

Antifouling Paint Waste Management and Disposal at Washington Boatyards

pacific northwest
POLLUTION PREVENTION
resource center



Introduction

Boatyard managers and boat owners have an important role in preserving water quality and healthy marine life. Many boat hulls are coated with antifouling paints to prevent slime, algae build up, and invasive species attachment to the boat hull.

Most antifouling paint formulations contain metals such as copper or zinc pyrithione, or other non-metal biocides such as Ecomea and Irgarol - are all federally regulated pesticides. They release from the boat bottom while in the water, but also during hull pressure washing, and sanding and painting, at boatyards or other locations used by Do-It-Yourself (DIY) boat owners.



Relevant Washington State Boatyard General Permit Language Relating to Solid Materials and Wastes:

1. *The Permittee must control and collect all particles, oils, grits, dusts, flakes, chips, drips, sediments, debris, and other solids from work, service, and storage areas of the boatyard to prevent their release into the environment and entry into waters of the State.*
2. *The Permittee must avoid wetting solids during collection and must not wash solids into any surface water or into a stormwater collection system.*
3. *The Permittee must manage all solid waste materials to prevent the release of leachate into waters of the State.*

A series of factsheets provided by Pacific Northwest Pollution Prevention Resource Center (PPRC) and the Clean Boating Foundation provide best practice suggestions to help reduce impacts to marine life and water quality from boat hull maintenance and repair activities. This factsheet covers management of solid waste streams that may have antifouling biocide content, including: pressure wash sludge, hull sanding/scrapings, plastics, air filters, surplus antifouling paint, painting equipment, and stormwater sediment.

The following factsheet and video topics are available [here](#).

- Hull Paint Removal
- Do It Yourself (DIY) Tips to Minimize Antifouling Pollution
- Zinc Anode Alternatives and End of Life Management
- Pressure Washing

Marine Toxicity Concerns of Antifouling Paint Wastes

Antifouling ingredients in hull paint (aka biocides) become concerning when many boats are stored in a concentrated area together, for instance at marinas. These chemicals build up in the water and affect marine life, such as mussels and marine plants that are a critical part of the food chain. Marinas also offer an attractive environment where many marine animals come to breed. The early life stages of these organisms can be very sensitive to biocides and zinc.

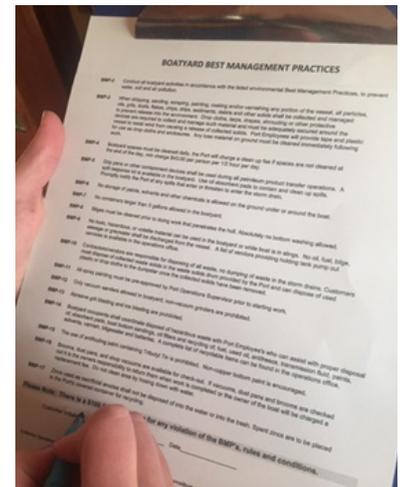
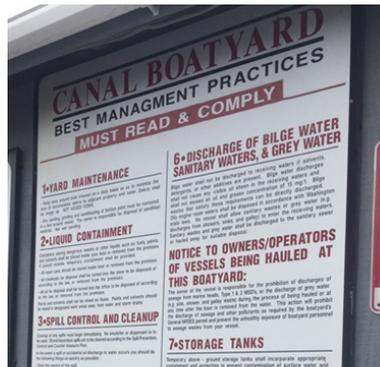
This problem worsens when paint dust and particles from hull sanding or grinding at boatyards or back yards are not contained, allowing chemicals to reach stormwater drains leading to a local water body, or become airborne and deposit directly into the water.



Boatyards are legally responsible for knowing whether any waste streams are dangerous in the state of Washington, and if so, ensuring safe handling while on site and proper disposal.

Policies & Procedural Oversight for Managing Biocidal Paint Wastes

- Include waste disposal procedures in BMPs, and require all site users to sign the compliance document. Conspicuously post BMPs outdoors.
- If Do-It-Yourself (DIY) work is conducted at a yard, monitor DIY work and disposal activities.
- Clearly label solid waste, recycling, and dangerous waste receptacles directing staff and DIYs to proper disposal locations for different waste streams.
- Ensure that all dumpsters, drums, and other waste receptacles are intact, sealed, labeled, dated, and rain and leak proof.



Antifouling Paint Solids Designation/ Disposal

Due to biocide content in antifouling paints and therefore paint wastes, most wastes require testing to determine designation as dangerous waste (or not) in Washington. Management and disposal are based on the designation. If a boatyard permit documents alternative stipulations, the individual boatyard permit or individual pollution prevention plans approved by the Department of Ecology supersede the information presented in Table 1. DIY boat owners must also comply with disposal requirements for antifouling paint content wastes at a boatyard and/or at a household hazardous waste (HHW) facility.

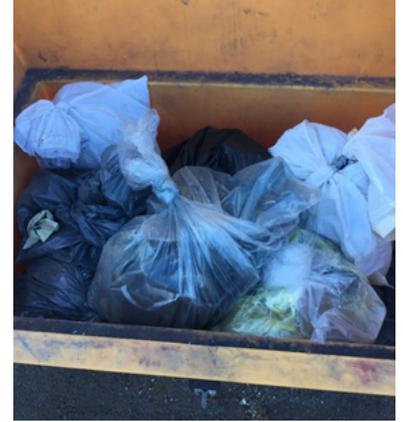
Table 1. Antifouling Paint Contaminated Waste Streams: Sources, Designation, and Disposal

Note: If a boatyard's default for a particular waste stream is to manage and dispose of as dangerous waste, testing is not required.

Waste	Source	Management & Disposal	Related BMPs
Pressure wash sludge	Pressure Wash	<ul style="list-style-type: none"> Solids are likely to have high copper and/or other biocide content. Vactor out and dispose of as dangerous waste, unless testing for non-designation. (Test method is Washington State's fish bioassay Method 80-12, Part A). If the material clears, dispose of as solid waste. 	<ul style="list-style-type: none"> If barnacles, mussels, and other fouling are removed, and NOT contaminated with removed paint residual, drain the fouling material over the wash pad and dispose of as solid waste. Otherwise, all removed fouling must remain with the pressure wash solids and be tested for designation.
Hull scrapings, sandings, dust, flakes, grindings, chips, or blast media	Paint Removal	<ul style="list-style-type: none"> Hull dust and scrapings and residuals are likely to have high copper and/or other biocide content. Contain all sanding and grinding dust in the vacuum containment bag and when bag is full, dispose of as dangerous waste receptacle, unless testing for non-designation. If designation is conducted prior to disposal, test a representative sample per Method 80-12, Part A to determine disposal. 	<ul style="list-style-type: none"> If an individual batch of sanding or grinding waste from a hull that is confirmed to not have biocidal paint (e.g., had silicone, ceramic, hydrogen peroxide generation coating), diligent segregation from other paint dust may allow this material to be disposed of as solid waste. Contact regional Ecology office for pre-approval. When removing the vacuum bag, shut the self-closing flap or seal hole with duct tape immediately.
Plastic shroud, plastic suits, tarps	Paint Removal	<ul style="list-style-type: none"> Clean all dust and fines off of shrouds, tarps, and plastic suits, contain the fines, or vacuum using the dustless vacuum, and place in dangerous waste receptacle. Once fines are removed from the plastics, place plastics in solid waste. 	<ul style="list-style-type: none"> Use a floor nozzle vacuum attachment and carefully vacuum fines off tarps to avoid dust release beyond the tarp.
Vacuum air filter	Paint Removal	<ul style="list-style-type: none"> If the default is to dispose as dangerous waste without testing, place with dangerous waste. Otherwise test filter per Method 80-12, Part A and if it designates, place in dangerous waste receptacle. If clear, bag and dispose in regular landfill. 	<ul style="list-style-type: none"> Inspect vacuum air filter before each new paint removal job.
Paint booth air filters		<ul style="list-style-type: none"> Filters may contain biocide-content paint particulate from hull painting. Dispose of as dangerous waste unless testing for designation. Otherwise, spent filters may have to pass the following tests depending on the situation, in order to be disposed of as solid waste: <ul style="list-style-type: none"> Method 80-12, Part A for biocides. SW-846 Method 9023 for halogenated organic compounds (HOCs). SW-846 Method 1311 (a.k.a. TCLP) if other metal-based primers or coating are sprayed in the facility, e.g. cadmium, chrome, or lead. 	<ul style="list-style-type: none"> Avoid using paint booth filters manufactured with HOCs as they would designate as dangerous waste from the HOC content. This type of filter may be called HOC-based or blown. Avoid primers and pigmented coatings containing heavy metals such as chrome, cadmium, or cobalt.
Surplus antifouling paint/primer	Painting	<ul style="list-style-type: none"> If biocides are present in the paint formulation, dispose of the sealed paint can as dangerous waste at the boatyard or at a HHW facility if generated by DIY work. 	<ul style="list-style-type: none"> Avoid over-purchasing paint quantity. Review safety data sheet (SDS), manufacturer's label and other instructions for use, PPE, application, and disposal.
Dried antifouling coating on rollers, trays, rags, empty paint cans	Painting	<ul style="list-style-type: none"> Cans with residual antifouling paint cannot be left open to air-dry. Seal cans for future use or disposal. Dispose of rollers, paint trays, drip pads with dried paint, into as solid waste. 	<ul style="list-style-type: none"> Use disposable painting equipment to avoid wash brushes and drip pans. Do not allow paint clean-up liquids to reach storm drains or water bodies.

Hull Paint Dust Recycling (Containing Copper)

Swantown Boatworks recycles their paint dust, by removing the vacuum containment bag, sealing it in a plastic bag, and segregating it from other wastes. The material is shipped as dangerous waste to World Resources Company ([WRC](#)) for recycling and cost offset for dangerous waste disposal. An initial sample is required prior to setting up recycling contract with WRC.



Waste Receptacles/Storage for Antifoulant Waste Streams

- Containers storing dangerous waste must have secondary containment (if liquid), be water-proof if stored outside, and securely closed at all times except when adding or removing waste.
- Inspect dangerous waste accumulation areas weekly for integrity, leaking, moisture, and secure closure. Review this and additional requirements in more detail at Washington's [Dangerous Waste Basics](#).
- Clearly label all receptacles with signage, that direct site users to the appropriate waste receptacles to prevent releases or contamination by disposing of different wastes improperly.



References

Washington State Department of Ecology, 2011. [Boatyard General Permit](#)
Washington State Department of Ecology, 2019. [Designation Checklist](#)
Northwest Green Chemistry (NWGC), 2017. [Boat Paint Alternatives Assessment](#)
Clean Boating Foundation, 2018 [Clean Boatyard Program Checklist & Standards](#)
Washington State Department of Ecology. Website: [Dangerous Waste Basics](#)
World Resources Company ([WRC](#)). Contact federicog@wrcusa.com

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