

# JOB SAFETY ANALYSIS

Safety Information for the University of California, Berkeley

## CORROSIVE RELEASE RESPONSE

\*Release of a corrosive solid, gas, or liquid and its cleanup or mitigation can lead to exposure to humans (mainly workers handling the material or responders to a release) and destruction of property.

TASK	HAZARDS	CONTROLS
<p>1. Assess the spill for strength, volume, extent (boundaries of the release area) and the presence of other chemicals and items that may pose possible chemical and physical hazards during response.</p>	<p>Exposure to the corrosive material by contact and/or inhalation.</p>	<p>Avoid entry into area of release until after you meet with site contact, material handler and others present during the release. Study the appropriate MSDS or an equivalent source of information before entering the contaminated area.</p> <p>Determine how the material released was being handled when incident occurred; interview user, handlers and others at the site of release.</p> <p>Determine if there are substances or chemicals in the vicinity of the release area that may conflict with the material released.</p> <p>Determine if there are heat sources in the vicinity (vaporization), and de-energize them.</p> <p>Make sure you have sufficient amount of the appropriate neutralizer nearby before starting the cleanup.</p> <p>Locate eye-wash and shower, and plan the shortest route of approach should there be a need to use either or both.</p> <p>Assess ventilation to determine if other areas/rooms could be contaminated if the material is volatile.</p> <p>During the tailgate safety meeting, make sure you plan entry into spill area and protocol of cleanup.</p>

	2. Select and don the appropriate personal protective equipment or clothing (PPE).	Inadequate protection of selected PPE	Select the PPE based on the spill assessment of Task 1, double check with a site contact familiar with handling the material and confirm adequacy of protection with an EH&S expert.
		Slipping and falling when donning the PPE	Suit up in an area free of equipment and debris.  Don foot PPE while sitting.  Practice the “buddy” system and request buddy to assist during donning of PPE.
	3. Monitor atmosphere based on Task 1 using the appropriate Drager tube if material released is a gas or a volatile material, or the appropriate assessment tool for material (e.g., pH paper for most liquid and solid corrosives).	Skin or inhalation exposure to material released	Wear appropriate PPE with adequate protection while monitoring. Unless otherwise determined, assume material(s) released are skin and/or inhalation hazards.
		Sharps injury or puncturing of PPE if Drager tube is used for monitoring	Handle the separated Drager tube properly, deposit the separated ends in a Ziploc bag or an appropriate sharps container and set container outside the cleanup area.  Carefully insert and secure the Drager tube into the pump; take your time and do not hurry.  Upon completion of the monitoring, if a Drager tube was used, place the spent tube in the Ziploc bag or an appropriate sharps container, and set the container aside outside the cleanup area. Use the same container used in 3b-1.
	4. Enter spill area with caution, and first search for spill location and determine the actual area and extent of contamination, including surfaces and nearby equipment and containers.	Vision or mobility impairment due to PPE preventing responder from accurately determining extent of release.	After donning the PPE, make sure the PPE does not impair vision or mobility.  Make sure cleanup area is adequately lighted and make sure droplets or particles of released material are visible.
5. Apply appropriate neutralizer to the contaminate area or surface.	Reaction between the acid or alkali with other chemicals in the immediate spill area, resulting in a potentially hazardous side reaction	Conduct a pilot application in a small area of the spill to make sure that the neutralizer is appropriate and no side reaction happens.  At the area where a side reaction happens, perform Task 1 and follow appropriate JSA.	

		<p>Contact with other chemicals that may be in the immediate vicinity of the cleanup area</p>	<p>Slowly apply the neutralizer on the cleanup area, starting from the perimeter and working inwards; do not dump neutralizer. Wait for neutralizer to take effect before collecting and containing the generated waste in an appropriate container. "Work in" the neutralizer with the second or third application to avoid</p> <p>Make sure there is sufficient neutralizer near the cleanup area within easy reach by responders.</p> <p>Avoid touching any bare skin, such as neck, ears, etc., or hair during cleanup or before washing (after removal of the PPE) outside of cleanup area.</p>
	<p>6. After neutralization of released material and collection of generated waste, decontaminate the contaminated surface and search for other spilled material and/or</p>	<p>Contact with the corrosive material and other chemicals in the vicinity of the spill</p>	<p>Avoid touching any bare skin, such as neck, ears, etc., or hair during cleanup or before washing (after removal of the PPE) outside of cleanup area.</p> <p>Search for other contaminated areas such as under furniture and other lab equipment.</p>
		<p>Electrical hazards present in the vicinity of the release.</p>	<p>Disconnect or de-energize equipment found in cleanup area prior to handling.</p> <p>Avoid contact with heat sources that may be in the vicinity of the cleanup area.</p>
		<p>Other physical hazards in the vicinity of the release.</p>	<p>Use tongs to pick up broken glass and other small items contaminated with the material or other chemicals.</p> <p>Decontaminate small equipment and other items by hand carefully and within the cleanup area.</p> <p>Properly dispose of expendables (towels, neutralizers, etc.) in a heavy polyethylene bag. Double bag if necessary.</p>
	<p>7. Check the pH of the surfaces (search for other locations that were reached by the material released).</p>	<p>Exposure to un-neutralized acid or alkali</p>	<p>Use tongs when using the pH strips.</p> <p>Make sure there is an adequate supply of neutralizer within easy reach in</p>

	8. Collect and bag the waste (search for other locations that were reached by the material released).	Body injury due to lifting, twisting, bending, falling or being struck by objects nearby.	Use proper lifting and bending techniques; make sure that your footing is secure while handling loads of hazardous waste. Make sure object nearby does not cause injury.
		Injury due to sharps that are present near the release area.	Deposit sharps in an appropriate sharps container. Use of thick Ziploc bag should be the last resort. Double bag if necessary.
	9. Final cleanup	May find unneutralized acid or alkali	Perform Tasks 5 to 8 and the respective controls.  Use the same PPE as determined and confirmed to be adequate as above.
	10. Transportation of wastes	Inadequate controls	Refer to JSA for transportation of hazardous materials.
	<b>Required Training:</b> 1. 24-hour initial emergency response training and yearly refresher. 2. Hazardous waste transportation 3. Respirator protection training	<b>Required Personal Protective Equipment (PPE)</b> 1. Eye protection: safety glasses with side shields or goggles 2. If deemed necessary, additional protection of a face shield 3. Double nitrile gloves; outer gloves should be the thicker kind. 4. Full protective suit resistant to the corrosive released 5. Foot covering resistant to the material or corrosive released and also slip resistant.	
<b>Other Information:</b> <b>Contributors:</b> <b>Created:</b> <b>JSA Library Number:</b>	Department: EH&S Specialist Ave Tolentino; EH&S Specialist Gary Bayne July 2003 EHS-ER-01  For more information about this JSA, contact the <i>Office of Environment, Health and Safety</i> at UC Berkeley, 317 University Hall #1150, Berkeley, CA 94720-1150 (510) 642-3073 ● <a href="http://www.ehs.berkeley.edu">http://www.ehs.berkeley.edu</a>  <i>The development of Job Safety Analyses is a Balanced Scorecard initiative of the AVC-BAS Safety Committee, sponsored by the Associate Vice Chancellor-Business and Administrative Services (AVC-BAS) and the AVC-BAS Leadership Team ● <a href="http://bas.berkeley.edu/balancedscorecard">http://bas.berkeley.edu/balancedscorecard</a></i>		