

JOB SAFETY ANALYSIS

Safety Information for the University of California, Berkeley

ENVIRONMENT, HEALTH & SAFETY – RADIOACTIVE WASTE SAMPLING LIQUID WASTE

TASK	HAZARDS	CONTROLS
1. Transport liquid waste to the RWF Hot Lab.	Chemical and radioactive contamination from leaking bottle.	Follow RP-20, “Handling and Disposal of Radioactive Waste.” Inspect the integrity of primary containers of radioactive liquid waste at the pickup point. Inspect the secondary container prior to loading off from the truck to the RWF. Use strapping equipment to tie down and stabilize the secondary container to the hand truck. Make sure there are no physical impediments blocking the hand-truck when moving waste into the Hot Lab. Follow RWI-12, “Contamination Control Zone.” Follow RWI-2, “Monitoring and Surveys.”

		Chemical and radioactive exposure from contamination.	See 1a-1. Use precautionary measures based on chemical constituents. See 1a-6. See 1a-7. Verify the air flow in the fume hood prior to placing the bottle in the fume hood.
	2. Place the bottle inside the fume hood in the contamination zone.	Contamination (chemical & radioactive) from dropping the bottle.	Check the bottle cap to insure that it is tightly closed. Lift the bottle from the transport box and place it onto the radioactive spill tray. Be careful not to allow the bottle to slip out of the plastic bag that contains it.
		Exposure from contamination (chemical & radioactive).	See 2a-1. See 2a-2.
	3. Shake the bottle from side to side and up and down.	Contamination (chemical & radioactive) from dropping the bottle	Place the correct type of shield between you and the container inside the hood. Pull the bottle out of the plastic bag. Use care to avoid dropping the container. Set the bag aside on the radiation spill tray. With both hands, carefully hold the bottle assuring that it is securely held before shaking it. In a calculating manner, slowly shake the bottle and gently set it down.
		Exposure from contamination (chemical & radioactive).	See 3a-1. See 3a-2. See 3a-3.
	4. Open the bottle by removing the cap.	Contamination (chemical and radioactive) due to spillage.	See 3a-1. Carefully place cap in the hot zone away from the bottle and the sample vial.

		Exposure from contamination (chemical & radioactive).	See 3a-1. See 4a-2.
	5. Collect the sample with a pipette and make deposit into a scintillation vial. Confirm the pH by using pH paper to obtain the pH.	Contamination (chemical and radioactive) due to spillage.	<p>Pull the sample by placing the pipette into the liquid. Draw the liquid into the tip. If the container must be tilted, use care to avoid spilling the contents.</p> <p>Carefully hold the pipette in a manner to control the deposition of the sample into the vial.</p> <p>Hold the sample vial in one hand while depositing sample with pipette in the other hand.</p> <p>When deposition is complete, place the pipette onto the radioactive spill tray. Cap the vial, and carefully tighten it down. Check for contamination by wiping the sample vial with a Kimpak tissue and put it on the diaper or tray.</p> <p>Place pH paper at the mouth of the bottle and replace cap. Make sure to tighten cap down to avoid spilling the liquid.</p> <p>Gently shake the bottle to assure pH paper absorbs liquid.</p> <p>Place bottle on spill tray and slowly uncap it, being careful to procure the pH paper. Read the result and toss the pH paper into the radioactive dry waste container.</p> <p>Deposit pipette tip into radioactive dry waste box, using the pipette tip release button.</p>
		Exposure from contamination (chemical and radioactive).	Repeat directions from the box above.

	6. Prepare the sample for the Liquid Scintillation Counter (LSC).	Contamination (chemical and radioactive) due to spillage.	<p>Work over the spill tray.</p> <p>Check vial to insure the cap is tightly seated.</p> <p>Gently shake the sample vial several times to mix the chemical constituents.</p> <p>Place the sample vial in the vial rack. Place the vial rack on the spill tray. Let it sit overnight before running on the LSC.</p>
		Exposure from contamination (chemical and radioactive).	Repeat directions from the box above.
	7. Transfer the bottle into the storage cabinets.	Contamination (chemical and radioactive) due to spillage.	<p>Check the cap on the bottle to assure that it is tight. Re-bag the bottle in the plastic bag provided for transport by the generating lab.</p> <p>Remove the shielding from the spill tray to create room for maneuvering the bottle.</p> <p>Lift the bottle from the fume hood and place it into the transportation box.</p> <p>Tie or strap the box down for stability.</p> <p>Carefully move the box to the storage cabinet for transfer.</p>
		Exposure from contamination (chemical and radioactive).	Repeat directions from the box above.

<p>Other Information: Contributors: Environment, Health and Safety Created: June 2005 JSA Library Number: EHS-2HM-9</p>	8. Transfer the bottle(s) into the storage cabinet.	Contamination (chemical and radioactive) due to spillage.	<p>Prepare to transfer liquid waste by obtaining spillover cans from the store room and insuring that they are in good condition and properly labeled with radiation labels.</p> <p>Open the liquid waste storage cabinet doors for room to maneuver.</p> <p>Carefully pick up each bottle of liquid waste - one at a time - and place into a spillover can. Hold the spillover can as well as the neck of the bottle and place the waste in the storage cabinet. Neatly fill the shelves.</p>	
		Exposure from contamination (chemical and radioactive).	Repeat directions from the box above.	
	9. Run the vial in the Liquid Scintillation Counter (LSC).	Contamination (chemical and radioactive) due to spillage.	<p>Open the LSC and prepare space by moving sample racks out of the way and ordering the protocols for the sample run.</p> <p>Place the protocol flag in the sample rack and put the rack(s) into the LSC in the proper order.</p> <p>Close the lid to the LSC and hit the start button to begin the routine.</p>	
		Exposure from contamination (chemical and radioactive).	Repeat directions from the box above.	
	<p>Required Training:</p> <ol style="list-style-type: none"> 1. Radiation Safety Training. Must be on RUA 3771. 2. RP-20, "Handling and Disposal of Radioactive Waste." 3. RWI-2, "Monitoring and Surveys." 4. RWI-12, "Contamination Control Zone." 5. Use of the hood. 6. Use of the LSC. 7. Use of the pipette. 		<p>Required Personal Protective Equipment (PPE):</p> <p>Latex or similar gloves, safety glasses, lab coat</p>	

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