



U.S. Environmental Protection Agency



U.S. Maritime Administration

This document is one section from the “National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs,” published in May 2006. The reference number is EPA 842-B-06-002. You can find the entire document at <http://www.epa.gov/owow/oceans/habitat/artificialreefs/index.html>.

National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs

Other Materials of Environmental Concern

May 2006

OTHER MATERIALS OF ENVIRONMENTAL CONCERN

Narrative Clean-up Goal: Remove other materials that may negatively impact the biological, physical, or chemical characteristics of the marine environment.

What are other materials of environmental concern?

Refer to the list provided below.

What are the potential environmental impacts of other materials of environmental concern?

When placed in the marine environment, materials of environmental concern can have adverse effects on fish, wildlife, shellfish, recreation, or municipal water supplies. Adverse effects on the environment include any of the impacts mentioned in the preceding sections of the document. The magnitude of the impact of these materials on the marine environment will be related to the nature of the material, the level of toxicity, and the ecological resources that could come in contact with “other material of environmental concern.”

Where are other materials of environmental concern found on ships?

Other materials of environmental concern can be found anywhere within the vessel as well as on the decks.

How should the vessel be prepared; what are the appropriate BMPs for other materials of environmental concern?

Shipboard equipment or materials with constituents that can leach into the water column (e.g., petroleum products, batteries, and/or mercury-containing switches) should be removed from the vessel prior to sinking. Fluorescent light tubes and ballasts should be removed. Waste water resulting from clean-up processes, including but not limited to, decontamination, contaminated rain water, and water from rinsing of tanks and lines, should be properly collected and disposed.

Antifreeze and Coolants

Antifreeze and coolant mediums, other than untreated sea water, should be drained and removed from the vessel, and the equipment should be flushed.

Batteries

All batteries should be removed from the vessel. This includes batteries that are part of fitted equipment.

Fire Extinguishing Systems

Fire extinguishing systems should be fully decommissioned. Except for fire-fighting systems that employ untreated seawater or fresh water, all fire-fighting compounds should be removed from the ship. Storage containers, if left in situ, should be cleaned, flushed, and re-closed for transit. Any lines that have been charged with any fire-fighting product other than untreated seawater or fresh water should be treated in the same manner as fuel lines and oil piping.

Refrigerants and Halons

All refrigerants and halons should be removed from the vessel.

Mercury

Ship system components using mercury (e.g., some gyroscopes, vacuum measurement gauges, some laboratory equipment, some light switches, some older radar displays) should be removed from the vessel. All portable thermometers and other measuring equipment employing mercury should be removed intact from the vessel. Any other extant mercury or items containing mercury should be removed from the vessel. Even minute quantities of mercury may be of concern and should be removed. Note that there is a health hazard associated with airborne mercury.



Photo courtesy of Laura Casey

Mercury removed from smoke detector onboard the ex-USS Oriskany.

Lead

Lead ballast bars, shielding and fittings should be removed from the vessel if the reef site is located in fresh or brackish water.

Black and Gray Water

Remove black water (sewerage) and gray water (waste water from sinks, showers, galleys, dishwashers) from the vessel; flush the lines.

Radioactive Materials

Ex-warships, research vessels, and a few other types of vessels may have used equipment containing low-level radioactive material. Residual radioactivity and any source of non-naturally occurring radioactive materials such as luminescent devices should be removed (except where it may safely be left on the ship in accordance with the references below). The Navy is more familiar with addressing this material generally aboard vessels, and as such, the Navy has guidance and established procedures regarding the removal and disposal of radioactive materials. For this reason, it is recommended that the procedures for removal and disposal of radioactive materials follow that provided in DLA INST 4145.8, "Material Management for Radioactive Items in the DoD" and implementing instructions. Another reference that may be useful is the American National Standard Institute's standard N13.12-1999, "Surface and Volumetric Radioactivity Standards for Clearance." This document contains tables of surface contamination criteria developed to allow users of radioactive material to demonstrate that the material or equipment can be safely released with no further regulatory control.

Invasive Species

Assess the presence of invasive species that could be transported to and survive at the artificial reef location on the hull of the ship or from other locations on or in the vessel such as ballast and bilge tanks. If a viable invasive species is found that may be expected to survive at the artificial reef site, that species should be removed or eliminated; the vessel should be clean of all such living organisms.