Sodium Hydroxide/Caustic Solution Spill Cleanup

Tank Farm Plant Operating Procedure

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

CHANGE HISTORY (≤ LAST 5 REV-MODS)

<table>
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<tr>
<th>Rev/Mod</th>
<th>Release Date</th>
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<th>Summary of Changes</th>
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<tr>
<td>A-4</td>
<td>12/12/2018</td>
<td>Field Condition Change</td>
<td>Reorganization of procedure steps to ensure proper usage.</td>
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<td>A-3</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 2.2.1 and Section 4.2).</td>
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<tr>
<td>A-2</td>
<td>01/10/2018</td>
<td>PER-2017-1986.5</td>
<td>Added PPE direction associated with inspecting and disposing of contaminated PPE. Updated Records requirements to current ETF standard.</td>
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<tr>
<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>03/21/2016</td>
<td>Converting to WRPS Format</td>
<td>New Procedure; Supersedes ETF-PRO-OP-52170 (POP-85B-003)</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for the safe cleanup of material that is known to be caustic, primarily sodium hydroxide (NaOH) at the ETF. This procedure may be performed in conjunction with ETF-AOP-85B-003, Response to Spill or Release at ETF or it may be performed independently to clean up legacy material that does not meet the entry requirements of ETF-AOP-85B-003.

1.2 Scope

This procedure includes instructions for various methods of cleaning up both liquid and solid caustic material that may be radioactive or non-radioactive.

2.0 INFORMATION

2.1 Terms and Definitions

- NaOH - Sodium Hydroxide
- Caustic – Basic solution of pH greater than 9.0 (primarily NaOH at ETF).

2.2 General Information

2.2.1 Disposal of caustic to ETF Sump 1 or 2 requires concurrence from the SOM.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

**WARNING** - Sodium hydroxide/caustic solution causes severe skin burns and eye damage.

3.1.1 Upon completion of any portion of this procedure which requires PPE, personnel must inspect their PPE for caustic residue or other contaminates. If caustic residue or other contaminates are found or suspected, dispose of the PPE per the Waste Planning Checklist (WPC).

3.2 Radiation and Contamination Control

3.2.1 When this procedure is worked in radiological areas, an approved radiological work permit (RWP) is required. If radiological conditions or work performed falls outside the scope of the RWP, all work activities must be discontinued until a new or revised RWP has been issued in accordance with TFC-ESHQ-RP_RWP-C-03.

3.3 Environmental Compliance

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.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies are required during NaOH cleanup activities:

**Required Equipment**
- Safety shower
- Eyewash.

**Minimum Chemical PPE**
- Chemical caustic-resistant gloves (e.g., Butyl)
- Tight-fitting goggles
- Chemical resistant arm sleeves.

The following supplies may be needed during NaOH cleanup activities depending on leak conditions and cleanup method employed:

**Additional PPE**
- Chemical resistant suit (e.g., Tychem)
- Chemical resistant boots
- Chemical resistant tape
- Face shield.

**Optional Equipment**
- Absorbent pads or pillows
- Neutralizers (Spill-X-C for caustic spills)
- Poly bags - 10 mil
- Commercial universal spill kit
- pH or litmus paper
- Plastic shovel
- Nylon bristle broom
- Squeegee
- Water spray can or bottle.
4.2 Performance Documents

The following documents may be needed to perform this procedure.

- ETF-ERP-85B-003, Emergency Spill or Release at ETF
- ETF-AOP-85B-003, Response to spill or Release at ETF
- ETF-65D-003, Package Waste
- TFC-OPS-OPER-C-17, Operating Logbooks.
5.0 PROCEDURE

NOTE - Sections 5.2 through 5.6 may be worked concurrently, independently, in parallel, or in any logical order.

- 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.

5.1 General Spill Cleanup Requirements

5.1.1 (SOM) PERFORM a pre-job briefing, including but not limited to the following items:

- Personnel assignments
- Review of RWP
- MSDS/SDS for information relevant to hazards, neutralizing agents, and PPE
- Safety equipment
  - Safety shower location
  - Portable eyewash location
  - PPE
  - Spill kit cleanup equipment.
- Waste handling and packaging; refer to the WPC
- Cleanup techniques and methods as specified in sections 5.2 through 5.5
- Actions to be performed if unanticipated problems arise (e.g., a person becomes contaminated [unprotected skin, eyes, or clothing] with NaOH/caustic solution):
  - Emergency medical assistance (911) or HAZMAT support
  - Safety Shower and Eyewash use.
- Heat/cold stress consideration.
5.1 General Spill Cleanup Requirements (Cont.)

**WARNING**
Sodium hydroxide/caustic solution causes severe skin burns and eye damage.

5.1.2 DON PPE as directed by SOM.

5.1.3 PERFORM spill cleanup as discussed in pre job briefing.

5.1.4 IF conditions develop outside the boundaries of the pre-job briefing, or applicable RWP, **PERFORM** the following:

5.1.4.1 SUSPEND work.

5.1.4.2 EXIT area.

5.1.4.3 CONTACT SOM for directions.
5.2 **Neutralize/Absorb Spill Caustic**

5.2.1 **COVER** spill area with a dusting of neutralizing agent (e.g., Spill-X-C).

5.2.2 **MIX** with plastic shovel or bristle brush until a paste consistency.

5.2.3 **PLACE** neutralized mixture into waste bags.

5.3 **Flush to Sump Trench**

5.3.1 **OBTAIN** approval from SOM to flush material to a sump trench.

5.3.2 **FLOOD** area with copious amount of water from hose while directing material to a sump trench.

5.3.3 **SQUEEGEE** excess material to the trench.

5.3.4 **CHECK** the pH of the flushed area to ensure pH is less than 9.0.

5.3.5 **IF** pH is above 9.0, **CONTACT** SOM for direction to continue flushing.

5.4 **Wipe Dried Caustic Material**

5.4.1 **OBTAIN** approval from SOM to rinse wet rags to sump 2 in lab sink.

5.4.2 **DAMPEN** material to be wiped using wetted rag or spray bottle with water.

5.4.3 **WIPE** material with wetted rag to dissolve and absorb residue.

5.4.4 **RINSE** rags in Lab sink until pH level in rags is less than 9.0.
5.5 Check pH of Area, Rags, and Other Items Used to Absorb Material

5.5.1 MOISTEN several locations in area if dry.

5.5.2 CHECK the pH of the area/supplies by placing piece of pH or litmus paper at the moistened locations/supplies.

5.5.3 IF pH is greater than 9.0, CONTINUE cleanup activities.

5.5.4 IF pH is less than 9.0, then, WIPE excess material with clean rag.

5.6 Restore Area/Materials to Normal

5.6.1 DISPOSE of all waste generated during clean-up activities in accordance with the WPC.

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

5.6.3 UPON completion of cleanup, WASH with soap and water.

5.6.4 DOCUMENT cleanup activities in ETF Control Room Logbook.
5.7 Records

The performance of this procedure generates no records.