Elevator Pit Effluent
Discharge Summary

Description of Discharge

How is this discharge generated? This discharge is the liquid that accumulates in, and is occasionally discharged from, the sumps of elevator wells on vessels. Most large surface ships have at least one type of elevator used to transport supplies, equipment, and personnel between different decks of the vessel. These elevators generally can be classified as either a closed design in which the elevator operates in a shaft, or an open design used to move aircraft between decks. Elevators operating in a shaft are similar to the conventional design seen in many buildings. For these elevators, a sump is located in the elevator pit to collect liquids entering the elevator and shaft areas. Deck runoff and elevator equipment maintenance activities are the primary sources of liquids entering the sump. On some vessels, the elevator sump is equipped with a drain to direct liquid wastes overboard. On others, piping is installed that allows an eductor to pump the pit effluent overboard. However, most vessels collect and containerize the pit effluent for disposal onshore or process it along with their bilgewater.

The elevators used on aircraft carriers to move aircraft and helicopters from one deck to another are an open design (i.e., there is no elevator shaft). The elevator platform is supported by cables and pulleys, and it operates on either the port or starboard side of the ship away from the hull. Unlike elevators with pits, the aircraft elevators are exposed to the water below and there are no systems in place for collecting liquid wastes.

Which vessels generate this discharge? Most large Navy and MSC surface vessels have at least one type of elevator. Coast Guard, Army and Air Force vessels do not have elevators and therefore do not produce this discharge.

How often and where is this discharge generated? The discharge of elevator pit effluent may occur at any location, within or beyond 12 n.m. from shore.

Analysis

Nature of Discharge: Constituents in elevator pit effluent are likely to include grease, lubricating oil, fuel, hydraulic fluid, cleaning solvents, dirt, paint chips, aqueous film-forming foam, glycol, and sodium metasilicate. The discharge can also contain nitrogen (measured as total Kjeldahl nitrogen) and metals from firemain water used to operate eductors draining the elevator pit.

The concentrations of copper, iron, nickel, and bis(2-ethylhexyl)phthalate in firemain water (discussed in section 5.1.11) may exceed acute Federal criteria or State acute water quality criteria. The elevator pit effluent discharge can also contain nitrogen in concentrations exceeding the most stringent State water quality criteria. Constituent concentrations and mass loadings vary among ship classes depending on the frequency of elevator use, the size of the elevator openings, the amount and concentration of deck runoff, and the frequency of elevator equipment maintenance activities.

Discussion and Discharge Determination

Discussion: Material accumulated in elevator pits is either collected for disposal onshore or directed to the bilgewater system for treatment through an oil-water separator prior to discharge. These existing practices demonstrate the availability of controls to reduce the potential for this discharge to cause adverse impacts on the environment. Therefore, EPA and DoD have determined that it is reasonable and practicable to require MPCDs for elevator pit effluent.

Determination: A marine pollution control device is required.