Department of Toxic Substances Control

Doc. No.

Hull Preparation: Blasting

Pollution Prevention for Marine Vessel and Service Repair Facility

Hull maintenance is essential to the longevity of a boat's structure. Routinely cleaning the hull and periodically removing old paint before repainting are part of regular maintenance. Media blasting is one of the methods used for removal of rust, marine growth, antifouling paint and other boat coatings.

Mechanical Removal: Blasting

Blasting involves removing old paint by propelling a high pressure stream of abrasive material or blasting media against the painted surface. Typically, pressurized fluid, air or a centrifugal wheel is used to propel the media. Blasting is an effective hull preparation method when old paint requires removal before a boat's hull is repainted.

Blasting media used in marine applications include: sand, copper slag grit (made of granulated slag from the copper smelting process), garnet, sodium bicarbonate, volcanic rock, and dry ice. The blasting media used depends upon factors such as:

Garnet Media

1. The composition of the boat's hull
2. The amount of build up on the hull
3. If the boat is used in fresh or salt water

Environmental Concerns:

Blasting of boat hulls generates paint chips, dust, and spent blast media. Paint dust contains heavy metals to include copper. Copper is used as a biocide in bottom paint to prevent marine life growth on hulls. Exposure to paint dust containing heavy metals can cause adverse impacts to human health and the environment

Targeted Pollutants:

- Metals
- Paint Dust
- Oils, Organic constituents
- Spent Media
- Trash and Debris

Regulatory Requirements

* **California Air Resources Board** [i] (www.arb.ca.gov)**:**
  - Statewide Portable Equipment Registration Program [ii] (PERP)
  - Small Gas Powered Engine Regulation [viii] (Gas Engines)
  - Abrasive Blasting Program [iii] (Certified Abrasives)

* **State Water Quality Control Board** [iv] (www.swrcb.ca.gov)**:**
  - National Pollutant Discharge Elimination System [v] (NPDES Permit)

* **California Division of Occupational Safety and Health** [vi] (CAL/OSHA)
  - Personal Protective Equipment [vii] (PPE)

Dual Media Blaster

Recommended Practices (RPs) for Blasting:

1. **Designated Area**: Use a clearly marked area that is far away from the surface waters and out of drainage pathways

    - Do not allow blasting activities outside the designated area
    - Perform blasting activities preferably in a building with proper ventilation and air filters
    - Ground surface must be impervious such as sealed asphalt or concrete surface (not over open ground)
    - Area must be bermed to contain the dust and prevent it from washing away
    - If concrete or asphalt is not available place a heavy or durable tarp on the ground

2. **Dust Management:** If a ventilated structure is not available, create an enclosure that prevents blasting dust and spent abrasives from reaching storm sewers or receiving water

    - Before blasting work begins, cover the boat must be completely
    - Hang plastic barriers or tarpaulins around the boat to contain blasting debris
    - Cover the floor with plastic barriers that contain debris and protect the ground
    - Provide proper ventilation that also enhances visibility within the enclosure
    - Cover drains, trenches, and drainage channels to prevent blasting debris from entering them

3. **Process Water**: If water is used in blasting, waste water must be channeled to flow into an approved pretreatment unit that discharges to a [ix] local waste water treatment facility or collects for offsite disposal

    - Dispose of wash water sludge or debris in an approved facility (e.g. your local waste management authority, hazardous waste facility)

4. **Cleanup:** Cleanup must be scheduled at the end of the shift and/or when the project is complete. Avoid tracking dust from the work area to other parts of the shipyard.

    - Use a vacuum to capture fugitive dust from the blasting work area and equipment
    - Do not use sweeper or other equipment in a manner that causes airborne fugitive dust
    - Work area must provide clearly marked receptacles to collect paint dust
    - The collected dust must be tested to determine if it is a hazardous waste. If test is positive then it must be disposed of as [viii] hazardous waste by a licensed hauler

5. **Recovery and Recycling of Blasting Media:** To reduce environmental impacts recovering and recycling blast media is highly recommended

    - Work area must be equipped with clearly marked receptacles to collect spent blasting media
    - Store spent blasting media for reuse in a manner that prevents the media from becoming airborne, and/ or wet; and entering a storm drain or nearby surface waters
    - Store spent media appropriately and wait for offsite recycling and/or disposal

6. **Good Housekeeping**: Good housekeeping and management practices must be implemented in order to promote pollution prevention during blasting activities.

- Prohibit blasting activities during windy conditions
- Establish process and schedule for equipment maintenance and media replacement
- Schedule routine site inspections to ensure RPs are implemented
- All RPs must be reviewed periodically and revised as necessary
- Train employees on proper blasting, waste management and disposal procedures
- Allow only trained employees to do the blasting.
- On the job training for operational procedures should emphasize safety concerns
- Training updates should be done on a regular basis
- Provide and encourage use of PPE such as Blasting suits, gloves, Respirators, etc.
- Provide educational materials and signs in both English and Spanish, and/or other foreign languages commonly used in your area

Other Resources:

i. www.arb.ca.gov

ii. http://www.arb.ca.gov/portable/portable.htm

iii. http://www.arb.ca.gov/ba/certabr/certabr.htm

iv. http://www.swrcb.ca.gov/

v. http://www.swrcb.ca.gov/water_issues/programs/npdes/

vi. http://www.dir.ca.gov/dosh/puborder.asp

vii. http://www.osha.gov/pls/oshaweb/owadisp.show_document?table=STANDARDS&p_id=9777

viii. http://www.dtsc.ca.gov/HazardousWaste/upload/HWMP_DefiningHW11.pdf

ix. www.aqmd.gov

x. http://www.arb.ca.gov/fcaa/tv/tvinfo/tvwebpag.htm

xi. http://www.arb.ca.gov/DRDB/MBU/CURHTML/R403.PDF

xii. http://www.arb.ca.gov/drdb/ker/curhtml/r402.pdf

xiii. http://www.arb.ca.gov/DRDB/AV/CURHTML/R1140.PDF

xiv. www.baaqmd.gov

xv. http://www.baaqmd.gov/Divisions/Engineering/Application-Forms.aspx

xvi. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Rules%20and%20Regs/reg%2008/rg0843.ashx

xvii. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Rules%20and%20Regs/new%20versions/rg0201.ashx

For additional information on auto body and paint shop pollution prevention practices and a list of available publications contact:

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