



DEPARTMENT OF APPLIED SCIENCES

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CHEMISTRY SECTION

CHEMICALS STORAGE AND DISPOSAL GUIDE

S.N.	CHEMICAL NAME	SAFE CONDITION FOR STORAGE	SPILLAGE DISPOSAL PROCEDURE	WASTE DISPOSAL PROCEDURE
1.	Acetaldehyde 35% solution	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store under inert gas. Air sensitive.</p> <p>(CLEAPSS) Ethanal has been known to spontaneously boil away during storage and on opening. It should only be opened in a fume</p>	<p>(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal.</p>	<p>(CLEAPSS) Add 10 mL to 1 liter of water before pouring down a foul-water drain.</p> <p>Conditions to avoid (Sigma-Aldrich SDS) Heat, flames and sparks. Extremes of temperature and direct sunlight.</p>

		cupboard. Cool in an ice bath before opening the bottle. Ethanal oxidises to ethanoic acid during storage.		
2.	Acetanilide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in amides waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases
3.	Acetic acid	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Moisture sensitive. (CLEAPSS) On cold days, the liquid solidifies. The melting point is 17 °C.	(Armour) Wear neoprene gloves, laboratory coat, and eye protection. Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop into a beaker or pail. In the fume hood, slowly add the acid mixture to a pail of cold water. When reaction ceases, neutralize with more sodium carbonate if necessary. When solids have settled, decant liquid into drain with 50 times its volume of water. Discard solid residue with normal refuse. Ventilate site of spillage well to evaporate remaining liquid and dispel vapor.	Procedure 1 (Armour) Package Lots. Label for recycling or follow disposal of small quantities. Small Quantities. Wear neoprene gloves, laboratory coat and eye protection. Work in the fume hood. Add slowly to large volume of cold water in a plastic pail. Neutralize with 5% sodium hydroxide solution or sodium carbonate and pour into the drain. Reactions for Spillage and Waste Disposal $\text{CH}_3\text{COOH} + \text{NaOH} \xrightarrow{\text{H}_2\text{O}} \text{CH}_3\text{COONa} + \text{H}_2\text{O}$ $2\text{CH}_3\text{COOH} + \text{Na}_2\text{CO}_3 \xrightarrow{\text{H}_2\text{O}} \text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$ Procedure 2 (CLEAPSS) Dilute to less than 0.1 M and pour the solution down a foul-water drain.

				<p>Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, soluble carbonates and phosphates, hydroxides, metals, peroxides, permanganates, e.g. potassium permanganate, amines, alcohols, nitric acid</p>
4.	Acetone	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p>	<p>(Armour) Wear nitrile rubber gloves, laboratory coat, and self-contained breathing apparatus. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate, clay cat litter (calcium bentonite), and sand. When all of the liquid has been absorbed, scoop the mixture into a plastic pail or other wide-mouth container and place in the fume hood. If local regulations permit, allow the acetone vapor to evaporate for several days until no odor remains. The spill mix can then be discarded with normal refuse. Otherwise, package and label for disposal by burning.</p>	<p><u>Procedure 1 (Armour, Sigma SDS)</u> Distill for reuse or collect in ketones waste container. Contact a licensed professional waste disposal service to dispose of this material.</p> <p><u>Procedure 2 (CLEAPSS)</u> Dilute to less than 10% (v/v) or 2 M before pouring down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Bases, oxidizing agents, reducing agents, acetone reacts violently with phosphorous oxychloride.</p>
5.	Acetonitrile	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle and store</p>	<p>(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations</p>	<p><u>Procedure 1 (Sigma-Aldrich SDS)</u> Collect in nitriles waste container. Contact a licensed professional waste disposal service to dispose of this material.</p> <p><u>Procedure 2 (Lunn & Sansone)</u> As ammonia is evolved all</p>

		under inert gas.		<p>operations should be carried out in a properly functioning chemical fumehood. Dilute the acetonitrile solution with water, if necessary, until the concentration of acetonitrile is 10% or less. For each mole of acetonitrile that is present add 2.5 mol of NaOH in the form of a 10 M NaOH solution. If the acetonitrile solution (e.g. from HPLC buffer salts) it may be necessary to add more NaOH to maintain a strongly basic solution. Stir at room temperature (25 °C) for 15 days or at 70-80 °C for 2 h, neutralize, check for completeness of destruction, and discard the solution.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Acids, bases, oxidizing agents, reducing agents, alkali metals</p>
6.	Aluminium hydroxide	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.</p>	<p>(Sigma-Aldrich SDS) Collect in aluminium hydroxide waste container. Contact a licensed professional waste disposal service to dispose of this material.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong acids</p>
7.	Aluminium nitrate nonahydrate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up</p>	<p>(CLEAPSS) Solutions should be diluted to less than 0.2 M before pouring down a</p>

		ventilated place. (CLEAPSS) It can absorb water from the atmosphere to give an acidic solution.	and shovel. Keep in suitable, closed containers for disposal.	foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, powdered metals, strong acids
8.	Aluminium oxide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Strongly hygroscopic. It can absorb water from the atmosphere to give an acidic solution.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong bases, chlorine trifluoride, ethylene oxide, halogenated hydrocarbon, oxygen difluoride, sodium nitrate, vinyl compounds
9.	Aluminum potassium sulfate dodecahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials ((Sigma-Aldrich SDS) Strong oxidizing agents, bases, steel (all types and surface treatments), aluminum, copper, zinc
10.	Ammonia solution	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Recommended storage temperature: 2 - 8 °C. (CLEAPSS) Pressure builds up in containers of concentrated solution on hot days.	(Armour) Wear a self-contained breathing apparatus, laboratory coat, eye protection, and nitrile rubber gloves (and rubber boots or overshoes if spillage is large). Cover the spilled liquid with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop the mixture into a	Procedure 1 (Armour) Small Quantities. Wear nitrile rubber gloves, eye protection, all-purpose or special canister respirator for ammonia, and laboratory coat. Pour into a large container of water and neutralize with 5% hydrochloric acid. Pour into the drain. Reactions for Spillage and Waste Disposal

		In hot weather, open bottles cautiously, particularly new ones, wearing a face shield. Store in as cool a place as possible at low level. Ensure containers are tightly closed. The gas is responsible for white deposits on bottles. The solution has a limited shelf life, possibly as short as 5 years depending on the storage conditions.	plastic container and, in the fume hood, add to a pail of cold water. Neutralize the mixture with 5% hydrochloric acid, let stand overnight, and then pour the liquid into the drain. Dispose of any solid with normal refuse. Wash the area of the spill with plenty of water.	$\text{NH}_4\text{OH} + \text{HCl} \rightarrow \text{NH}_4\text{Cl} + \text{H}_2\text{O}$ <p>Procedure 2 (CLEAPSS) Solutions should be diluted to less than 0.5 M before pouring down a foul-water drain.</p> <p>Conditions to avoid (Sigma-Aldrich SDS) Heat, flames and sparks. Extremes of temperature and direct sunlight.</p>
11.	Ammonium carbonate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air sensitive.</p> <p>(CLEAPSS) The solid decomposes to ammonia and carbon dioxide. The top must be on firmly.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) Solutions should be diluted to less than 0.9 M before pouring down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong acids</p>
12.	Ammonium cerium(IV) nitrate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.</p> <p>Store under inert gas.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.</p>	<p>(Sigma-Aldrich SDS) Collect in nitrates waste container. Contact a licensed professional waste disposal service to dispose of this material.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, organic materials, powdered metals</p>
13.	Ammonium chloride	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.</p>	<p>(Sigma-Aldrich SDS) Solutions should be diluted to less than 1.8 M before pouring down a foul-water drain.</p> <p>Incompatible materials (Sigma-</p>

				Aldrich SDS) Strong acids, strong bases, strong oxidizing agents
14.	Ammonium ferrous sulfate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air and light sensitive. Store under inert gas. (CLEAPSS) These compounds are oxidized in moist air and turn brown.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dilute to less than 0.2 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents
15.	Ammonium oxalate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Add no more than 30 g to 1 liter of water or dilute to less than 0.3 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong acids
16.	Aniline	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle under inert gas. Protect from moisture. Light sensitive. (CLEAPSS) When pure, phenylamine is colourless but it goes dark on storage. It can only be purified by	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	(CLEAPSS) Use 100 mL of 1 M ethanoic acid per 1 mL or 1 g of phenylamine. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, iron and iron salts, zinc

		distillation (usually at reduced pressure). For most school chemistry, the dark liquid is suitable.		
17.	Antibumping granules	(Fisher SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Fisher SDS) Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.	(Assessment based on material's low hazard) Place in normal refuse (no limit). Incompatible Materials (Fisher SDS) Strong oxidizing agents, acids, bases
18.	L-Ascorbic acid	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Light sensitive.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPPS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
19.	Aspirin	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Add slowly to 1 M sodium carbonate solution. Heat may be produced. The resulting solution should be tested for alkalinity with litmus solution and when just alkaline, poured down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong acids, strong bases
20.	Barium chloride dihydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	<u>Procedure 1 (CLEAPSS)</u> Dilute to 0.05 M before pouring the solution down a foul-water drain. <u>Procedure 2 (CLEAPSS)</u>

				Dissolve in water, add sodium or magnesium sulfate solution to precipitate barium sulfate. Filter off the barium sulfate for disposal in normal refuse. Pour the filtrate down a foul-water drain.
21.	Benzaldehyde	(Sigma-Aldrich SDS) Store under nitrogen. Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Air, light, and moisture sensitive.	Procedure 1 (Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing. Keep in a suitable, closed container and follow disposal procedure. Procedure 2 (CLEAPSS) Shut off all possible sources of ignition. Ventilate the area of the spill. For large spills, evacuate the area and leave the liquid to evaporate.	(Sigma-Aldrich SDS & CLEAPSS) Collect in aldehydes waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong reducing agents, strong bases, alkali metals, aluminium, iron, phenols, oxygen
22.	Benzamide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS & CLEAPSS) Collect in solid amides waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases
23.	Benzene	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully	(Armour) Shut off all possible sources of ignition. Instruct others to keep a safe distance. Wear breathing apparatus, eye protection,	(Sigma-Aldrich SDS, CLEAPSS, & Armour) Collect in nonhalogenated aromatic hydrocarbons waste container. Contact a licensed

		resealed and kept upright to prevent leakage.	laboratory coat, and Viton rubber gloves. Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop into an appropriate container and package for disposal by burning. Spillage site should be washed thoroughly with soap and water.	professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Acids, bases, halogens, strong oxidizing agents, metallic salts
24.	Benzoic acid	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Add slowly to 1 M sodium carbonate solution. Heat may be produced. The resulting solution should be tested for alkalinity with litmus solution and when just alkaline, poured down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases, strong reducing agents
25.	Benzyl chloride	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Light sensitive. Moisture sensitive.	(Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Depending on the size of the spill, breathing apparatus may be required. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. When the benzyl chloride has been absorbed, scoop the mixture	<u>Package Lots (Armour, Sigma-Aldrich SDS, CLEAPSS)</u> Collect in halogenated organics waste container. Contact a licensed professional waste disposal service to dispose of this material. Small Quantities (CLEAPSS) Wear nitrile rubber gloves, laboratory coat, and eye protection. Work in the fume hood. Place 7.9 g (0.12 mol) of 85%

			<p>into a plastic container and package for disposal by burning. Wash site of spillage with soap and water</p>	<p>potassium hydroxide pellets in 100-mL, three-necked, round-bottom flask equipped with a stirrer, water-cooled condenser, dropping funnel, and heating mantle or steam bath. While briskly stirring, rapidly add 31.5 mL of 95% ethanol. The potassium hydroxide dissolves within a few minutes, causing the temperature of the solution to rise to about 55 °C. Heat the solution to gentle reflux and add the benzyl chloride (12.6 g, 0.1 mol) dropwise at such a rate to maintain gentle reflux. Heat under reflux while stirring (to prevent bumping) for another 2 hours. Cool, dilute the reaction mixture with water, and wash into the drain.</p> <p>Reactions for Spillage and Waste Disposal</p> $\text{C}_6\text{H}_5\text{CH}_2\text{Cl} + \text{KOH} \xrightarrow{\text{C}_2\text{H}_5\text{OH}} \text{C}_6\text{H}_5\text{CH}_2\text{OH} + \text{KCl}$ <p>Incompatible materials (Sigma-Aldrich SDS) Contact with common metals (except nickel and lead) or moisture produces a Friedel-Crafts, condensation type reaction with the liberation of heat and formation of toxic and corrosive hydrogen chloride. Hydrolyzes</p>
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				very slowly to form hydrogen chloride and benzyl alcohol. This product is not sensitive to physical impact. When stabilized with propylene oxide, the possibility of a Friedel-Crafts type reaction is minimized. Depletion of the stabilizer increases the possibility of condensation reactions, oxidizing agents, iron and iron salts, brass, aluminum
26.	Bromine	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Do not store in polyethylene containers. Handle and open container with care.</p> <p>(CLEAPSS) Fumes accelerate the corrosion of metal in cupboards. Keep liquid bromine bottle inside a closed container with soda lime present which should be renewed regularly. This can be stored on shelves in a secure store. Purchase small quantities (100 cm³ or less). Check condition of the caps regularly. Keep ampoules in their protective packing with other corrosives. Take only the required</p>	<p>(Sigma-Aldrich SDS) Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) In a fume cupboard, add the liquid, 1 mL at a time, with stirring, to 1 liter of 1 M sodium carbonate solution in a 2 liter glass beaker. Add no more than 40 mL before pouring down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Reducing agents, alkali metals, powdered metals, aluminum, stainless steel, iron, copper, organic materials. Bromine will attack some types of plastics, rubber, and coatings, aldehydes, ketones, arsenic powder, amines, amides, phenols, alcohol, reacts violently with: ammonia, azides, ozone</p>

		number of ampoules into a class.		
27.	1-Bromobutane	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations	(Sigma-Aldrich SDS, CLEAPSS) Collect in halogenated organics waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases, magnesium, potassium, Sodium/sodium oxides
28.	Bromoethane	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Light sensitive. Refrigerate before opening. Over time, pressure may increase causing containers to burst. Handle and open container with care.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	(Sigma-Aldrich SDS, CLEAPSS) Collect in halogenated organics waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong bases, strong oxidizing agents, magnesium, potassium, calcium, sodium/sodium oxides, aluminum, zinc, alkali metals
29.	1-Butanol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle and store under inert gas. Hygroscopic.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	(CLEAPSS) Dilute to less than 10% (w/v), before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, alkali metals, bases, strong acids, halogens
30.	tert-Butanol	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Sigma-Aldrich SDS) Contain spillage, and then collect	(CLEAPSS) Dilute to less than 10% (w/v),

		tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Alkali metals, strong oxidizing agents, copper, aluminum
31.	2-Butanone	(Sigma-Aldrich SDS) Store under inert gas. Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Hygroscopic.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	(CLEAPSS) Dilute to less than 10% (w/v), before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, strong reducing agents
32.	Cadmium nitrate tetrahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	(CLEAPSS) Collect in cadmium salts waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Reducing agents, phosphorus, copper, organic materials
33.	Cadmium sulfate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in cadmium salts waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
34.	Calcium carbonate	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in	Place in normal refuse (no limit). Incompatible materials

		tightly closed in a dry and well-ventilated place. Keep in a dry place. Hygroscopic.	suitable, closed containers for disposal.	Strong oxidizing agents, acids, magnesium, aluminium
35.	Calcium chloride hexahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. (CLEAPSS) These compounds absorb water from the atmosphere.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve no more than 100 g in small amounts in 1 liter of water. Heat will be evolved. Pour the solution down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong acids, borane/boron oxides, calcium oxide, zinc, methyl vinyl ether, calcium chloride is attacked by bromine trifluoride
36.	Calcium hydroxide	(Sigma-Aldrich SDS) Store in a cool place. Keep container tightly closed in a dry and well-ventilated place. (CLEAPSS) The solid reacts with carbon dioxide from the atmosphere. Once the container is opened, the substance rapidly deteriorates so that very old samples may not give the expected results.	(Armour) Aqueous Solutions of calcium hydroxide. Wear nitrile rubber gloves, laboratory coat, and goggles. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate, clay cat litter (calcium bentonite) and sand. When the mixture has been completely absorbed, scoop it into a plastic pail. Add water to dissolve the calcium hydroxide and sodium carbonate. Allow to stand for 24 hours. Test the pH and neutralize with 2 M hydrochloric acid (1 volume of concentrated hydrochloric acid to 5 volumes of water). Decant the solution to the drain with large quantities of	(Armour) Package Lots. Place in a separate labeled container for recycling or disposal. Small Quantities. Dissolve in water to give a 10% solution. Slowly, and while stirring, neutralize by adding 2 M hydrochloric acid (1 volume of concentrated hydrochloric acid added to 5 volumes of water). Wash into the drain. Reactions for Spillage and Waste Disposal $\text{Ca(OH)}_2 + 2\text{HCl} \rightarrow \text{CaCl}_2 + 2\text{H}_2\text{O}$ Incompatible materials (Sigma-Aldrich SDS) Strong acids

			water.	
37.	Calcium sulfate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(UC Berkeley) Prepare 10% solution with water, adjust pH to within 5 – 10, and dispose down the drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
38.	Carbon disulfide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Refrigerate before opening.	(Armour) Shut off all possible sources of ignition. Instruct others to keep a safe distance. Wear breathing apparatus, eye protection, laboratory coat, and Viton rubber gloves. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Place mixture in an evaporating dish in the fume hood to evaporate. Ventilate the spill area thoroughly to dispel vapor.	(Armour) Package Lots. Place in a separate labeled container for recycling or disposal. Small Quantities. Wear Viton rubber gloves, laboratory coat, and eye protection. Work in the fume hood. For each 0.05 mol (3.8 g, 3.0 mL) of carbon disulfide to be destroyed, use 670 mL of sodium hypochlorite (bleach) or a mixture of 55 g of 65% calcium hypochlorite in 220 mL of water. Place the hypochlorite in flask equipped with dropping funnel, stirrer, and thermometer, and add the carbon disulfide dropwise such that the reaction temperature is maintained between 20 and 30 °C (to avoid volatilizing of the carbon disulfide). When addition is complete, continue stirring for 2 hours or until a clear, homogeneous solution remains (perhaps

				<p>containing traces of oily by-products). The reaction mixture can be washed into the drain. If quantity is large, carbon disulfide may be recovered by distillation and repackaged for use.</p> <p>Reactions for Spillage and Waste Disposal $\text{CS}_2 + 8\text{OCl}^- + 2\text{H}_2\text{O} \rightarrow \text{CO}_2 + 2\text{H}_2\text{SO}_4 + 8\text{Cl}^-$</p> <p>Incompatible materials (Sigma-Aldrich SDS) Alkali metals, zinc, amines, azides, oxidizing agents</p>
39.	Chitosan	<p>(Acros SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature: 2 - 8 °C.</p>	<p>(Acros SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Dispose in rubbish bin.</p>	<p>(Acros SDS) Place in normal refuse (no limit). Incompatible materials (Acros SDS) Strong oxidizing agents</p>
40.	Chlorobenzene	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p>	<p>(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.</p>	<p>(Sigma-Aldrich SDS) Collect in halogenated organics wastes container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents</p>
41.	Chloroform	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-</p>	<p>(Armour) Instruct others to keep a safe distance. Wear breathing</p>	<p>(Armour) Wear PVA or Viton gloves, laboratory coat, and eye</p>

		ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	apparatus, eye protection, laboratory coat, and PVA or Viton gloves. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop into an appropriate container and label for disposal by burning in a furnace equipped with afterburner and scrubber.	protection. Avoid breathing vapor. Recycle by distillation (in a fume hood) or collect in halogenated organics waste container. Accumulated waste to be referred for disposal by an authorized chemical wastes disposal company. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases, magnesium, sodium/sodium oxides, lithium
42.	Chromium(III) sulfate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Handle under inert gas. Protect from moisture.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in chromium salts waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
43.	Citric acid	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(UC Berkeley) Prepare 10% solution with water, adjust pH to within 5 – 10, and dispose down the drain. (CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, bases, reducing agents, nitrates
44.	Cobalt(II) nitrate hexahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an	(CLEAPSS) Dilute the solution to less than 0.004 M before pouring down a

		ventilated place.	electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Organic materials, reducing agents
45.	Copper foil	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Air sensitive.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents, acid chlorides, halogens
46.	Copper(II) chloride dihydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dilute to less than 0.5 M. This disposal procedure should be kept to a minimum. Incompatible materials (Sigma-Aldrich SDS) Alkali metals
47.	Copper(II) oxide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) React no more than 24 g in 1 liter of warm 1 M ethanoic acid before pouring down a foul-water drain. This procedure should be kept to a minimum. Incompatible materials (Sigma-Aldrich SDS) Reducing agents, hydrogen sulfide gas, aluminum, alkali metals, powdered metals
48.	Copper(II) sulfate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up	(CLEAPSS) Dissolve 64 g in 1 liter of water before pouring the solution down a

		ventilated place. Air sensitive. Hygroscopic. Store under inert gas. (CLEAPSS) May turn blue as it absorbs water from the atmosphere. Dry in a hot oven.	and shovel. Keep in suitable, closed containers for disposal.	foul water drain. This disposal procedure should be kept to a minimum. Incompatible materials (Sigma-Aldrich SDS) Powdered metals, hydroxylamine, Magnesium, Strong reducing agents
49.	Copper(II) sulfate pentahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air sensitive. Hygroscopic. Handle and store under inert gas.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dilute to less than 0.4 M or dissolve 100 g in 1 liter of water before pouring the solution down a foul-water drain. This disposal procedure should be kept to a minimum. Incompatible materials (Sigma-Aldrich SDS) Powdered metals, anhydrous copper(II) sulfate, reacts violently with: hydroxylamine, magnesium
50.	Cyclohexanol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	(CLEAPSS) Burn small volumes of the alcohol using a spirit burner in a fume cupboard. Alternatively, dissolve no more than 30 mL in 1 liter of water before pouring down a foul-water drain. Conditions to avoid (Sigma-Aldrich SDS) Heat, flames and sparks
51.	Cyclohexene	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Sigma-Aldrich SDS) Contain spillage, and then collect	(Sigma-Aldrich SDS) Collect in aliphatic nonhalogenated

		tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	hydrocarbons waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
52.	Dichloromethane	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Heat sensitive. Store under inert gas.	(Armour) Turn off all sources of ignition and evacuate the area. Wear breathing apparatus, nitrile rubber gloves, and a laboratory coat. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate, clay cat litter (calcium bentonite), and sand. When all the liquid has been absorbed, scoop into an appropriate container and package for disposal by burning.	(Armour, Sigma-Aldrich SDS) Collect in halogenated organics waste container. Offer surplus and non-recyclable solutions to a licensed disposal company. (CLEAPSS) Burn, evaporate or vent the material in a working fume cupboard or out in the open if safe to do so. This should be limited to 25 mL. Incompatible materials (Sigma-Aldrich SDS) Alkali metals, aluminum, strong oxidizing agents, bases, amines, magnesium, strong acids and strong bases, vinyl compounds
53.	1,3-Dinitrobenzene	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in solid nonhalogenated aromatic hydrocarbons waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-

				Aldrich SDS) Oxidizing agents, reducing agents, strong bases
54.	3,5-Dinitrobenzoyl chloride	(Sigma-Aldrich SDS) Store in a cool place. Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Moisture sensitive.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in halogenated organics waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Water, alcohols, amines, oxidizing agents, reducing agents, strong bases
55.	2,4-Dinitrophenylhydrazine	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. (CLEAPSS) 2,4-dinitrophenylhydrazine must be kept damp at all times. It is a good idea to keep the bottle of damp solid inside a larger container with some water in it. (Label both bottle and container!) If the chemical may have become dry, open the bottle slowly under water to avoid a sudden shock. There are now reports that availability might be limited because of carriage restrictions.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations.	(Sigma-Aldrich SDS) Collect in the hydrazine waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong oxidizing agents
56.	1,4-Dioxane	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-	(Armour) Shut off all possible sources of ignition. Instruct others to keep a	(Armour) Containers of dioxane that have been opened and are more than 1

		<p>ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p>	<p>safe distance. Wear breathing apparatus, eye protection, laboratory coat, and butyl rubber gloves. Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Transfer to an appropriate container labeled for disposal by burning. Ventilate spill site well to evaporate remaining liquid and dispel vapor.</p>	<p>year old may contain hazardous quantities of peroxides. Especially if they have screw caps, these containers should not be opened, but should be disposed of by the appropriate authorities. When the container can be opened safely, check for peroxides as follows: Wear butyl rubber gloves, laboratory coat, and eye protection. Dissolve 100 mg of potassium iodide in 1 mL of glacial acetic acid. Add to 1 mL of the dioxane. A pale yellow color indicates a low concentration (0.001–0.005%) and a bright yellow or brown color indicates a high concentration (0.01% and hazardous) of peroxide in the sample.</p> <p>To remove peroxides, wear butyl rubber gloves, laboratory coat, and eye protection. Pour the dioxane (100 mL) into a separatory funnel and shake with a freshly prepared 50% aqueous solution of sodium metabisulfite (20 mL) for 3 minutes. Release the pressure in the funnel at 10-second intervals. Separate the aqueous layer. Retest the dioxane for the continued presence of small amounts of dialkyl peroxides that are not</p>
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				<p>reduced by the metabisulfite treatment. If peroxides are absent, the dioxane can be dried for reuse or packaged for disposal by burning. If peroxides are still present, in the fume hood, place the ether in a 250-mL round-bottom flask equipped with a condenser, and add a solution of 100 mg of potassium iodide in 5 mL of glacial acetic acid and 1 drop of concentrated hydrochloric acid. Reflux gently for 1 hour. Package the ether for disposal by burning.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Oxygen, oxidizing agents, halogens, reducing agents, perchlorates, trimethylaluminum</p>
57.	Diethyl ether	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Light sensitive. Heat sensitive. Air sensitive. (CLEAPSS) Do not put anything treated with ether into a refrigerator that is not specially spark-proofed; the door switch may ignite the vapor.</p>	<p>(Armour) Shut off all possible sources of ignition. Instruct others to keep a safe distance. Wear breathing apparatus, eye protection, laboratory coat, and PVA or silver-shield rubber gloves.²¹ Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Transfer to an appropriate container labeled for disposal by burning. Ventilate site of spillage well to evaporate</p>	<p>(Armour) Containers of diethyl ether that have been opened and are more than 1 year old may contain hazardous quantities of peroxides. Especially if they have screw caps, these containers should not be opened, but should be disposed of by the appropriate authorities. When the container can be opened safely, check for peroxides as follows: Wear PVA or silver shield rubber gloves, laboratory coat, and eye</p>

			<p>remaining liquid and dispel vapor.</p>	<p>protection. Work in the fume hood. Dissolve 100 mg of potassium iodide in 1 mL of glacial acetic acid. Add to 1 mL of the diethyl ether. A pale yellow color indicates a low concentration (0.001–0.005%) and a bright yellow or brown color indicates a high concentration (above 0.01% and hazardous) of peroxide in the sample.</p> <p>To remove peroxides, wear PVA or silver-shield rubber gloves, laboratory coat, and eye protection. Pour the ether (100 mL) into a separatory funnel and shake with a freshly prepared 50% aqueous solution of sodium metabisulfite (20 mL) for 3 minutes. Release the pressure in the funnel at 10-second intervals. Separate the aqueous layer and wash the ether with water (3 \ 10 mL). Retest the ether for the continued presence of small amounts of dialkly peroxides that are not reduced by the metabisulfite treatment. If peroxides are absent, the ether can be dried for reuse or collected in ethers waste container. Offer surplus and non-recyclable solutions to a licensed disposal</p>
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				<p>company.</p> <p>If peroxides are still present, in the fume hood, place the ether in a 250-mL round-bottom flask equipped with a condenser, and add a solution of 100 mg of potassium iodide in 5 mL of glacial acetic acid and 1 drop of concentrated hydrochloric acid. Reflux gently on the steam bath for 1 hour. Package the ether for disposal by burning.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, strong acids</p>
58.	Dimethylglyoxime	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations.</p>	<p>(Sigma-Aldrich SDS) Collect in oximes waste container. Contact a licensed professional waste disposal service to dispose of this material.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents</p>
59.	Dimethyl sulfoxide	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Store under inert</p>	<p>(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing</p>	<p>(Sigma-Aldrich SDS) Collect in sulfoxides waste container. Contact a licensed professional waste disposal service</p>

		gas. Hygroscopic.	and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Acid chlorides, phosphorus halides, strong acids, strong oxidizing agents, strong reducing agents
60.	Dimethylformamide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle and store under inert gas.	(Armour) Wear eye protection, laboratory coat, and butyl rubber gloves. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop the mixture into a container and transport to the fume hood. Slowly add the mixture to 10% sodium hydroxide solution, allowing at least 10 mL of sodium hydroxide for each 1 mL of dimethylformamide. Allow the solution to stand for 48 hours. Decant the liquid to the drain. Treat the solid as normal refuse.	(Armour) Package Lots. Place in nonhalogenated solvent disposal container for recycling or disposal by burning in a furnace equipped with afterburner and scrubber. Small Quantities. Wear eye protection, butyl rubber gloves, and laboratory coat. Work in the fume hood. For each 1 mL of dimethylformamide, add 10 mL of 10% sodium hydroxide solution. Heat the mixture under reflux for 30 minutes, or allow to stand at room temperature for 48 hours. Wash the liquid into the drain. Reactions for Spillage and Waste Disposal $\text{HCON}(\text{CH}_3)_2 + \text{NaOH} \rightarrow (\text{CH}_3)_2\text{NH} + \text{HCOO}^-\text{Na}^+$ Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
61.	Disodium tetraborate decahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up	(CLEAPSS) Dissolve 1 g of solid in 1 liter of water before pouring down a foul-

		ventilated place. (CLEAPSS) Avoid the anhydrous salt which produces a dust during use.	and shovel. Keep in suitable, closed containers for disposal	water drain. Incompatible materials Strong oxidizing agents, strong reducing agents
62.	Ethane-1,2-diol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Soak up with inert absorbent material and dispose of as hazardous waste. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Add no more than 250 mL to 1 liter of water before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents, strong bases, aldehydes, aluminum
63.	Ethanol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Hygroscopic.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal.	(CLEAPSS) Dilute to a 5% (v/v) solution before pouring it down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Alkali metals, ammonia, oxidizing agents, peroxides
64.	Ethylenediaminetetraacetic acid (EDTA)	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed container and dispose following applicable procedure.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
65.	Ethylenediaminetetraacetic acid (EDTA) disodium salt	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents

66.	Fehling's solution no. 1	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Sigma-Aldrich SDS) Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.	(CLEAPSS recommendation for copper(II) sulfate) Dilute to less than 0.4 M before pouring the solution down a foul-water drain. This disposal procedure should be kept to a minimum. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
67.	D-(-)-Fructose	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
68.	D-(+)-Glucose	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
69.	Glycerol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.	(UC Berkeley) Dispose down the drain by preparing a 10% aqueous solution (e.g. 100 g glycerol in 1 liter of water). Incompatible materials (Sigma-Aldrich SDS) Strong bases, strong oxidizing agents
70.	n-Hexane	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which	(Armour) Shut off all sources of ignition. Evacuate the area. Wear self-contained breathing apparatus,	(Armour) Package Lots. Distill for reuse or package and label for disposal by burning.

		are opened must be carefully resealed and kept upright to prevent leakage.	nitrile rubber gloves, and laboratory coat. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate, clay cat litter (bentonite), and sand. When all the liquid has been absorbed, scoop into a pail or other wide-mouth container and place in fume hood. If local regulations allow, stand in the fume hood for several days until all of the hexane has evaporated. Discard the solid with normal refuse. Otherwise, package and label the solid for disposal.	Small Quantities. If local regulations permit, place in an evaporating dish or beaker in the fume hood and allow to evaporate. Ensure that there are no flames or other ignition source present. Otherwise, collect in aliphatic nonhalogenated hydrocarbons waste container. Offer surplus and non-recyclable solutions to a licensed disposal company. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents
71.	1-Hexene	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal.	(Sigma-Aldrich SDS) Collect in aliphatic nonhalogenated hydrocarbons waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Acids, oxidizing agents
72.	1-Hexyne	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	(Sigma-Aldrich SDS) Collect in aliphatic nonhalogenated hydrocarbons waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents
73.	Hydrochloric acid	(Sigma-Aldrich SDS)	(Armour)	(Armour)

		<p>Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p> <p>(CLEAPSS)</p> <p>Store large containers at a low level, preferably in a tray to contain spills. Once bottles are opened, gases can leak into the store; this accelerates the corrosion of metals. The gases can also diffuse through plastic so that labels on the containers fade and disintegrate. The gases react with ammonia and amines to deposit a white powder over bottles.</p>	<p>Instruct others to keep a safe distance. Wear nitrile rubber gloves, laboratory coat, eye protection, and breathing apparatus if required. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. When the hydrochloric acid has been absorbed, scoop the mixture into a container and transport to the fume hood. Very slowly add the mixture to a pail of cold water. Neutralize if necessary with sodium carbonate. Decant the solution to the drain. Treat the solid residue as normal refuse.</p>	<p>Wear nitrile rubber gloves, laboratory coat, eye protection, and self-contained breathing apparatus if necessary. In the fume hood, slowly add the hydrochloric acid to a pail of cold water (at least a 1:10 dilution of acid to water is suggested). Soda ash or calcium carbonate is then added slowly until neutralization is complete. Wash the resulting solution into the drain. Any solid residue may be treated as normal refuse.</p> <p>Reactions for Spillage and Waste Disposal</p> $2\text{HCl} + \text{Na}_2\text{CO}_3 \rightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$ <p>Incompatible materials (Sigma-Aldrich SDS)</p> <p>Bases, amines, alkali metals, metals, permanganates, e.g. potassium permanganate, fluorine, metal acetylides, hexalithium disilicide</p>
74.	Iodine	<p>(Sigma-Aldrich SDS)</p> <p>Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Handle and store under inert gas. Hygroscopic.</p> <p>(CLEAPSS)</p> <p>The vapor can escape out of poorly-sealed bottles and</p>	<p>(Sigma-Aldrich SDS)</p> <p>Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers and dispose following applicable procedure.</p>	<p>(Sigma-Aldrich SDS)</p> <p>Add no more than 10 g of iodine to 1 liter of 1 M sodium thiosulfate solution. The pale-coloured solution can then be poured down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS)</p> <p>Rubber, plastics, iron and iron</p>

		accelerates corrosion of metals in the room. Make sure the top is firmly secured. The bottle of iodine could be placed inside another container.		salts., sulphur compounds, ammonia, magnesium, zinc, aluminum, metals, alkalis, antimony salts, arsenites, bromides, chlorides, iodides, thiocyanates, ferrous salts, hypophosphites, morphine salts, oils, creosote, phosphates, tannins, tartrates, mixing iodine, antimony, and ammonia resulted in an explosion. A violent reaction occurs between iodine and acetaldehyde, acetylene
75.	Iodoform	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in solid halogenated organics waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong bases, alkali metals, strong oxidizing agents, magnesium
76.	Iron(III) chloride	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Handle and store under inert gas. Air and moisture sensitive. (CLEAPSS) The chemical absorbs water. Keep inside other containers with soda lime.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Add no more than 100 g of the solid to 1 liter of 1 M sodium carbonate solution. Remove the precipitate of hydrated iron(III) oxide and place this in the normal refuse. The solution can then be poured down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS)

				Strong oxidizing agents, forms shock-sensitive mixtures with certain other materials, potassium, sodium/sodium oxides
77.	Iron(III) nitrate nonahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. Air sensitive. Store under inert gas.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Dilute to less than 0.2 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Organic materials, powdered metals
78.	Iron(II) sulfate heptahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air sensitive. Store under inert gas. Hygroscopic. (CLEAPSS) These compounds are oxidized in moist air and turn brown.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dilute to less than 0.2 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
79.	Lead(II) acetate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Light sensitive. Air sensitive.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS, Sigma-Aldrich SDS) Collect in lead salts waste container. Offer surplus and non-recyclable solutions to a licensed disposal company. Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents
80.	Lead(II) nitrate	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Sigma-Aldrich SDS) Sweep up and shovel. Contain	(CLEAPSS, Sigma-Aldrich SDS) Collect in lead salts waste

		tightly closed in a dry and well-ventilated place.	spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	container. Offer surplus and non-recyclable solutions to a licensed disposal company. Incompatible materials Strong reducing agents, organic materials, powdered metals
81.	Lithium carbonate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Add slowly to 1 M ethanoic acid solution. Heat may be produced. The resulting solution should be tested for acidity with litmus solution and when just alkaline, poured down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Incompatible with strong acids and oxidizing agents
82.	Magnesium chloride hexahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Moisture sensitive. Hygroscopic.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
83.	Magnesium sulfate heptahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
84.	Maleic acid	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Sigma-Aldrich SDS) Pick up and arrange disposal	(CLEAPSS) Add slowly to 1 M sodium

		tightly closed in a dry and well-ventilated place.	without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	carbonate solution. Heat may be produced. The resulting solution should be tested for alkalinity with litmus solution and when just alkaline, poured down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents
85.	D-(+)-Maltose monohydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
86.	Manganese(II) chloride tetrahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Dilute to less than 0.5 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Sodium/sodium oxides, strong acids, potassium, zinc
87.	Methanol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. (CLEAPSS) Bottles used regularly in the laboratory should not be more than 500 mL in capacity.	(Armour) Shut off all possible sources of ignition. Instruct others to maintain a safe distance. Wear breathing apparatus if necessary, eye protection, laboratory coat, and butyl rubber gloves. Cover spill with a 1:1:1 mixture by weight of sodium carbonate, clay cat litter (bentonite), and sand. Scoop into a container. If local regulations permit, add the solid to a pail of	(CLEAPSS) Dilute to a 1% (v/v) solution before pouring it down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Acid chlorides, acid anhydrides, oxidizing agents, alkali metals, reducing agents, acids

			water, allow to stand until the solids settle, decant the liquid to the drain and treat the solid as normal refuse. Otherwise, package the solid and label for disposal by burning.	
88.	Methyl acetate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Moisture sensitive.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.	(CLEAPSS) Add no more than 50 mL to 1 liter of water and pour down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
89.	α -Naphthol	(Sigma-Aldrich SDS) Store in a cool place. Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Air and light sensitive.	(Armour) Wear nitrile gloves, goggles, and a laboratory coat. Sweep the spill into a beaker and place in the fume hood. Estimate the weight of the naphthol spilled and for each 1 g, add 100 mL of 3 M H ₂ SO ₄ (17 mL of concentrated added to 83 mL of water) and 6 g KMnO ₄ . Stir the mixture for 48 hours. Add solid sodium bisulfite until the solution is colorless. Neutralize with 5% aqueous sodium hydroxide and pour into the drain. Discard small quantities of brown precipitate (manganese dioxide) with normal refuse.	(Armour) Package lots. Label for recycling or disposal by burning. Small quantities. Follow spillage disposal procedure. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases
90.	Nitric acid	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Sigma-Aldrich SDS) Contain spillage, and then collect	(CLEAPSS) Add no more than 50 mL of

		<p>tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p> <p>(CLEAPSS)</p> <p>Bottles should not be stored in direct sunlight; dark glass bottles or opaque containers are best. Light decomposes the colourless acid. If there is a brown colouration, decomposition has occurred and the liquid should be disposed of. Fuming nitric acid (100%) should only be made in situ and not stored in schools.</p>	<p>with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.</p>	<p>concentrated nitric acid slowly to 1 liter of 1 M sodium carbonate. Do not attempt to dispose of large volumes of fuming nitric acid by this method.</p> <p>Incompatible materials (Sigma-Aldrich SDS)</p> <p>Alkali metals, organic materials, acetic anhydride, acetonitrile, alcohols, acrylonitrile, ammonia, crotonaldehyde, halogenated hydrocarbon, acids, bases, metals, hexalithium disilicide, hydrogen peroxide, ketones, metal acetylides, water, fluorine, amines, thiols, cadmium, bromine, copper, hydrazine, hydrazinium nitrate, nitro compounds, cyanides, phosphorus trihydride (phosphine), diphosphine, halides, organic halides, May set fire to wood or paper. Polyethers, methyl vinyl ether.</p>
91.	Petroleum ether, 40 – 60 °C	<p>(Sigma-Aldrich SDS)</p> <p>Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p>	<p>(Sigma-Aldrich SDS)</p> <p>Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.</p>	<p>(Sigma-Aldrich SDS)</p> <p>Collect in ethers waste container. Offer surplus and non-recyclable solutions to a licensed disposal company.</p> <p>Conditions to avoid (Sigma-Aldrich SDS)</p> <p>Heat, flames and sparks</p>
92.	Phenol	<p>(Sigma-Aldrich SDS)</p>	<p>(Sigma-Aldrich SDS)</p>	<p>(CLEAPSS)</p>

		Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. Store under inert gas. Light sensitive.	Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	Add no more than 1 g to 100 mL of 1 M sodium carbonate solution before pouring it down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases, strong acids
93.	Phenylhydrazine	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Light sensitive. Store under inert gas. Air sensitive.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in phenylhydrazine waste container. Offer surplus and non-recyclable solutions to a licensed disposal company. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents
94.	Phosphoric acid, 85% solution	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Armour) Wear a face shield, goggles, laboratory coat, and nitrile rubber gloves. Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop into a container and transport to the fume hood. Slowly add to a pail of ice-cold water. Test the pH and neutralize if necessary with sodium carbonate. Decant the solution to the drain. Treat the solids as normal refuse. Wash the site of the spill thoroughly with water.	(Armour) Wear a face shield, goggles, laboratory coat, and nitrile rubber gloves. In the fume hood, slowly add the acid to a pail of cold water. Cautiously neutralize the solution by adding solid sodium carbonate while stirring. Wash the solution into the drain. Reactions for Spillage and Waste Disposal $2\text{H}_3\text{PO}_4 + 3\text{Na}_2\text{CO}_3 \rightarrow 2\text{Na}_3\text{PO}_4 + 3\text{H}_2\text{O} + 3\text{CO}_2$ Incompatible materials (Sigma-Aldrich SDS) Strong bases, powdered metals

95.	Potassium chloride	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. Keep in a dry place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents
96.	Potassium dichromate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	(CLEAPSS) In a fume cupboard, add no more than 1 liter of 0.02 M solution or 5 g of the solid to 1 liter of 0.1 M sodium metabisulfite solution made up in 1 M sulfuric(VI) acid and then pour the solution down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Organic materials, do not store near acids, powdered metals, hydrazine
97.	Potassium hexacyanoferrate (III)	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Do not store near acids.	(Sigma-Aldrich SDS) Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Acids, strong oxidizing agents
98.	Potassium hydrogen phthalate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-

			containers for disposal.	Aldrich SDS) Strong oxidizing agents
99.	Potassium hydroxide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Absorbs carbon dioxide (CO₂) from air. Air sensitive. Strongly hygroscopic. (CLEAPSS) It absorbs both water and carbon dioxide from the atmosphere. If the solid forms a cake, it may be necessary to dispose of it.	(Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Shovel into bucket and add, a little at a time and while stirring, to a large volume of ice water. Neutralize with 5% hydrochloric acid and wash into the drain. Spill site should be washed thoroughly with water.	(Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Add slowly while stirring to a large volume of ice water. Neutralize with 5% hydrochloric acid and wash into the drain. Reactions for Spillage and Waste Disposal $\text{KOH} + \text{HCl} \rightarrow \text{KCl} + \text{H}_2\text{O}$ Incompatible materials (Sigma-Aldrich SDS) Nitro compounds, Organic materials, Magnesium, Copper, Water, reacts violently with:, Metals, light metals, contact with aluminum, tin and zinc liberates hydrogen gas. Contact with nitromethane and other similar nitro compounds causes formation of shock-sensitive salts, vigorous reaction with alkali metals, halogens, azides, anhydrides
100.	Potassium iodate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep	(CLEAPSS) 50 g should be dissolved in 1 liter of water before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, powdered

			in suitable, closed containers for disposal.	metals, incompatibility: mixtures of iodates with finely divided aluminum, arsenic, copper, carbon, phosphorous (red or white) sulfur; hydrides of alkali and alkaline earth metals; sulfides of antimony, arsenic, copper or tin, metal cyanides, thiocyanates or impure manganese dioxide may react violently or explosively, either spontaneously (especially in the presence of moisture) or on initiation by heat, friction impact, sparks, or addition of sulfuric acid
101.	Potassium iodide	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air, light, and moisture sensitive. Store under inert gas.</p> <p>(CLEAPSS) Sometimes these substances turn yellow in storage. Make up solutions and add a crystal or two of sodium thiosulfate.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.</p>	<p>(CLEAPSS) Dissolve in water and pour down the foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, nickel, strong acids, and its alloys, steel (all types and surface treatments), aluminum, alkali metals, brass, magnesium, zinc, cadmium, copper</p>
102.	Potassium oxalate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.</p>	<p>(CLEAPSS) Add no more than 30 g to 1 liter of water or dilute to less than 0.3 M.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Halogens, ammonia, cyanides, heavy metals</p>

103.	Potassium permanganate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p> <p>(CLEAPSS) Solutions should be stored in dark Bottles.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.</p>	<p>Procedure 1 (CLEAPSS) Solutions less than 0.3 M or 5% (w/v) may be poured down a foul-water drain.</p> <p>Procedure 2 (CLEAPSS) Dissolve 10 g of solid in 1 liter of water and add 1 liter of 1 M sulfuric acid. Add sodium metabisulfite, with stirring, until the solution is colourless. Then pour the solution down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, powdered metals, peroxides, zinc, copper</p>
104.	Potassium persulfate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Moisture sensitive.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.</p>	<p>Procedure 1 (CLEAPSS) Solutions should be diluted to less than 0.05 M.</p> <p>Procedure 2 (CLEAPSS) Dissolve 5 g of the solid in 100 mL of water and add 5 g of sodium metabisulfite. Pour the solution down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Organic materials, strong reducing agents, powdered metals, strong bases, alcohols, phosphorus, anhydrides, halogens, acids</p>
105.	Potassium phosphate monobasic	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up</p>	<p>(CLEAPSS) Dissolve in water at less than 10% (w/v) concentration and pour</p>

		ventilated place. Keep in a dry place.	and shovel. Keep in suitable, closed containers for disposal.	down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
106.	Potassium sulfate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
107.	Potassium thiocyanate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Do not store near acids. Air, light, and moisture sensitive. Handle and store under inert gas.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Solutions should be diluted to less than 2 M before pouring them down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Acids, strong bases
108.	2-Propanol	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle and store under inert gas. Hygroscopic. (CLEAPSS) Propan-2-ol should be in a dark bottle which limits the formation of peroxides. It can normally be kept for several years if it is to be	(Sigma-Aldrich SDS) Contain spillage and collect into alcohols waste container for disposal.	(CLEAPSS) Prepare a 5% solution before pouring it down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, acid anhydrides, aluminum, halogenated compounds, acids

		used as a solvent or a fuel. If it is ever to be boiled to almost dryness, the sample should not be more than 2 years old.		
109.	Pyridine	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Heat sensitive.</p>	<p>(Armour) Wear butyl rubber gloves, laboratory coat, and eye protection. Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop into a plastic pail and add enough water to dissolve the sodium carbonate. Allow the solids to settle and decant the liquid to another container. Discard the solid with normal refuse. To the liquid, add slowly (frothing will occur) 6 M sulfuric acid to pH 2. Stir into the acidified solution sufficient solid potassium permanganate so that the liquid remains purple (a drop of the liquid on a filter paper will show a purple ring). Allow the mixture to stand at room temperature for 48 hours, and then neutralize the solution by adding solid sodium carbonate (frothing will occur) or a 10% solution of sodium hydroxide. Add solid sodium bisulfite until the solution is colorless. Decant the clear liquid into the drain and</p>	<p>(Armour) Package Lots: Recycle or package and label for disposal by burning. Small Quantities: Wear eye protection, laboratory coat, and rubber gloves. Dissolve the pyridine (1 mL) in 50 mL of 3 M sulfuric acid (prepared by slowly adding 8 mL of concentrated sulfuric acid to 21 mL of water). Weigh 10 g of potassium permanganate and stir small portions of the solid into the pyridine solution over a period of about 1 hour. Stir the mixture at room temperature for 48 hours, and then neutralize the solution by adding solid sodium carbonate or a 10% solution of sodium hydroxide. Add solid sodium bisulfite until the solution is colorless. Decant the clear liquid into the drain and discard any brown solid with normal refuse. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong acids</p>

			discard any brown solid with normal refuse.	
110.	Resorcinol	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air and light sensitive.</p>	<p>(Armour) Wear nitrile rubber gloves, laboratory coat, and eye protection. Sweep up solid with brush and follow waste disposal procedure.</p>	<p><u>Procedure 1 (Armour)</u> Package Lots. Place in a separate labeled container for recycling or disposal by burning. Dissolve the compound in a flammable solvent and spray into furnace with afterburner. Small Quantities. Wear eye protection, laboratory coat, and nitrile rubber gloves. Work in the fume hood. A solution of 5.5 g (0.05 mol) of resorcinol in 75 mL of water is prepared in a 200-mL, three-necked, round-bottom flask equipped with a stirrer, dropping funnel, and thermometer. Ferrous sulfate heptahydrate (2.35 g, 0.0085 mol) is then dissolved in the mixture, and the pH is adjusted to 5–6 (pH paper) with dilute sulfuric acid. Then 41 mL (0.4 mol) of 30% hydrogen peroxide is added dropwise while stirring over 1 hour. CAUTION: The order of addition of the reagents is important. If hydrogen peroxide and ferrous sulfate are premixed, a violent reaction may occur. Heat is evolved, and the reaction temperature is maintained at 50–</p>

				<p>60 °C by adjusting the rate of addition and by using an ice bath if necessary. Stirring is continued for 2 hours while the temperature gradually falls to ambient. The solution is allowed to stand overnight and is then washed down the drain.</p> <p>Procedure 2 (CLEAPSS) Add slowly to 1 M sodium carbonate solution. Heat may be produced. The resulting solution should be tested for alkalinity with litmus solution and, when just alkaline, poured down a foul-water drain with further dilution.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, iron and iron salts</p>
111.	Salicylic acid	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Light sensitive.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) Add slowly to 1 M sodium carbonate solution. Heat may be produced. The resulting solution should be tested for alkalinity with litmus solution and, when just alkaline, poured down a foul-water drain with further dilution.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong bases, iodine, iron and iron salts</p>
112.	Silica gel for dessicator	<p>(Sigma-Aldrich SDS)</p>	<p>(Sigma-Aldrich SDS)</p>	<p>(CLEAPSS)</p>

	(containing traces of cobalt chloride)	Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	Sweep up and shovel. Keep in suitable, closed containers for disposal.	Add the solid to water. Leave for 24 hours. Pour the liquid down a foul-water drain and place the solid in normal refuse. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
113.	Silver nitrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Light sensitive. (CLEAPSS) It is usual to keep a silver-residues bottle but do not dispose of Tollen's reagent in this way.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.	Procedure 1 (CLEAPSS) Collect in silver salts waste container for recycling. Procedure 2 (CLEAPSS) Dilute to less than 0.05 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, alcohols, ammonia, magnesium, strong bases
114.	Sodium acetate trihydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
115.	Sodium azide	(Sigma-Aldrich SDS) Store in cool place. Prevent unauthorized access. Store in a place accessible by authorized persons only. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.	(Sigma-Aldrich SDS) Collect in azides waste container. Offer surplus and non-recyclable solutions to a licensed disposal company. Incompatible materials (Sigma-Aldrich SDS) Halogenated hydrocarbon, metals,

		water during storage. Do not store near acids. Heat sensitive.		acids, acid chlorides
116.	Sodium bicarbonate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents
117.	Sodium bromide	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down the foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong acids, strong oxidizing agents, alkali metals, halogens
118.	Sodium carbonate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Add slowly to 1 M ethanoic acid solution. Heat may be produced. The resulting solution should be tested for acidity with litmus solution and when just alkaline, poured down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong acids
119.	Sodium carbonate decahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.	(CLEAPSS) Add slowly to 1 M ethanoic acid solution. Heat may be produced. The resulting solution should be tested for acidity with litmus solution and when just alkaline,

				<p>poured down a foul-water drain with further dilution.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong acids, aluminum</p>
120.	Sodium chlorate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p> <p>(CLEAPSS) During storage, the solution loses chlorine to the atmosphere. Pressure may build up; open bottles carefully. Do not store longer than 2 years. The storage room should be well ventilated. Chlorine also accelerates rusting in the storage area.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) Dilute the solution 20 times with water before pouring down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong reducing agents, organic materials, alcohols</p>
121.	Sodium chloride	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents</p>
122.	Sodium hydrogensulfite	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Do not store near acids. Air and moisture sensitive.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) Add the solid to water in small amounts in a fume cupboard. Add litmus indicator followed by 1 M sodium carbonate solution until the solution is alkaline. Then pour the liquid down a foul-water drain.</p> <p>Incompatible materials (Sigma-</p>

		<p>(CLEAPSS) This chemical reacts with moisture in the air to release sulfur dioxide. It is also subject to oxidation when exposed to oxygen in the air.</p>		<p>Aldrich SDS) Strong oxidizing agents, Strong acids</p>
123.	Sodium hydroxide	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.</p>	<p>(Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Shovel into a bucket and add, a little at a time and while stirring, to a large volume of ice water. Neutralize with 5% hydrochloric acid and wash into the drain. Wash spill site thoroughly with water.</p>	<p>Procedure 1 (Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Add slowly, while stirring, to a large volume of ice water. Neutralize with 5% hydrochloric acid and wash into the drain. Reactions for Spillage and Waste Disposal $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$</p> <p>Procedure 2 (CLEAPSS) Add to 1 M nitric acid with stirring. When the solid has dissolved, pour the solution down a foul-water drain with more water. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents, strong acids, organic materials</p>
124.	Sodium iodide	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Air, light, and moisture sensitive. (CLEAPSS) Sometimes this chemical turns yellow in storage. Make up</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in a suitable, closed container and follow disposal procedure.</p>	<p>(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents, strong acids, bromine trifluoride</p>

		solution and add a crystal or two of sodium thiosulfate.		
125.	Sodium lauryl sulfate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations.</p>	<p>(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents</p>
126.	Sodium metal	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Handle and store under inert gas. Air sensitive.</p> <p>(Flinn Scientific SDS) Sodium metal must always be stored under dry mineral oil to prevent contact with moist air.</p>	<p>(Armour) Instruct others to maintain a safe distance. Wear face shield, goggles, laboratory coat, and nitrile rubber gloves. Cover sodium with dry sodium carbonate or calcium carbonate, shovel into dry bucket, and transport to fume hood. Behind a shield, add a little at a time to a large excess of dry butanol. Leave to stand for 24 hours and run to waste, diluting greatly with at least 50 times its volume of water.</p>	<p><u>Procedure 1 (Armour)</u> Handling techniques and safety precautions for large-scale operations have been detailed for this reactive metal. Package Lots. Place in a separate labeled container for recycling or disposal. Small Quantities. Wear eye protection, laboratory coat, and nitrile rubber gloves. Work in the fume hood. Place small pieces of solid sodium in a three-necked, round-bottom flask equipped with a stirrer, dropping funnel, condenser, and heating mantle. Flush the flask with nitrogen. Add</p>

				<p>95% ethanol (13 mL per gram of sodium) dropwise at a rate to cause rapid reflux. Stirring is started as soon as enough ethanol has been added to make it feasible. The mixture is stirred and heated under reflux until the sodium is dissolved. Heat is turned off and an equal volume of water is added at a rate that causes no more than mild refluxing. The solution is cooled, neutralized with 6 N sulfuric (prepared by cautiously adding 15 mL of concentrated acid to 75 mL of cold water) or hydrochloric acid (prepared by adding concentrated acid to an equal volume of cold water), and washed into the drain with at least 50 times its volume of water.</p> <p>Reactions for Spillage and Waste Disposal</p> $2\text{Na} + 2\text{CH}_3\text{CH}_2\text{OH} \rightarrow 2\text{CH}_3\text{CH}_2\text{ONa} + \text{H}_2$ $\text{CH}_3\text{CH}_2\text{ONa} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{CH}_3\text{CH}_2\text{OH}$ <p><u>Procedure 2 (CLEAPSS)</u> Add the solid (no more than 5 g) in small pieces (sides no bigger than 4 mm) to 100 mL propan-2-ol. Place a heat-proof mat over the beaker</p>
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				<p>to extinguish any flames caused by propan-2-ol burning. Once the reactions have stopped, carefully add the solution to a bucket of water before disposal down a foul-water drain.</p> <p>Incompatible materials (Sigma-Aldrich SDS) Oxidizing agents</p>
127.	Sodium nitrite	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.</p>	<p>(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.</p>	<p>(CLEAPSS) For 25 g amounts, dissolve in 500 mL of water in a 1 liter beaker, add 25 g of ammonium chloride and heat to boiling. Wear goggles. The gas evolved is nitrogen and the nitrite is completely destroyed. Incompatible materials (Sigma-Aldrich SDS) Acids, powdered metals, ammonia, cyanides, amines, activated carbon</p>
128.	Sodium nitroprusside dihydrate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic . Moisture sensitive.</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.</p>	<p>(Sigma-Aldrich SDS) Collect in nitroprussides waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents</p>
129.	Sodium oxalate	<p>(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-</p>	<p>(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up</p>	<p>(CLEAPSS) Add no more than 30 g to 1 liter of water or dilute to less than 0.3 M.</p>

		ventilated place. Hygroscopic.	and shovel. Keep in a suitable, closed container and follow disposal procedure.	Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
130.	Sodium sulfate anhydrous	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong acids, aluminum, magnesium
131.	Sodium sulfate decahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong acids, aluminum, magnesium
132.	Sodium sulfite	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Do not store near acids. Air and moisture sensitive. (Sigma-Aldrich SDS) This chemical reacts with moisture in the air to release sulfur dioxide. It is also subject to oxidation when exposed to oxygen in the air.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.	(CLEAPSS) Add the solid to water in small amounts in a fume cupboard. Add litmus indicator followed by 1 M sodium carbonate solution until the solution is alkaline. Then pour the liquid down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Acids, strong oxidizing agents
133.	Sodium thiosulfate	(Sigma-Aldrich SDS)	(Sigma-Aldrich SDS)	(CLEAPSS)

	pentahydrate	Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	Sweep up and shovel. Keep in suitable, closed containers for disposal.	Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Sodium nitrate, acids, strong oxidizing agents, Incompatible with: iodides, silver salts, mercury salts, lead
134.	Succinic acid	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Add slowly to 1 M sodium carbonate solution. Heat may be produced. The resulting solution should be tested for alkalinity with litmus solution and, when just alkaline, poured down a foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Bases, oxidizing agents, reducing agents
135.	Sulfuric acid, concentrated	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Scoop into a pail in the fume hood. Slowly and cautiously add this mixture to a large volume of water in a pail. Neutralize with sodium carbonate if necessary. Let stand until solids	(Armour) Wear eye protection, laboratory coat, and nitrile rubber gloves. Work in the fume hood. Cautiously and slowly add to a large volume of ice-cold water. Slowly and carefully add sodium carbonate until neutralization is complete. Wash into the drain. Reactions for Spillage and Waste Disposal $H_2SO_4 + Na_2CO_3 \rightarrow Na_2SO_4 + H_2O$

			settle. Decant liquid into the drain. Solid residue may be discarded with normal refuse.	+ CO ₂ Incompatible materials (Sigma-Aldrich SDS) Bases, halides, organic materials, carbides, fulminates, nitrates, picrates, cyanides, chlorates, alkali halides, zinc salts, permanganates, e.g. potassium permanganate, hydrogen peroxide, azides, perchlorates, nitromethane, phosphorous, reacts violently with: cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous(III) oxide, powdered metals
136.	Thiourea	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Handle and store under inert gas.	(Armour) Wear nitrile rubber gloves, laboratory coat, and goggles. Sweep up the solid into a container and place in the fume hood. Wash the spill area thoroughly with soapy water. Add sufficient water to the solid so that it dissolves. Estimate the weight of thiourea spilled and add 100 mL of household bleach (5% sodium hypochlorite solution) for each 1 g of thiourea. Allow to stand overnight. Pour the liquid into the drain.	(Armour) Package Lots. Collect in amines waste container. Contact a licensed professional waste disposal service to dispose of this material. Small Quantities. Follow spillage disposal procedure.
137.	Toluene	(Sigma-Aldrich SDS) Store in cool place. Keep container	(Armour) Shut off all possible sources of	(Sigma-Aldrich SDS) Collect in nonhalogenated

		tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	ignition. Wear eye protection, laboratory coat, and Viton gloves. Cover spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite), and sand. Transport to fume hood for evaporation. Ventilate spill site well to evaporate remaining liquid and dispel vapor.	aromatic hydrocarbons waste container. Contact a licensed professional waste disposal service to dispose of this material. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
138.	Triethylamine	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.	(Sigma-Aldrich SDS) Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for amine wastes.	(UC Berkeley) Dispose down the drain by preparing a 10% aqueous solution (e.g. 100 g triethylamine in 1 liter of water). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
139.	Trisodium citrate dihydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
140.	Urea	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	(Sigma-Aldrich SDS) Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dissolve in water and pour down solution in foul-water drain with further dilution. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
141.	Zinc carbonate basic	(Sigma-Aldrich SDS)	(Sigma-Aldrich SDS)	(CLEAPSS)

		Store in cool place. Keep container tightly closed in a dry and well-ventilated place.	Sweep up and shovel. Keep in suitable, closed containers for disposal.	Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents
142.	Zinc foil	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage.	(Sigma-Aldrich SDS) Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations.	(CLEAPSS) Place in normal refuse (no limit). Incompatible materials (Sigma-Aldrich SDS) Acids, strong bases, chlorides, fluorine, nitrates, carbon disulfide
143.	Zinc(II) sulfate heptahydrate	(Sigma-Aldrich SDS) Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.	(Sigma-Aldrich SDS) Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	(CLEAPSS) Dilute to less than 0.3 M before pouring down a foul-water drain. Incompatible materials (Sigma-Aldrich SDS) Strong oxidizing agents

References

1. Armour, Margaret-Ann. Hazardous Laboratory Chemicals Disposal Guide. 3rd edition. Lewis Publishers, Boca Raton, Florida, USA, 2003
2. Committee on Hazardous Substances in the Laboratory, Committee on Physical Sciences, Mathematics, and Resources, National Research Council. Prudent Practices for Disposal of Chemicals from Laboratories. National Academy Press, Washington DC, USA, 1983
3. Consortium of Location Education Authorities for the Provision of Science Services (CLEAPSS). HAZCARDS. 2007 Edition (including 2013 updates). London, United Kingdom, 2013
4. Lunn, George & Sansone, Eric B. Destruction of Hazardous Chemicals in the Laboratory. 3rd edition. Wiley, Hoboken, New Jersey, USA, 2012
5. Respective Safety Data Sheets of the chemical saved in Drive L.
6. University of California Berkely, USA. Drain Disposal Restrictions for Chemicals. 2013. <http://ehs.berkeley.edu/sites/default/files/lines-of-services/hazardous-materials/draindisposal.pdf>