

Appendix L
DISPOSAL OF SHIPBOARD HAZARDOUS MATERIAL

(A)

OPNAVINST 5090.1B CH-1
2 February 1998

Shipboard Hazardous Material Type	Generation Source	Associated Hazardous Material	Authorized Disposal Methods
Components containing Polychlorinated biphenyls (PCBs)	Capacitors, coils (usually with radar systems) (listing by NSN of components containing PCBs for each ship has been provided under separate cover)	PCBs	Containerize for shore disposal
Chlorinated solvents	Cleaning operations	Perchloroethylene, trichlorethylene, trichlormethane, trichloroethane, freon™	Containerize for shore disposal; keep separate from nonchlorinated solvents
Nonchlorinated solvents	Cleaning operations	Ethyl acetate, acetone, morpholine, methyl ethyl ketone, toluene, xylene, kerosene, Stoddard solvent, petroleum naphtha (petroleum ether)	Containerize for shore disposal; keep separate from chlorinated solvents
		Ethylene glycol, methyl alcohol, ethyl alcohol, butyl alcohol	Overboard discharge permitted beyond 12 nm of shore; in port, containerize for offload
Wastes from painting, resurfacing operations	Paints, enamels, varnishes, lacquers, paint chips	Petroleum distillates with lead/cobalt drier, cadmium, chromium, lead oxide	Containerize for shore disposal
	Thinners, strippers	Toluene, xylene, styrene, phenol, methyl isobutyl ketone, cresol, chlorobenzene turpentine	Containerize for shore disposal
Waste oils	Non-PCB containing capacitors, coils	Mineral, silicone, paraffin based oils	Containerize for shore disposal
	Cutting fluids	Chlorinated and sulfurized mineral oils, MIL-C-47220	Containerize for shore disposal
	Damping fluids	Silicone based oils, dimethylpoly- siloxane	Containerize for shore disposal
	Lubricant oils from machinery, turbines, engines, motors	Lubricant oils in accordance with MIL-L-9000, MIL-L-15019, MIL-L-17331, and MIL-L-24467	Containerize for shore disposal
Oily sludge	Residue from oil/water separators, fuel tanks	Oil mixed with lead, zinc, chromium, copper, tin residues	Containerize for shore disposal
Oily solid waste	Contaminated sorbents/rags, oil and fuel filters	Items coated with residual oil	Jettison beyond 50 nm of shore; discharge material must be negatively buoyant; containerize for shore disposal if within 50 nm of shore

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Greases	Machine maintenance, motors, roller bearings	Greases such as: MIL-G-18458, MIL-G-18709, MIL-G-21164, MIL-G-24139, MIL-L-15719, DOD-G-24508	Containerize for shore disposal
Non-oily lubricants	Machine maintenance, motors, roller bearings	Lead oleate, dry lube, antiseize, molybdenum, graphite	Containerize for shore disposal
Water with corrosion inhibitors	Diesel generator cooling water, closed loop cooling water, locked-in ballast, fuel ballast	Ethylene glycol, sodium silicate	Overboard discharge permitted beyond 12 nm, of shore; within 12 nm, containerize for shore disposal. Containerize excess stock treatment chemicals for shore disposal
		Sodium chromate, solution mixed with residual fuel or soluble oil	Overboard discharge permitted beyond 50 nm of shore; within 50 nm, containerize for shore disposal. Containerize excess stock treatment chemicals for shore disposal.
Synthetic hydraulic fluids	Aircraft elevators, weapons handling systems, some ballast valve operating systems and replenishment at sea (RAS) systems	MIL-H-19457 fluids (cellulube, FYRQUEL, Houghto-safe 1000 series); WARNING: Contains a neurotoxin (tri-ortho cresyl-phosphate); wear protective clothing during handling. Warning does not apply to MIL-H-19457C fluids.	Hold for shore disposal; keep separate from petroleum hydraulic fluids
	Catapult retracting engines, jet blast deflectors, weapons elevators	MIL-H-22072 fluids (Houghto-safe); WARNING: Contains suspected cancer causing agents (nitrosamine); wear protective clothing during handling. Warning does not apply to MIL-H-22072C fluids.	Hold for shore disposal; keep separate from petroleum hydraulic fluids
	Missile holddown and lockout systems	MIL-S-81087 fluid contains chlorinated phenyl methyl polysiloxane	Hold for shore disposal; keep separate from petroleum hydraulic fluids

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Propellants	Torpedo overhaul	OTTO fuel II, substituted hydrazine	Containerize for shore disposal
Petroleum hydraulic fluids	Machinery, heavy lifts elevators, trucks	Fluids in accordance with MIL-H-17672, MIL-H-17331, MIL-F-17111, MIL-H-5606	Hold for shore disposal; keep separate from synthetic hydraulic fluids
Spent acid	Cleaning	Acetic acid, citric acid, hydrochloric acid, sulfuric acid, sulfamic acid	Carefully neutralize with a weak base, dilute and flush overboard using large amounts of water
Spent alkali	Cleaning, deoxidizing	Sodium hydroxide, potassium hydroxide	Carefully neutralize with a weak acid, dilute and flush overboard using large amounts of water
Metal plating, electroplating solutions	Metal plating, electroplating operations, etching, activating operations	Acetic acid, formic acid, hydrochloric acid, sulfuric acid, nitric acid, fluoroboric acid and phosphoric acid contaminated with lead, zinc, chromium, copper, and brass	Containerize for shore disposal
		Sodium hydroxide contaminated with lead, zinc, chromium, copper, and brass	Containerize for shore disposal
		Sodium cyanide contaminated with lead, zinc, chromium, copper, and brass	Containerize for shore disposal; keep separate from other plating solutions
Firefighting materials	Firefighting, testing of fire- fighting equipment	Protein foam, AFFF (perfluorocarbon compounds mixed with polyoxyethylene compound)	Overboard discharge permitted beyond 12 nm of shore, preferable while ship is underway; in port and within 3 nm of shore, discharge to tank, barge or truck*; between 3 to 12 nm overboard discharge permitted with minimum 10-knot speed
Boiler and boiler water wastes	Boiler blowdown, continuous boiler water treatment tank	Trisodium phosphate, disodium phosphate, hydrazine, morpholine, sodium nitrate, EDTA	Overboard discharge of blowdown effluents permitted, inside 12 nm, continuous boiler water treatment tank contents must be disposed of ashore; containerize excess stock boiler water treatment chemicals

*Contact local Public Works Center/Public Works Department for authorized procedures.

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Boiler and boiler water wastes (continued)	Boiler water test chemicals	Nitric acid, EDTA, mercuric nitrate, potassium chloride, phenolphthalein	Containerize excess reagents, and samples containing mercuric compounds for shore disposal; if available, process mercuric samples through ion exchange cartridge; overboard discharge of cartridge effluent permitted; containerize exhausted cartridge for shore disposal
	Boiler waterside cleaning solutions	EDTA, citric acid	Overboard discharge permitted beyond 50 nm of shore, in port, offload to donut, tank, barge, or truck*
	Acid cleaning solutions	Hydrochloric acid, sulfamic acid	In port, offload to tank, barge, or truck*
	Passivator solutions	Sodium nitrate, potassium nitrate	In port, offload to tank, barge, or truck*
	Boilout solutions	Trisodium phosphate, sodium metasilicate	In port, offload to tank, barge, or truck*
	Feedwater demineralizer	Ion exchange resin with adsorbed metal ions	Containerize for shore disposal as plastics solid waste
Distilling plant cleaning wastes	On-line distilling plant chemical cleaning	Citric acid, trisodium phosphate	Overboard discharge permitted beyond 50 nm of shore; in port, NOT USED IN PORT
Lead-acid batteries	Propulsion systems auxiliary lighting, communication and power systems	Lead, lead sulfate, lead dioxide, antimony, sulfuric acid electrolyte	Containerize for shore disposal; do not empty electrolyte from battery
Alkaline batteries: Nickel-cadmium Silver-zinc Nickel-iron Silver-cadmium Nickel-zinc	Auxiliary power systems, power supply for portable equipment	Nickel, silver, zinc, cadmium, potassium hydroxide electrolyte	Containerize for shore disposal; do not empty electrolyte from battery

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Dry cell batteries: ` Lelanche cells Mercury cells Low-temperature cells	Power supply for portable equipment	Manganese dioxide, mercuric oxide, zinc	Containerize for shore disposal
Lithium batteries	Power supply for portable equipment	Lithium, acetonitrile	Jettison in deep water (over 100 fathoms) beyond 50 nm; in port, containerize for shore disposal
Battery water purification canister	Cation exchanger, mixed bed exchanger	Ion exchange resin with adsorbed metal ions	Containerize for shore disposal
Used/over-age OBA canisters	Damage control operations	Potassium superoxide, sodium chlorate	Jettison beyond 25 nm of shore; preferably while underway; containerize for shore disposal if within 25 nm of shore; contact with oil, grease, or water during storage is prohibited. Follow guidelines within NSTM chapter 079, Vol 2, Practical Damage Control
Medical and dental lab chemicals and materials	Dental amalgam used as filling material, thermometers, mercury from broken thermometers	Silver, silver nitrate, mercuric nitrate, mercury	Containerize for shore disposal
	Antiseptics, disinfectants	Isopropyl alcohol, hydrogen peroxide	Overboard discharge permitted beyond 12 nm of shore; in port, containerize for shore disposal
Materials containing asbestos	Thermal insulation, pipe lagging, flooring tile, safety curtains, gasket and packing materials	Asbestos	Properly wet to prevent creating airborne particles of dust, then containerize for shore disposal
Materials containing man-made vitreous fibers	Thermal insulation, pipe lagging	Man-made vitreous fibers (MMVF)	Properly wet to prevent creating airborne particles of dust, then containerize for shore disposal
Fluorescent light bulbs, other light bulbs containing mercury	Normal shipboard operations	Mercury	Retain for shore disposal
Insecticides, pesticides	Pest control operations	Diazinon, Baygon, Dyrethrin, Resmethrin, Dursban, Malathion	Containerize for shore disposal
Biocide, VANTOCIL IB©	Water from the MK41 vertical launch deluge system	Polyhexamethalene biguanide hydrochloride, sodium hypochlorite	Overboard discharge permitted beyond 25 nm of shore; in port and within 12 nm, containerize for shore disposal

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Color film processing waste	Continuous processor effluent, small quantities of processing liquids	Hydroquinone, sodium thiosulfate	Overboard discharge permitted beyond 12 nm of shore; in port and within 12 nm, containerize for shore disposal; do not discharge to CHT tank
	Excess film, batch quantities of developer, fixer and intensifier solutions	Hydroquinone, sodium thiosulfate, cellulose acetate	Containerize for shore disposal
Black and white, X-ray film processing waste	Continuous processor effluent, stop bath, photo-flo, detergents and hardener solutions	Acetic acid, potassium chrome alum, sulfuric acid	Overboard discharge permitted beyond 12 nm of shore; within 12 nm, containerize if facilities are available; in port, if ship has CHT system, discharge to CHT tank
	Excess film, batch quantities of developer and intensifier solution	Hydroquinone, ethanolamine, diethylene glycol, cellulose acetate	Containerize for shore disposal
	Fixer solutions	Sodium thiosulfate, silver, halides	Containerize for shore disposal; if available, process fixer through silver recovery unit; overboard discharge of unit effluent permitted beyond 12 nm of shore; in port, containerize unit effluent for offload
			<u>For submarines:</u> Containerize fixer solutions for shore disposal at all times
Contaminated sorbents (rags); unrecoverable personal protective clothing; unpurged HM containers	Normal ship operations, spill response operations	HM that must be containerized for shore disposal (find specific containment in this appendix to learn if is containerization required)	Containerize for shore disposal
		HM that may be discharged overboard (find specific contaminant in this appendix to learn if overboard discharge is required)	Jettison beyond 25 nm of shore; discharged material must be negatively buoyant; containerize if within 25 miles of land