
Ocean City Fire Department
Standard Operating Guidelines

Operations

Subject: Response to Chlorine/Sulfur Dioxide
Emergencies in Water/Wastewater
Facilities
Revised: 3-12-10
Effective: 5-1-10
Approved: 3-12-10 (Fire Chief)
Section: 425.00

425.01 Purpose

To establish guidelines for the response and operation of Fire Department Hazardous Materials Operations-Level personnel at Chlorine/Sulfur Dioxide Emergencies in Public Works Water/Wastewater Facilities.

425.02 Scope

This policy specifically addresses the response of Fire Department Hazardous Materials Operations-Level Personnel to Chlorine or Sulfur Dioxide Emergencies in Water/Wastewater Facilities. All other locations or chemical emergencies are outside the scope of this SOG.

425.03 Policy

Due to the dynamic nature of hazardous materials incidents, nothing in this or any policy should preclude an incident commander from deviating from these guidelines in order to most effectively address the emergency.

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425.04 Definitions (applicable to this Guideline)

- A. Hazardous Materials Response Team (HMRT): Group of resources and personnel (at Hazardous Materials Operations and Technician Levels), organized and trained to perform offensive skills and tasks for the mitigation of hazardous materials/weapons of mass destruction (WMD) incidents. Initiation of Hazardous Materials Response Team (HMRT) response typically provides the following resources, which may be altered as needed by the on-call Fire Marshal (FM) Supervisor or Incident Commander (IC):
1. FM Supervisor
 2. On-Call FM Hazmat Technicians
 3. All Available OCFD Hazmat Technicians
 4. Hazmat Response Unit(s)
 5. Additional Apparatus: 1 Engine/1 Rescue/1 Staffed Ambulance
- B. Hazardous Materials Operations Level Personnel/Resources: Those Fire Department personnel responding on the initial dispatch of an emergency (Engine Company/Medic Unit/Chief Officers), trained to the Hazardous Materials Operations Level, who operate on emergency incidents without the support of the full Hazardous Materials Response Team (HMRT).
- C. Scrubber Facilities: Chlorine and Sulfur Dioxide storage rooms at Water and Wastewater Facilities are protected by an Emergency Chlorine/Sulfur Dioxide Gas Scrubber System, capable of removing and treating contamination of a full 1-ton cylinder release in the storage room, with a complete treatment occurring in approximately 20 minutes. Activation of the scrubber system may occur automatically via in-room detectors, or through manual/remote start activation by personnel. An induced draft fan pulls gas vapor from the storage area through a scrubber consisting of a series of bed spray system sections where intimate contact with re-circulating caustic solution results in the complete absorption and removal of chlorine or sulfur dioxide gas. Due to automated processes to protect the scrubber system, there may be up to a 5-second delay from activation of the unit until it becomes operational. The scrubber exhausts to the exterior of the structure at a maximum Chlorine/Sulfur Dioxide concentration of 3 ppm (parts per million) or less.

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D. Water/Wastewater Facility Emergency Chemical Status: Tiered emergency response plan guiding the response and operations of Water/Wastewater personnel in handling chemical emergencies at Water/Wastewater Facilities:

- Level 4: No Emergency: Operational/maintenance issue with Scrubber being addressed by Water/Wastewater Personnel
- Level 3: No Emergency: Chemical Alarm received and being addressed by Water/Wastewater Personnel
- Level 2: Emergency: Minor Leak being addressed by Water/Wastewater Personnel, supported by Fire Department Engine Company Response
- Level 1: Emergency: Major Leak Detected- Water/Wastewater Personnel and Fire Department Hazardous Materials Response Team Response

425.04 Fire Department Response to Chlorine/Sulfur Dioxide Incidents at Water/Wastewater Facilities

A. Level 4 (Operational/maintenance issue with Scrubber)

No Fire Department Response is necessary. Notifications (via email/text) will be sent by Dispatch, notifying FD Command Staff and FMO personnel of the scrubber issue at Water/Wastewater Facility.

B. Level 3 (Chemical Alarm received and being addressed by Water/Wastewater Personnel)

No Fire Department Response is necessary. Notifications (via email/text) will be sent by Dispatch, notifying FD Command Staff and FMO personnel of the chemical alarm at Water/Wastewater Facility. Duty Fire Officer will be notified of incident by Dispatch. After notification that a Level 3 Incident is ongoing at a Water/Wastewater Facility, the Duty Fire Officer should remain appraised of the status of the incident, (either by direct monitoring of assigned coordination channel, or by requesting regular updates from dispatch), until the conclusion of the incident.

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C. Level 2 (Minor Leak being addressed by Water/Wastewater Personnel)

OCFD Response: 1 Engine Company/ 1 Staffed Ambulance

The general tasks of the Fire Department Operations-Level response under a Level 2 incident, are:

1. Coordinate safe staging location, for responding FD Resources with on-scene Water/Wastewater Personnel.
2. Analyze the ongoing incident.
3. Collect hazard and response information.
4. Participate in Unified Command with Water/Wastewater Personnel.
5. Coordinate any resources needed by Water/Wastewater personnel addressing the leak.
6. Provide accountability for FD personnel. Provide Water/Wastewater Personnel accountability operating at the incident, visually or by radio.
7. Upgrade the incident to Level 1 (HMRT Response) if needed.
8. Provide an emergency Rapid Intervention Team (RIT), if needed.
9. Provide any necessary medical care, if needed.

D. Level 1 (Major Leak-HazMat Team Needed to Mitigate)

OCFD Response: HazMat Response Team Callout
1 Engine Co./1 Rescue/ 1 Staffed Ambulance
Hazmat Response Unit
FM Supervisor
All Available HazMat Techs

The general tasks of the Fire Department Operations-Level response at a Level 1 Water/Wastewater incident are:

1. Coordinate safe staging location, for responding FD Resources with on-scene Water/Wastewater Personnel.
2. Analyze the ongoing incident.
3. Evaluate facility and surrounding area for evacuation/protect-in-place considerations and direct operations accordingly.
4. Collect hazard and response information.
5. Participate in Unified Command with Water/Wastewater Personnel.
6. Provide accountability for FD personnel. Provide Water/Wastewater Personnel accountability operating at the incident, visually or by radio.
7. Provide an emergency Rapid Intervention Team (RIT), if needed.
8. Provide any necessary medical care, if needed.
9. Coordinate response and staging of additional resources.
10. Debrief responding Hazardous Materials Response Team on incident information.

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- E. After dispatch to the respective facility for a Water/Wastewater Chemical Incident, responding units shall:
1. Notify dispatch of their response on appropriate radio channel and immediately switch to the Coordination Channel assigned to the incident by Dispatch.
 2. Make contact and coordinate response with on-scene Water/Wastewater Command.
 3. Request an appropriate staging area (A or B) from on-scene Water/Wastewater Command.
 4. Respond and stage, as directed.

425.05 Initial Fire Department Staging Areas

Two (2) specified areas for each Water/Wastewater facility have been identified, where Water/Wastewater personnel will evacuate to, meet incoming emergency services units, and provide a liaison to Fire Department Unified Command. Water/Wastewater personnel know the staging areas as either "A or B," however, fire department personnel when communicating on the radio shall verbally identify the staging areas by letter and physical location description. The areas will be designated:

1. Staging Area "A" (Primary Location)
2. Staging Area "B" (Secondary Location)

On-scene Water/Wastewater personnel will determine which staging area will be utilized, dependent upon chemical release, weather, wind direction/speed, and other environmental or situational factors.

Wastewater Facility, 6405 Seabay Drive

Staging A: 64th Street bayside at Wastewater Front Gate

Staging B: 65th Street bayside at Public Works Gate

Water Facility, 104 44th Street

Staging A: 44th Street and Coastal Highway

Staging B: Alleyway behind Water Plant adjacent to 45th St. Shopping Ctr.

Water Facility, 1400 St. Louis Avenue

Staging A: 14th Street & alley, south of Water Dept. Loading Dock

Staging B: 15th Street & alley, behind OCFD HQ

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Water Facility, 204 136th Street

Staging A: 136th Street & Sinepuxent Avenue

Staging B: 137th Street & Sinepuxent Avenue

425.06 Upgrading Incidents

Considerations by an Incident Commander that may support an incident upgrade to a Level 1 (requesting the response of the HMRT), may include, but are not limited to:

- A. Leak repair by Water/Wastewater Personnel requires them to don PPE above the PPE level available to the Engine Company (A/B Suits).
- B. Leak originating or extending outside of the scrubber building.
- C. Insufficient trained personnel available to facilitate the general tasks required.
- D. Incident requires the evacuation of areas outside the Water/Wastewater Facility.

425.07 Evacuation Considerations

Incident Commanders should consider the totality of the situation, including but not limited to the following factors, when developing an action plan for the evacuation/protection-in-place of the Water/Wastewater Facility as well as surrounding areas:

- Leak Containment (interior vs. exterior)
- Scrubber in operation
- Duration of leak (how long before corrective measures are complete)
- Amount of Product Leaked
- Environmental Factors (Wind Direction/Speed, Humidity, Temperature)
- Occupancies potentially affected by leak
 - a. Amount of people present
 - b. Mobility to evacuate
 - c. Ability to protect-in-place

Incident Commanders should consider utilizing perimeter air monitoring to identify the size and effected area of the leak.

On Level 1 & 2 Incidents at the 65th Street Wastewater Facilities, the incident commander shall have the US Coast Guard notified of the incident and request assistance with perimeter control on the bayside as necessary.

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425.08 Chemical Hazards

Although the focus of this SOG is the release of Chlorine or Sulfur Dioxide, as they maintain the greatest potential for release in Water/Wastewater Facilities, the following chemicals may also be found in various quantities in Water/Wastewater Facilities.

Appendix A contains Material Safety Data Sheets (MSDS) of these chemical hazards, for reference. Personnel are encouraged to coordinate with on-scene Water/Wastewater personnel during an incident in order to obtain more specific and timely information.

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|---------------------------------|------------------------|
| A. Chlorine (CL ₂) | F. Sulfuric Acid |
| B. Sulfur Dioxide | G. Liquid Oxygen (LOX) |
| C. Potassium Permanganate | E. Caustic Soda |
| D. Sodium Hypochlorite (Bleach) | (Sodium Hydroxide-50%) |

425.09 Minimum Recommended Personal Protective Equipment

- A. Fire Department personnel operating at incidents in Water/Wastewater Facilities, with potential exposure to Chlorine/Sulfur Dioxide, shall wear the personal protective equipment (PPE) outlined below, as a minimum. PPE for the operations of Hazardous Materials Technicians during an incident shall be determined by an appropriate hazard and risk analysis.
1. Respiratory: SCBA (Self-Contained Breathing Apparatus)
 2. Clothing: Structural Firefighting Gear (incl. Gloves/hood)
 3. MX6 Gas Detector (preferably with chlorine sensor)
- B. Personnel should avoid direct contact with any chemical during emergency victim rescue/recovery operations. Should direct contact with the chemical appear to be unavoidable, consideration should be given to the risk/benefit of conducting the rescue, as well as the potential consequences of waiting for the arrival of Hazardous Materials Technicians and chemically impermeable personal protective equipment.

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425.10 Decontamination Recommendations

A. Chlorine:

1. Remove contaminated clothing and allow to air out.
2. Rinse any exposed/contaminated skin with plenty of water for 15-20 minutes.
3. Monitor for any adverse health effects.

B. Sulfur Dioxide:

1. Remove contaminated clothing and allow to air out.
2. Rinse any exposed/contaminated skin (if irritation occurs) with lukewarm, gently flowing water for at least 5 minutes.
3. Monitor for any adverse health effects.

C. For other chemicals, review appropriate MSDS sheet.