Sea Grant instructor helps protect boats from marine corrosion

Aluminum is rapidly becoming a popular boatbuilding material for vessels of all sizes, large and small. The marine-grade alloys are strong and easy to weld.

But aluminum has a downside, notes Rich Troberg, instructor for Washington Sea Grant’s Marine Corrosion Protection Workshop. The “galvanic series”, which ranks metals according to their corrosion activity, shows that aluminum will act as an anode for other metals, such as iron, stainless steel and bronze. This means, for example, that an aluminum hull will corrode by galvanic action to protect a bronze propeller. Aluminum also suffers from two other corrosion mechanisms: “poultice” corrosion and “stray current” corrosion.

According to Troberg, the poultice reaction gets its name from a medical term that describes a moist, medicated bandage placed over inflamed skin. The reaction occurs when stagnant water is trapped against bare aluminum. Stagnant water, without oxygen, generates a chemical reaction that converts aluminum metal to aluminum hydroxide. This corrosion shows up as a white paste when wet or a white powder when dry. The problem can often be seen in an aluminum boat’s fishhold, where spray foam has been applied over bare aluminum for insulation. The corrosion will penetrate the bottom from the inside, and the damage can even occur when the boat is in dry storage. Poultice corrosion can also occur on aluminum fuel tanks, if the bare tank surface is mounted against wet wood or other wick-like material, such as carpeting.

Damage from stray current corrosion, Troberg says, typically occurs on boats moored in the water and connected to shore power. Simple shore-power wiring errors can create a leakage path for stray current, which uses the water for a return path. Recent tests have shown that active metals such as zinc and aluminum will rapidly corrode when alternating current (AC) is flowing between the metal and the water. Stray AC can be detected by using an AC current clamp to measure the unbalanced current in the shore
The unbalanced current is equivalent to the current flowing between the boat and the water.

Troberg will bring his knowledge of marine corrosion to a workshop sponsored by Washington Sea Grant and the Port of Seattle Fishermen’s Terminal. The class is scheduled for May 17, 6-9 p.m. in the Nordby Building at Fishermen’s Terminal, Seattle.

This hands-on class for marine professionals and boat owners offers a good introduction for technicians planning to enroll in the American Boat and Yacht Council corrosion certification course. In addition to galvanic, poultice and stray current corrosion of aluminum, topics will include: crevice corrosion of stainless steel; galvanic corrosion of steel and bronze; corrosion-potential testing; monitoring systems for aluminum and bronze; advantages and disadvantages of different types of anodes; analysis of wood damage from too much zinc; controlled-potential systems for wood boats; coatings for propellers and shafts; methods for detecting AC and DC stray current; and more.

The fee is $50. Class size is limited to 18, so pre-registration is required. To register or for more information, contact Sarah Fisken, Washington Sea Grant continuing education coordinator, at 206 543-1225 or sfisken@u.washington.edu.

Based at the University of Washington, Washington Sea Grant provides statewide marine research, outreach, and education services. The National Sea Grant College Program is part of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. http://www.wsg.washington.edu/