

	<b>REPAIRING OR SERVICING ALKYLATION UNIT EQUIPMENT BY OFFSITE VENDORS PROCEDURE</b>		
	<b>Procedure Type:</b> Routine		<b>Department:</b> Environmental, Health and Safety
	<b>Document Owner:</b> Manager, EH&S		<b>Document Contact:</b> Safety Advisor, EH&S
<b>Document Number:</b> 4000-ZPR-HMSAFECA-031186	<b>Issue Date:</b> 06/16/2017	<b>Revision Number:</b> 1	<b>Next Review Date:</b> 03/16/2022

<b>Purpose and Scope:</b>	This procedure provides the controls necessary to prevent exposure to residual HF Acid when repairing or servicing Alkylation Unit equipment.
<b>Personal Protective Equipment (PPE) Required:</b>	<p>Normal mandatory PPE for working in process areas required. Additional PPE may be required as per Refinery Standards and applicable Material Safety Data Sheets (MSDS).</p> <p><b>Persons dismantling equipment that has not been fully decontaminated shall wear the following PPE:</b></p> <ul style="list-style-type: none"> <li>• Hard hat and face shield (appropriate for HF)</li> <li>• Safety glasses</li> <li>• Optional goggles (appropriate for HF)</li> <li>• HF acid resistant jacket and pants or acid resistant coveralls</li> <li>• HF acid resistant rubber boots</li> </ul> <p><b>Persons cleaning PPE, floors and equipment shall wear:</b></p> <ul style="list-style-type: none"> <li>• Safety glasses</li> <li>• HF acid resistant apron</li> <li>• HF acid resistant gloves</li> <li>• Safety Boots</li> </ul> <p><b>Persons providing first aid shall wear:</b></p> <ul style="list-style-type: none"> <li>• HF acid resistant gloves</li> <li>• Safety glasses</li> </ul>
<b>References:</b>	<ul style="list-style-type: none"> <li>• MSDS for Hydrogen Fluoride</li> <li>• <a href="#">Handling HF Contaminated Equipment Outside Unit Area</a></li> <li>• Hydrofluoric Acid Safety and First Aid Booklet</li> <li>• <a href="#">Personal Protective Equipment: Hydrofluoric Acid and Acid Soluble Oil</a></li> </ul>

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### PREREQUISITES

Operations personnel shall ensure the equipment to be worked on has been neutralized as thoroughly as possible before leaving the unit. A yellow Hazardous Service Tag shall be attached by Operations to any equipment before the equipment can leave the unit. The Hazardous Service Tag shall contain the signature of the person attaching it, the date the tag was attached, the type of service the equipment was in, and the extent to which the equipment has been neutralized or decontaminated.

### PROCEDURE INSTRUCTIONS

<b>1.0</b>	<b>Repairing and Servicing Partially Decontaminated Equipment</b>		<u>NOTE</u> A separate area shall be designated for servicing partially decontaminated equipment with appropriate signage indicating Alky PPE is required in the area.
		1.1	Wear the prescribed PPE.
		1.2	Neutralize again every part that is removed by submerging it in a solution consisting of 1 cup soda ash to 10 gallons of water.
		1.3	Use litmus paper to verify parts are acid free.
		1.4	Neutralize all tools as prescribed in 1.2
		1.5	Use litmus paper to verify tools are acid free.
<b>2.0</b>	<b>Cleaning Procedure for Hard Hats, Face Shields and Ear Muffs</b>		<u>NOTE</u> A separate area shall be provided for neutralizing, cleaning, drying and storing Alky PPE.
		2.1	Wear the prescribed PPE.
		2.2	Wipe hard hats, face shields, ear muffs with rag soaked in neutralizing solution.
		2.3	Remove any ASO or grease with Lemon Solv degreaser and coarse bristle brush.
		2.4	Wipe with rag soaked in detergent solution consisting of 1 cup of 2X Ultra Tide to 10 gallons of water.
		2.5	Wipe with rag soaked in clean rinse water.
		2.6	Inspect for defects and discard accordingly.
		2.7	Hang to dry.

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<b>3.0</b>	<b>Cleaning Procedure for Gloves</b>	3.1	Wear the prescribed PPE.
		3.2	Pre-soak gloves in neutralizing solution for 10 minutes.
		3.3	Remove any ASO grease with Lemon Solv degreaser and coarse bristle brush.
		3.4	Agitate by hand in detergent solution consisting of 1 cup of 2x Ultra Tide to 10 gallons of water.
		3.5	Soak in neutralizing solution for 5 minutes.
		3.6	Rinse with clean water
		3.7	Dry in dryer or hang until dry.
		3.8	Perform 4 lb. test on dry gloves by inserting air nozzle in glove; wrapping gauntlet tight around nozzle and holding secure; and submerging pressured glove in water to check for leaks (bubbles will indicate leak location). Discard gloves that fail the test.
		3.9	Re-dry gloves and restock when completely dry.
<b>4.0</b>	<b>Cleaning Procedure for Boots</b>	4.1	Wear the prescribed PPE.
		4.2	Wipe with rag soaked in neutralizing solution.
		4.3	Remove any ASO grease with Lemon Solv degreaser and coarse bristle brush.
		4.4	Wipe with rag soaked in detergent solution consisting of 1 cup of 2X Ultra Tide to 10 gallons of water.
		4.5	Wipe with rag soaked in clean rinse water.
		4.6	Inspect for defects and discard accordingly.
		4.7	Restock when dry.
<b>5.0</b>	<b>Cleaning Procedure for Jackets, Pants or Coveralls</b>	5.1	Wear the prescribed PPE.
		5.2	Pre-soak in neutralizing solution for 10 minutes.
		5.3	Remove any ASO grease with Lemon Solv degreaser and coarse bristle brush.
		5.4	Agitate by hand with detergent solution consisting of 1 cup of 2X Ultra Tide to 10 gallons of water.

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		5.5	Soak in neutralizing solution for 10 minutes.
			<b>NOTE:</b> If garment is equipped with Velcro, scrub with a soda ash / water slurry directly along the Velcro strips and soak again in the neutralizing solution for 10 minutes.
		5.6	Rinse with clean water.
		5.7	Place garments in dryer or hang until completely dry.
<b>6.0</b>	<b>Building Decontamination</b>	6.1	Wear prescribed PPE.
		6.2	Decontaminate and clean floors and equipment on a daily basis. Use a solution of 1 cup of soda ash and 1 cup of 2X Ultra Tide detergent to 10 gallons of water.
		6.3	Use litmus paper to verify floor and equipment are acid free.
<b>7.0</b>	<b>First Aid</b>		<b>NOTE</b> Initial treatment shall be provided by a person trained in First Aid. Refer <b>all</b> cases to a medical facility <b>after</b> the initial first aid treatment and decontamination. Call ahead to the hospital to notify them of the individual's arrival and what treatment they have received. The MSDS for Hydrogen Fluoride should accompany the casualty to the hospital.
<b>8.0</b>	<b>First Aid – Skin</b>	8.1	If ASO burn, remove substance with mineral oil and then remove oil with Palmolive dish soap.
		8.2	Flush affected area with water for 5 minutes while removing contaminated clothing.
		8.3	Massage calcium gluconate gel into affected area for at least 20 minutes or until cessation of pain whichever is longer.
<b>9.0</b>	<b>First Aid - Eyes</b>	9.1	Flush eyes for 5 minutes with tepid water holding eyelids apart to optimize cleaning.
		9.2	In a lying position if possible, instill eyes with 1% calcium gluconate solution with a steady stream in one or both eyes.

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		9.3	Transport to medical facility immediately, continuing to irrigate on route.
<b>10.0</b>	<b>First Aid - Inhalation</b>	10.1	Inhaling HF Acid vapours requires the administration of 2.5% calcium gluconate solution via nebulizer with oxygen <b>immediately</b> and until individual has reached the hospital.
<b>11.0</b>	<b>First Aid - Ingestion</b>	11.1	Drink large amounts of water mixed with several ounces of Milk of Magnesia. <b>Do Not Induce Vomiting.</b>
<b>12.0</b>	<b>Disposal and Transport of Waste</b>	12.1	Reference applicable section of MSDS.

**CHANGES / UPDATES**

Are any changes/updates required?  YES  NO

Changes/updates required may be written within the procedure itself or in this section.

All comments **MUST** include operator name and review date (mm/dd/yy).

Name: \_\_\_\_\_ Date: \_\_\_\_\_

<b>END OF PROCEDURE</b>			
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**REVISION LOG**

<b>Date (MM/DD/YYYY)</b>	<b>Revision</b>	<b>Section</b>	<b>Comments</b>	<b>Editor (Name)</b>
08/28/2013	Original	All	New Procedure. Replaces Repairing or Servicing Alkylation Unit by Offsite Vendors Work Practice.	D. Allen
-	-	-	Added Livelink number to header. eSign page lost due to Edit. Approved by Peter Lynch.	
06/09/2014	1	PPE Requirements	Changed boot requirement to acid resistant boots to align with C Class Requirements in the Personal Protective Equipment: Hydrofluoric Acid and Acid Soluble Oil Standard.	D. Allen
		5	Changed Section title from Cleaning Procedure for Jackets and Pants to Cleaning Procedure for Jacket, Pants or Coveralls.  Added note to use a second neutralizing step if garments are equipped with Velcro followed by another rinse step to align with Alky PPE Cleaning Procedure.	D. Allen
06/16/2017	2	All	No change	T. Richard



The following individuals have approved and signed this document.

UserName: Todd Murray (toddmurray)

Title: Mgr EH&S Sarnia Refinery

Date: Wednesday, 05 July 2017, 06:47 AM Mountain Time

Meaning:

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