

## Dirty Ballast Discharge Summary

### Description of Discharge

**How is this discharge generated?** This intermittent discharge is composed of the seawater taken into, and discharged from, empty fuel tanks to maintain the stability of the vessel. The seawater is brought into these tanks for the purpose of improving the stability of a vessel during rough sea conditions. Prior to taking on the seawater as ballast, fuel in the tank to be ballasted is transferred to another fuel tank or holding tank to prevent contaminating the fuel with seawater. Some residual fuel remains in the tank and mixes with the seawater to form dirty ballast. Dirty ballast systems are configured differently from compensated ballast and clean ballast systems. Compensated ballast systems continuously replace fuel with seawater in a system of tanks as the fuel is consumed. Clean ballast systems have tanks that carry only ballast water and are never in contact with fuel. In a dirty ballast system, water is added to a fuel tank after most of the fuel is removed.

**Which vessels generate this discharge?** Thirty Coast Guard vessels generate dirty ballast as a discharge incidental to normal vessel operations. These Coast Guard vessels do so because their size and design do not allow for a sufficient volume of clean ballast tanks.

**How often and where is this discharge generated?** The larger of these vessels discharge the dirty ballast at distances beyond 12 n.m. from shore, while the smaller vessels discharge the dirty ballast between 3 and 12 n.m. from shore. Coast Guard vessels monitor the dirty ballast discharge with an oil content monitor. If the dirty ballast exceeds 15 parts per million (ppm) oil, it is treated in an oil-water separator prior to discharge.

### Analysis

**Nature of Discharge:** Expected constituents of dirty ballast are Naval distillate fuel or aviation fuel. Based on sampling results for compensated fuel ballast, which is expected to have similar constituents to dirty ballast, this discharge can contain oil (and its constituents such as benzene and toluene); biocidal fuel additives; metals such as copper, mercury (a bioaccumulative chemical of concern), nickel, silver, thallium, and zinc; and the constituents 2-propenal, nitrogen (in the form of ammonia and total Kjeldahl nitrogen), and phosphorus. Uncontrolled discharges of dirty ballast would be expected to exceed acute Federal criteria or State acute water quality criteria for oil, benzene, copper, nickel, phosphorus, 2-propenal, silver, thallium, and zinc. Concentrations of nitrogen would be expected to exceed the most stringent State water quality criteria.

## Dirty Ballast Discharge Summary (continued)

### Analysis (continued)

Based on data for compensated ballast discharge, which is similar to dirty ballast discharge, the following table lists the concentration of constituents that are expected to exceed acute Federal criteria or State water quality criteria and the resulting annual mass loadings.

Constituent	Concentration ( $\mu\text{g/L}$ )	Annual Mass Loading (lbs)
Benzene	153	27.6
Copper	86	16.5
Mercury <sup>B</sup>	0.00083	49
Nickel	267	15
Phenol	83	1
Silver	5.7	860.2
Zinc	4845	0.0002
Oil & Grease	15000	2704 <sup>C</sup>
Total Phosphorus	340	61.4
Total Nitrogen <sup>A</sup>	580	105
Ammonia as Nitrogen	300	54.2

<sup>A</sup> Total nitrogen is the sum of nitrate/nitrite and total Kjeldahl nitrogen.

<sup>B</sup> Mercury was not found in excess of federal criteria guidance or State water quality criteria; concentration is shown only because it is a bioaccumulator.

<sup>C</sup> Annual mass loading for oil and grease was based on maximum oil-water separator system discharges and not on compensated ballast discharge.

### Discussion and Discharge Determination

**Discussion:** Uncontrolled discharges of dirty ballast would be expected to exceed acute federal water quality and State water quality criteria. The use of oil content monitors and oil-water separators to reduce the concentration of oil (and associated constituents) demonstrates the availability of MPCDs to control this discharge.

**Determination:** A marine pollution control device is required.