Powerwashing and Other Water-based Blasting

Guidance for generators of blasting waste

What is water-based blasting?

Water-based blasting is the use of steam or pressurized water (with or without added abrasives) to remove paint or other coatings, oils or grease, or corrosion from a surface, or to prepare a surface for a new coating. Often called *hydroblasting* or *powerwashing*, it includes any type of surface preparation by a stream of water.

Air-based blasting techniques using compressed air or other gas with or without abrasives also are used for surface cleaning and preparation. Air-based methods are commonly called sandblasting. For guidance on air-based blasting, visit the Minnesota Pollution Control Agency (MPCA) at http://www.pca.state.mn.us/publications/w-hw4-39a.pdf to view MPCA hazardous waste fact sheet #4.39a, Air-based Blasting.

Environmental concerns

Two main areas of environmental concern are associated with water-based blasting:

1. Process wastewater discharges
2. Debris management and disposal

Water-based blasting can elicit other potential environmental concerns, including noise and fugitive dust emissions from dry material. This fact sheet offers guidance regarding the primary Minnesota requirements administered by the MPCA.

Contractors using water-based blasting on structures that might bear lead paint may also be subject to federal requirements of the U.S. Environmental Protection Agency (EPA) under the Renovation, Repair, and Painting Rule (RRP). (Lead paint is any paint that contains 0.5% or 5000 parts per million total lead or contains one milligram or more lead per square centimeter of surface area.) For questions about RRP requirements, contact the EPA. (See *More information* on page six.)

Water-based blasting also raises concerns about employee safety as to impacts to the respiratory system, skin, and hearing. For guidance about protecting employees during water-blasting operations, visit the Minnesota Occupational Safety and Health Administration at http://www.doli.state.mn.us/mnosha.asp.

Process wastewater discharges

Process wastewater discharge-control requirements differ depending on whether you are performing water-based blasting at a permanent site (e.g., a factory or repair shop) or at a temporary site away from your base of operations (e.g., a bridge, house, or equipment outside at a remote site). Requirements for managing process wastewater at permanent and temporary sites are discussed below.

Permanent site

If you perform water-based blasting at a permanent site, capture the resulting wastewater. Do not allow any to discharge to the ground or to surface water such as a ditch, river, or lake without a permit. If available, you may be able to discharge the process wastewater to a Publicly Owned Treatment Works (POTW). To have this option, you must first evaluate the wastewater to determine whether it is hazardous and inform the POTW of its status. Then you must give notice of your intent to discharge and receive permission from the POTW before you discharge. Your POTW may require you to test for additional parameters or to apply pretreatment standards. See *Testing and evaluation*, page three, for more information about evaluating to determine whether a waste is hazardous.

If you are not connected to a POTW, you may still be able to discharge non-hazardous wastewater, but you may need to get a National Pollutant Discharge Elimination System (NPDES) and/or State Disposal System (SDS) Permit from the MPCA. Before discharging any wastewater, contact MPCA Industrial Wastewater Permit staff to determine whether you will need a permit. If allowed, discharge would likely be to one of the following:

- A surface water body
- A septic system – called a *subsurface sewage treatment system* (SSTS)
- The land as an industrial byproduct – called *land application*

Note: EPA regulates an SSTS receiving process wastewater as an Underground Injection Control Well.

At this time, the MPCA is allowing non-hazardous process wastewater from automatic vehicle washing facilities to be land applied as an industrial byproduct without an NPDES or SDS Permit or other site-specific MPCA approval. Limited amounts of non-hazardous process wastewater from manual vehicle washing facilities and from other water-based blasting processes may be allowed to be land applied as an industrial byproduct without a permit, but requires MPCA approval. To apply for approval, complete and submit MPCA water quality form #7.14, Notification to Land Apply Industrial Byproduct without a Permit, at http://www.pca.state.mn.us/index.php/view-document.html?gid=6794.

For more information on land application of vehicle wash water and the required prior wastewater characterization and site selection criteria, visit the MPCA at http://www.pca.state.mn.us/index.php/view-document.html?gid=13641 to view water quality fact sheet #2.08, Land Application of Manual Vehicle Wash Wastewater.

Temporary site

At a temporary site, you may use water-based blasting on a surface that might generate hazardous debris or wastewater only if you capture all wastewater and spray. See Table 1 for management options. See *Testing and evaluation*, page three, for information about hazardous waste evaluation.

Table 1: Managing process wastewater discharges from temporary water-based blasting sites

If you generate a non-hazardous, non-polluting wastewater or you capture all process wastewater &:	Then, to manage process wastewater discharges:
Without using chemicals, wash only non-hazardous contaminants in concentrations low enough to not pollute drinking water (e.g., powerwashing buildings where the surface will not be removed or eroded by washing)	Filter the wastewater with absorbent socks or other filter material, such as sand. Manage captured solids as solid waste. You may allow the filtered wastewater to infiltrate into vegetation or a permeable surface, such as gravel. If you are located in an urban area where sufficient permeable surface is not available, document the circumstances and seek approval from the stormwater collection system owner (usually the city) to discharge the filtered wastewater to the stormwater collection system.
Remove only solid material for which you have evidence showing it is non-hazardous (e.g., non-hazardous paint removal or exposed aggregate pavement installation)	
Wash a surface carrying an oily or chemical residue that may pollute drinking water but is not a hazardous waste, or use non-hazardous cleaning chemicals (e.g., washing tank interiors or using a release agent)	Capture the wastewater and water spray. Do not allow any to infiltrate into the ground or discharge to surface waters. Manage wastewater as an industrial liquid waste or industrial by-product (IBP) under the guidelines discussed above for permanent sites.
Use a hazardous chemical or remove solid material or liquid residue that has not been evaluated or is known to be hazardous waste (e.g., unknown coating or lead paint removal)	Capture the wastewater and water spray. Do not allow any to infiltrate into the ground or discharge to surface waters. Manage both wastewater and solids as hazardous wastes unless you have evaluated and have evidence showing they are non-hazardous.

Testing and evaluation

Although lead is the most common contaminant that may cause water-based blasting debris and process wastewater to become hazardous wastes, it is not the only one. Both the material to be blasted and a blasting abrasive may contain other metals – any of those listed in Table 2 – that may cause the debris and process wastewater to be a hazardous waste. Toxic solvents and strippers applied to the material before blasting may also cause the resulting debris and process wastewater to be hazardous even if the material did not contain any heavy (Table 2) metals.

If you do not evaluate both the material to be blasted and the blasting abrasive, or the resulting debris and process wastewater, you must assume the debris and process wastewater will be hazardous and manage them as hazardous wastes.

Remember: paint that does not contain enough lead to be considered 'lead paint' (0.5% or 5000 ppm total lead or 1 mg/cm^2 lead) may still produce debris and process wastewater that are hazardous wastes because of their lead content. All 'lead paint' will generate hazardous waste debris; the process wastewater may be hazardous.

Table 2: Totals thresholds for metal-containing blasting debris

Metal	Percent		Parts per million
Arsenic	0.01%	or	100 ppm
Barium	0.2%	or	2000 ppm
Cadmium	0.002%	or	20 ppm
Chromium	0.01%	or	100 ppm
Lead	0.01%	or	100 ppm
Mercury	0.0004%	or	4 ppm
Selenium	0.002%	or	20 ppm
Silver	0.01%	or	100 ppm

Acceptable test methods

To determine whether blasting debris and process wastewater will be hazardous, you may use any method that will **accurately** measure the total concentration of the Table 2 (heavy) metals. You may not use field 'swab' tests, such as those involving sulfide or porphyrin reactions, even if the EPA allows use of those tests to meet RRP Rule requirements.

Commonly used acceptable test methods include:

- **Acid extraction or total metals**
  Use an analytical laboratory for this totals test that measures the total concentration of Table 2 metals in a coating.
- **Toxicity Character Leaching Procedure (TCLP)**
  Use an analytical laboratory for this definitive hazardous waste evaluation test, which may also be used to show that a paint is not lead paint. Multiply the results of this test by 20 when comparing to the Table 2 Totals thresholds. When assessing TCLP results of wastewater samples, divide the Totals thresholds above by 20 when comparing to the test results.
- **X-ray fluorescence (XRF)**
  This test uses a portable or laboratory-based radiation source to irradiate the sample material and then measure the spectrum of X-rays it emits. Ensure that the XRF unit and setting you use can detect all of the Table 2 metal constituents that may be contained in the material to be blasted. Take care to calibrate and operate the unit according to the manufacturer's recommendations for the surface and substrate you are testing, and perform and document daily verification tests for each metal for which you are testing.

Selecting an analytical laboratory

The Minnesota Department of Health (MDH) administers a voluntary laboratory certification program. You are not required to use a specifically accredited or licensed analytical laboratory; however, contact the MDH or MPCA if you would like assistance finding an MDH-certified laboratory (see *More information,* page six).

If you contain and collect all of the blasting debris and process wastewater, you may do the blasting first and then test the debris and process wastewater for all the metals listed in Table 2. Until you have tested and can document they are not hazardous, assume the debris and process wastewater are hazardous and manage them as hazardous wastes. Evaluate debris and process wastewater from each material separately; do not average results or mix blasting debris or wastewater from different items and then test.

Managing and disposing of debris and process wastewater

Contain, collect, accumulate, and ship off site for proper disposal all debris generated by water-based blasting. All blasting debris is regulated waste. You may not stockpile it outside of a container, abandon it on any site or use it for fill for driveways, parking lots or anywhere else. Manage all process wastewater generated by water-based blasting according to the directions discussed in Table 1.

1. **Contain all debris**
   Keep blasting debris within tenting, tarps, or other protective containment. If any debris escapes, stop blasting immediately. Right away, collect the debris from unprotected vegetation, grass, soil, parking lots, streets, or other parts of the building you are blasting and then adjust or extend your containment.
2. **Collect the debris**
   Collect all debris from your containment area by the end of each working day.
3. **Accumulate the debris properly**
   Accumulate hazardous waste blasting debris in closed, compatible containers labeled with the words "Hazardous Waste" and a description of the waste (e.g., "Hazardous Waste Blasting Debris"). Secure any hazardous waste blasting debris containers that will not be transported off site at the

end of the working day. Accumulate non-hazardous blasting debris in closed containers or other compatible units that will protect it from precipitation and prevent a release of the debris to the environment.

4. **Ship the debris off site for proper disposal**
   Except for lead paint debris from blasting a residence, hazardous waste blasting debris must be shipped for disposal to a permitted hazardous waste Treatment Storage or Disposal Facility (TSDF), or, if you are eligible, to a Very Small Quantity Generator Program (VSQGCP). If you are a contractor water blasting at a temporary site, you may transport your hazardous waste blasting debris back to your base of operations for consolidation and subsequent shipment to a TSDF or VSQGCP for disposal under the MPCA contractor policy. Hazardous waste blasting debris may be recycled as a feedstock provided you follow hazardous waste feedstock requirements.

   Contractors may be able to dispose of lead paint debris from blasting a residence at certain municipal solid waste landfills in Minnesota. Contact the landfill first. The landfill operator has the option to reject the material. Contractors need not count lead paint debris from residences towards their regulated hazardous waste generator status. Homeowners who remove lead paint themselves must manage it as a household hazardous waste. Lead paint debris from any other structure must be disposed of as a hazardous waste.

   Manage non-hazardous blasting debris as an industrial solid waste. If you believe the debris may have a beneficial use, you must get approval from the MPCA for your proposed use of that specific material before you reuse it. You may not reuse blasting debris as new blasting abrasive without prior review and approval by the MPCA.

Table 3: Resources

For information on	See
VSQGCPs and programs	*VSQG Collection Program Requirements for Generators* http://www.pca.state.mn.us/publications/w-hw2-51.pdf
Contractor policy	*Managing Hazardous Waste Generated by Construction and Service Contractors* http://www.pca.state.mn.us/publications/w-hw3-11.pdf
Recycling – hazardous waste feedstocks	*Recycling Hazardous Waste* http://www.pca.state.mn.us/publications/w-hw2-42.pdf
Residential lead paint waste disposal	*Residential Lead-Paint Waste Disposal* http://www.pca.state.mn.us/publications/w-hw4-41.pdf

Using blasting additives

Various products on the market claim to prevent blasting debris from being hazardous when mixed into the blasting abrasive before use or into the resulting debris after blasting is completed. Although Minnesota allows the use of these products, you must still be able to document that the resulting waste is non-hazardous. Due to the inherent variation in paint and abrasive mixtures, you will most likely need an analytical analysis of the final waste mixture to document that it is non-hazardous. Note that the treating effect of some of these products may be temporary. If your treated waste re-exhibits a hazardous waste characteristic at any time before final disposal, you remain fully responsible for managing it under full hazardous waste requirements. Regardless of the debris status at the time of disposal, you remain liable under the Federal and State Superfund laws for any contamination the debris may cause after disposal.

If you intend to treat your debris after blasting, you must contain, collect, and accumulate the debris in full compliance with the hazardous waste requirements discussed in this fact sheet before treating it.

More information

Guidance and requirements in this fact sheet were compiled from multiple Minnesota Statutes and Rules, including Minn. Stat. §116 and Minn. R. Chapters 7001, 7011, 7025, 7035, and 7045, and incorporates regulatory interpretation decisions made by the MPCA on November 9, 2011. Visit the Office of the Revisor of Statutes at https://www.revisor.mn.gov/pubs to review the Minnesota Statutes and Rules directly.

Your metropolitan county and the MPCA have staff available to answer waste management questions. For more information, contact your metropolitan county hazardous waste office or your nearest MPCA regional staff. For information about blasting waste and toxicity reduction and alternatives to water-based blasting, contact the Minnesota Technical Assistance Program (MnTAP).

Metro County Hazardous Waste Offices

Anoka 763-422-7093
Carver 952-361-1800
Dakota 952-891-7557
Hennepin 612-348-3777
Ramsey 651-266-1199
Scott..... 952-496-8475
Washington..... 651-430-6655
Websites ..... http://www.co.[county].mn.us

Minnesota Department of Health

Statewide 651-201-5200
Website ..... http://www.health.state.mn.us

Minnesota Technical Assistance Program

Toll free..... 1-800-247-0015
Metro 612-624-1300
Website ..... http://www.mntap.umn.edu

Minnesota Pollution Control Agency

Toll free (all offices)..... 1-800-657-3864
Brainerd.....218-828-2492
Detroit Lakes 218-847-1519
Duluth 218-723-4660
Mankato 507-389-5977
Marshall 507-537-7146
Rochester 507-285-7343
St. Paul 651-296-6300
Willmar 320-214-3786
Website .....http://www.pca.state.mn.us

Small Business Environmental Assistance

Toll free 1-800-657-3938
Metro 651-282-6143
Website http://www.pca.state.mn.us/sbeap/

U.S. Environmental Protection Agency

RRP Program.....1-800-424-LEAD [5323]
Website .....http://www.epa.gov