellow**
- Secondary Disinfection
- Material Safety Data Sheet (MSDS) Review
 - Stored as liquid in two 6000 gallon and two 450 gallon cross-linked HDPE tanks
 - 12.5% chlorine
 - PEL: Not applicable
 - TLV: Not applicable
 - pH: 12.5-13.5
 - Specific Gravity 1.196
 - Flash point: Not applicable

Chemical Properties & Personal Protection

Sodium Hypochlorite (cont.)

– Odor/visual detection

- Greenish-yellow liquid
- Bleach-like or chlorine odor

– Emergency Overview

- Routes of entry: eyes, skin, inhalation
- Target Organs: eyes, skin, respiratory tract
 - Acute Exposure, Eyes & Skin: Severe irritant, corrosive, reddening, severe burns
 - Acute Exposure Lungs: Severe irritation and chemical burns
 - Repeating exposure: Damage to eyes and skin; chemical burns

Chemical Properties & Personal Protection

Sodium Hypochlorite (cont.)

- **First Aid** (applies to all chemicals; seek medical attention ASAP in all cases after first aid)
 - Eyes: Flush immediately for 15 minutes
 - Skin: Flush 15 minutes, wash with water
 - Inhalation: Remove victim to fresh air, CPR only if breathing stops.
 - Ingestion: Call Poison Control Center w/MSDS available; sips of water.
- **Chemical incompatibility:** Acids; alcohols; amines; ammonia; chlorinated isocyanurates; detergents; ether; hydrocarbon; oxidizable materials; reducing agents.
- **Corrosiveness:** Very corrosive to most metals

Chemical Properties & Personal Protection

Sodium Hypochlorite (cont.)

- Fire & Explosion Hazards
 - Flash Point: Not applicable
 - Flammable Limits: Not applicable
 - Extinguishing media: Flood area with water or CO₂

Chemical Properties & Personal Protection

Sodium Hypochlorite (cont.)

- Personal Protection (all chemicals)
 - Proper PPE: Rubber gloves; face shield; goggles; apron
- Spills:
 - Containment w/dikes or absorbent material
 - Neutralize w/sodium bisulfate or ferrous salt
 - Flush area w/water

Chemical Properties & Personal Protection

Sodium Hydroxide

- **Color Code: Purple**
- pH control
- 25% caustic, strong alkali (pH 14.0); no odor, extremely corrosive!
- First aid for eye/skin Burns: Similar to sodium hypochlorite
- Spills: Neutralized with mild acetic acid solution. Contain with absorbent material or by diking
- Fire and Explosion: Non-combustible
- PPE: Neoprene gloves, goggles, face shield

Chemical Properties & Personal Protection

Zinc Orthophosphate

- (Color Code: **Orange**)
- 36% orthophosphate; 3.6% zinc (10:1)
- Corrosion Control Chemical
 - Strong acid (< 1.0 pH); no odor; “liquid white”
 - First aid for eye/skin burns: similar to sodium hypochlorite
 - Spills: Neutralize with “Kolorsafe” neutralizer for acids. Contain with absorbent material or by diking
 - Fire and Explosion: Non-combustible
 - PPE: Neoprene gloves, goggles, face shield

Chemical Properties & Personal Protection

Aqua Ammonia

– Aqua Ammonia (Color Code: **White**)

- Secondary disinfection chemical
- 29% ammonia; strong eye and respiratory irritant
- First Aid: Similar to sodium hypochlorite
- Spills: Dilute with water, contain with absorbent material or by diking
- Fire And Explosion: Non-Flammable
- PPE: NIOSH approved full-faced respirator with ammonia cartridges, rubber gloves & boots.

Chemical Properties & Personal Protection

Hydrofluorosilicic Acid

- Hydrofluorosilicic Acid (Color Code: **Grey w/red Stripes**)
- Used for fluoridation
- 24% fluoride, strong acid (ph 1.2), very corrosive
- First Aid: Similar to sodium hypochlorite
- Spills: Contained and neutralized with soda ash
- Fire & Explosion Hazard: Non-flammable
- PPE: Face shield w/goggles; rubber gloves; apron; rubber boots.

Chemical Properties & Personal Protection

Ozone Gas

– Ozone Gas (Primary Disinfection)

- Highly Toxic, Irritant Gas
- 2% maximum concentration by weight
- PEL: 0.1 PPM; STEL 1.0 PPM
- Leak Detectors set to alarm at 0.1-PPM ambient ozone, and shutdown ozone generation at 0.3 PPM.
- Contact Tank Vacuum Alarms: Early warning device set to trip at -2" WC (Typically -3" WC)
- Audible & visual alarming
- Ozone area must be evacuated during startup
- First Aid: Remove to fresh air, CPR only if necessary
- Leaks: Ventilate the area; ozone will decompose to oxygen in minutes.

Safety-Related Housekeeping Items

- Emergency Shower & Eyewash Station location & operation
- Evacuation Plan
 - Alarming System (Visual/Audible)
 - Ozone Room Contact Tank Vacuum Alarm (Red light Ozone Room & Yellow light in the standby generator room, constant loud buzzer)
 - Ozone Alarm (Red light in Ozone Room, horn; Red light in Standby generator room)
 - Fire Alarm (Intermittent loud buzzer)
 - Emergency Shower alarm (Bell; fluoride room: loud local buzzer)
 - Process Alarm: Bell
 - Security Alarming
 - Muster Point: Source Protection Building. (Alternate Sites: Gorham Throttling Valve Building Road Entrance, Standish Pump)

Confined Spaces/Lockout-Tagout

- **Confined Space Vessel Entry**
 - Confined spaces must be checked by competent personnel for hazards before work can begin.
 - A written permit is required for entrance to a confined space.
- **Lock-Out / Tag-Out:**
 - Equipment must be de-energized and locked-out before it is worked on.
 - Before working on a piece of equipment, assure lock-out by checking for activation.
 - PWD will typically perform equipment LOTO and then turn over the project to contractor

Safety-Related Housekeeping Items

- **Fire Extinguishers:**
 - Located throughout the SLWTF.
 - Visually locate an extinguisher before beginning work
 - Extinguisher always upright
 - Pull pin
 - Start eight feet back
 - Aim at base of fire
 - Squeeze lever and sweep side to side
- **Plant Communication**
 - Overview of how to use Gaitronics intercom system
- **Material Safety Data Sheets:**
 - Large Bright Yellow Notebook in the SLWTF Control Center

Safety-Related Housekeeping Items

- PWD has a “zero tolerance” Sexual Harassment policy that has severe consequences for engaging in offensive, unwelcomed or illegal behavior of a sexual nature.
- PWD has a “zero tolerance” firearms policy.
 - No firearms are allowed on PWD property (including parking lots).

Safety-Related Housekeeping Items

- Brief tour of facility, highlighting:
 - Safety Shower locations
 - Alarm lights/horns
 - Location of fire extinguishers
 - Use of in-house communication
 - Plant evacuation plan
 - Chemical delivery area
 - LOTO stations/brief overview
- Questionnaire & documentation of training