Hydrogen Peroxide Spill Cleanup

Tank Farm Plant Operating Procedure Effluent Treatment Facility

USQ Not Required – ETF is a < Hazard Category 3 Radiological Facility

CHANGE HISTORY ( ≤ LAST 5 REV-MODS )

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
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<tr>
<td>A-4</td>
<td>09/27/2018</td>
<td>Changes found in periodic review process</td>
<td>Formatting updates</td>
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<tr>
<td>A-3</td>
<td>05/30/2018</td>
<td>ETF formatting update</td>
<td>Updated records section and signature lines throughout procedure. Removed 1st time use banner. Added ETF-AOP-85B-003 to section 4.2.</td>
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<tr>
<td>A-2</td>
<td>02/14/2018</td>
<td>Inconsequential change</td>
<td>Inconsequential change to title of TFC-OPS-OPER-C-24 to “Occurrence Reporting” (Step 3.3.2 and Section 4.2).</td>
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<td>A-1</td>
<td>12/27/2016</td>
<td>Inconsequential change</td>
<td>Updated records section</td>
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<td>A-0</td>
<td>03/30/2016</td>
<td>Converting to WRPS format</td>
<td>New Procedure; Supersedes ETF-PRO-OP-52169 (POP-85B-002)</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for the safe cleanup of hydrogen peroxide, radioactive or non-radioactive, spills at the ETF. This procedure is performed in conjunction with ETF-AOP-85B-003, Response to ETF Spills or Releases.

1.2 Scope

This procedure involves the cleanup instructions for hydrogen peroxide (H$_2$O$_2$) radioactive or non-radioactive spills. Spills are defined in ETF-ERP-85B-003, Emergency Spill or Release at ETF. For emergency response to an accidental spill or release, stop this procedure and go to ETF-ERP-85B-003.

2.0 INFORMATION

2.1 Terms and Definitions

- H$_2$O$_2$ - Hydrogen Peroxide.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

WARNING - Hydrogen peroxide causes eye irritant and may cause skin and respiratory tract irritation.

3.2 Radiation and Contamination Control

3.2.1 Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure, TFC-ESHQ-RP_RWP-C-03.

3.2.2 If spill contains radioactive material, cleanup work will require an RWP.

3.3 Environmental Compliance

NOTE - Due to the risks associated with potential contamination of chemically reactive material, spilled hydrogen peroxide shall not be reused.

- Flushing of hydrogen peroxide to ETF sump one requires concurrence of the SOM.

3.3.1 In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.

3.3.2 TFC-OPS-OPER-C-24, Occurrence Reporting, requires notification of spills and unplanned releases within 30 minutes of discovery to the ONC at 376-2900. ONC can provide review of the spill information to help with classification or regarding what further reporting requirements or contacts may need to be initiated.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

**Recommended PPE**

NOTE – Specific gloves are required for Sections 5.2 and 5.3 as noted at each section.

- Chemical resistant gloves (e.g., 3-mil nitrile or butyl)
- Chemical resistant suit (e.g., Tychem)
- Chemical resistant boots
- Chemical resistant tape
- Tight-fitting goggles and face shield.

**Optional equipment**

- Peroxide test strips
- Pogo pump or other portable pump and hose
- Warning signs
- Absorbent pads or pillows (PIG HAZ-MAT absorbent pads rated for oxidizers are acceptable, regular pads are not)
- Vented hazardous waste containers
- Poly bags - 10 mil
- Hazardous waste labels
- Commercial universal spill kit
- Plastic shovel
- Nylon bristle broom
- Water spray can or bottle
- Anti-contamination clothing.

4.2 Performance Documents

The following documents may be needed to perform this procedure.

- ETF-AOP-85B-003, Response to Spills or Releases
- ETF-ERP-85B-003, Emergency Spill or Release at ETF
- TFC-OPS-OPER-C-17, Operating Logbooks
- TFC-OPS-OPER-C-24, Occurrence Reporting.
5.0 PROCEDURE

NOTE - Tasks in this procedure may be performed concurrently or out of order unless specifically noted prior to that task.

- SOM has the responsibility to determine the appropriate method(s) for spill cleanup. The method(s) chosen should minimize waste generation to the maximum extent possible. If the spill is outside recognized chemical containment barriers, consult PRC-PRO-EP-15333, Environmental Protection Processes.

5.1 General Spill Cleanup Requirements

NOTE - Flushing is the preferred method for cleanup.

5.1.1 (SOM) COMPLETE Attachment 1.

NOTE - The RWP and job-specific radiological controls will be established at this time.

5.1.2 (SOM) PERFORM a pre-job briefing, including:

- Personnel assignments
- Review of RWP
- MSDS/SDS for information relevant to hazards and appropriate PPE
- Safety equipment
  - Safety shower location
  - PPE
  - Spill kit cleanup equipment.
- Procedures or actions
- Waste handling and packaging; contact Waste Technical Services
- General cleanup techniques and methods
- Actions to be performed if unanticipated problems arise (e.g., a person becomes contaminated [unprotected skin, eyes, or clothing] with hydrogen peroxide):
  - Emergency medical assistance (911) or HAZMAT support.
- Heat/cold stress consideration (i.e., Safety and Health).
5.1 General Spill Cleanup Requirements (Cont.)

WARNING
Hydrogen peroxide causes eye irritant and may cause skin and respiratory tract irritation.

5.1.3 DON PPE as directed by SOM:

NOTE – Specific gloves are required for Sections 5.2 and 5.3 as noted at each section.

- Chemical resistant gloves (e.g., 3-mil nitrile or butyl)
- Chemical resistant suit (e.g., Tychem)
- Chemical resistant boots
- Chemical resistant tape
- Tight-fitting goggles and face shield.

5.1.4 COMPLETE spill cleanup in accordance with the following:

- Pre-job briefing
- Recovery plan (Attachment 1)
- Designated RWP.

NOTE - Calls for emergency medical assistance require entry into TFC-OPS-OPER-C-24.

5.1.5 IF conditions develop outside the boundaries of the pre-job briefing, recovery plan, or RWP, PERFORM the following:

5.1.5.1 SUSPEND work.

5.1.5.2 EXIT spill area.

5.1.5.3 CONTACT SOM for directions.

5.1.6 DISPOSE of all waste generated during cleanup activities in accordance with established waste handling procedures.

5.1.7 DECONTAMINATE tools and equipment by liberally flushing with raw or sanitary water.

5.1.8 UPON completion of cleanup, WASH with soap and water.
5.2 Flush Spill Area

NOTE - Sump drains are available in the hydrogen peroxide bulk storage room that will allow flushing directly to Sump 1. Prior to beginning flushing operations, the impacts of adding H₂O₂ flush water to the sump must be considered (e.g., sump content compatibility, impacts on secondary treatment train, final concentration of peroxide in sump, etc.).

- Peroxide test strips may be used to determine peroxide levels.

**Special Instructions**

A minimum of 3-mil nitrile gloves shall be worn during the performance of this section.

5.2.1 **PERFORM** Steps 5.1.1 through 5.1.3 per SOM’s direction AND **PROCEED** with spill cleanup by flushing.

5.2.2 **IF** flushing activities are outside of chemical berm area, **PLACE** absorbent tubes to direct liquid into trench.

5.2.3 **FLUSH** spill area with water by using standard ¼-inch hose.

5.2.4 **FLUSH** sump or trench with water for ten minutes.

5.2.5 **MONITOR** sump levels.

5.2.6 **SQUEEGEE** excess liquid into sump or trench.

5.2.7 **ABSORB** excess liquid with absorbents from spill kit.

5.2.8 **PLACE** saturated absorbent materials into disposal bag.

5.2.9 **(HPT) IF** in an RBA, **PERFORM** radiological surveys on bag.

5.2.10 **PLACE** full disposal bag into an approved waste container.

5.2.11 **PACKAGE** waste per approved waste handling procedures.
5.3 **Clean Up Spill by Absorption**

**NOTE** - Only absorbent material rated for oxidizers (i.e., PIG HAZ-MAT) are used. Normal absorbents may become combustible with hydrogen peroxide.

**Special Instructions**

Butyl gloves must be worn when absorbing hydrogen peroxide.

5.3.1 **PERFORM** Steps 5.1.1 through 5.1.3 per SOM’s direction **AND**

**PROCEED** with spill cleanup by absorption.

5.3.2 **CIRCLE** the spill using socks or other absorbent material provided in spill kit.

5.3.3 **PLACE** absorbent material over spill.

5.3.4 **PLACE** saturated absorbent materials into disposal bag.

5.3.5 **(HPT) IF** in an RBA, **PERFORM** radiological surveys on bag.

5.3.6 **DISPOSE** of waste in accordance with approved waste handling procedures.

5.3.7 **REPEAT** Steps 5.3.2 to 5.3.6 until all liquid is absorbed and absorbents are placed into approved waste container.

5.3.8 **GO TO** Section 5.2 for flushing any residual spill.

5.4 **Restore Spill Area to Normal**

5.4.1 **REMOVE** barricades and signs erected for spill.

5.4.2 **RETURN** tools and unused materials to storage.

5.4.3 **RELEASE** the area.

5.4.4 **ENSURE** the following are complete:

- Spill information is recorded in the Facility Spill and Release Log (in accordance with ETF-ERP-85B-003)
- Recovery plan is attached, if generated (Attachment 1).

5.4.5 **DOCUMENT** cleanup activities in ETF Control Room Logbook.
5.5 Records

5.5.1 **PERFORM** the following for records identified within this procedure.

5.5.1.1 **RECORD** the number of times the record was generated in applicable column

**OR**

**PLACE** a check mark (✓) in the N/A column.

5.5.1.2 **SUBMIT** the package for verification of completed records.

<table>
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<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
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<tbody>
<tr>
<td><strong>Forms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment 1 – Recovery Plan – Short Form</td>
<td></td>
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</tbody>
</table>

**FWS/OE/Shift Manager** SEND the completed records to the Central Shift Office for records retention.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print (First &amp; Last)</th>
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The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
1.0 OBJECTIVE

Restore spill area to normal.

2.0 EXPECTED CONDITIONS

Spilled Material:_____________________________________________________

Quantity of spilled material:___________________________________________

Spill Area Boundaries:_________________________________________________

Expected Hazards:_____________________________________________________

Industrial Hygiene recommendations:___________________________________

Tools/Equipment:_____________________________________________________

Protective Equipment:_________________________________________________

Clean Up Method:_____________________________________________________

Waste Disposition:_____________________________________________________

Personnel and Assignments:___________________________________________

______________________________________________________________

______________________________________________________________
Schedule: __________________________________________

Overview of Activities: __________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

3.0 REQUIRED ATTACHMENTS
- MSDS/SDS for suspected spill material(s)
- MSDS/SDS for neutralizing agent, if used
- Radiation Work Permit, if used.

_________________________________________ / ______________________ / ______________
Signature Print (First & Last) Date

SOM Completion Review

4.0 WASTE HANDLING & PACKAGING

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________