

## Sonar Dome Discharge Summary

### Description of Discharge

**How is this discharge generated?** This discharge is generated by the leaching of antifoulant materials from the sonar dome material into the surrounding seawater and the discharge of seawater or freshwater from within the sonar dome during maintenance activities. Hull-mounted sonar domes house the electronic equipment used to navigate, detect, and determine the range to objects. Sonar domes are composed of either rubber impregnated with tributyltin (TBT) anti-foulant, rubber without TBT, steel, or glass-reinforced plastic, and are filled with freshwater and/or seawater to maintain their shape and internal pressure. The discharge is generated when materials leach from the exterior surface of the dome, or when water containing leach materials from inside the dome is pumped overboard to allow for periodic maintenance or repairs on the sonar dome or equipment housed inside the dome.

**Which vessels generate this discharge?** Only Navy and MSC operate vessels with sonar domes. Sonar domes are currently installed on approximately 225 vessels, including eight classes of Navy vessels and one class of MSC vessels. Sonar domes on MSC vessels are fiberglass and do not contain TBT.

**How often and where is this discharge generated?** The leaching of materials from the exterior surface of the dome is a continuous discharge and occurs both within and beyond 12 n.m. from shore. Discharges from the interior of the dome are intermittent and occur while the vessel is pierside as water inside the dome is removed to allow for periodic maintenance or repairs (approximately twice per year per dome).

### Analysis

**Nature of Discharge:** Expected constituents of sonar dome water discharge are TBT, dibutyl tin, monobutyl tin, and metals such as copper, nickel, zinc, and tin. Based on sampling data in the record, concentrations of TBT, copper, nickel, and zinc can exceed acute Federal criteria or State acute water quality criteria, although fleetwide mass loadings of these constituents are not considered large (15 pounds/year of TBT, 23 pounds/year of copper, 11 pounds/year of nickel, and 122 pounds/year of zinc). The following table lists the concentrations of the discharge's constituents and the resulting annual fleet-wide mass loading for those constituents that can exceed acute Federal criteria or State acute water quality criteria.

Constituent	Concentration (µg/L)	Annual Mass Loading (lbs)
TBT	470	Internal 2.4 External 12.6
Copper	1630	23.4
Nickel	660	11.2
Zinc	8300	121.9

### Discussion and Discharge Determination

**Discussion:** The Navy has instituted a program to install new sonar domes that do not have TBT-impregnated internal surfaces as existing domes require replacement. This practice demonstrates the availability of a control to mitigate potential adverse environmental impacts, if any, from sonar dome discharges.

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