



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



C. HEIDI GREETHER
DIRECTOR

RECOMMENDATIONS FOR ABRASIVE BLASTING OF WATER TOWERS AND OTHER STEEL STRUCTURES

PURPOSE

The purpose of this document is to provide recommendations for the removal, containment, and disposal of paint and other wastes generated during abrasive blasting operations on water towers, or similar steel structures (hereafter known as structures). The recommendations are designed to minimize the impact of abrasive blasting activities on the surrounding environment, to control nuisance conditions, and to ensure compliance with environmental requirements.

Also, recognizing that wastes generated during blasting operations may be hazardous wastes under State and Federal law (due to metals such as lead, chromium, cadmium, or organics present in paints), these recommendations will help to ensure that abrasive blasting operations are conducted in compliance with these particularly complex laws.

GENERAL REQUIREMENTS

Wastes regulated under Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), Part 111, Hazardous Waste Management of the NREPA, and Part 31, Water Resources Protection of the NREPA, cannot be placed onto the ground, or introduced into surface or groundwaters except in conformance with these Parts and with approvals or permits as required under these laws. Therefore, any blasting wastes reaching the soils or waters are unpermitted discharges and potential violations of Parts 115, 111, and 31 of the NREPA. In addition, the discharge of wastes into the environment may violate Part 55, Air Pollution Control of the NREPA, and could subject the property owner and contractors to the remediation conditions and penalties of Part 201, Environmental Response of the NREPA. Recognizing this, the following is recommended:

Equipment and Materials: Best available control technology should be employed to minimize adverse environmental impacts and airborne nuisance conditions resulting from abrasive blasting of structures. The abrasive blasting equipment employed should provide total containment of dust and wastes generated during the blasting operation. The blasting abrasive used should be a low-dusting abrasive.

Background: Before beginning the abrasive blasting operation, background soil concentrations of metals and organics must be established. Background areas are those areas not previously impacted by blasting or paint residues. This shall be done by representatively sampling beneath the structure (if not previously impacted) and in areas radiating out from the structure where any fugitive wastes may migrate during blasting. A minimum of four discrete samples should be taken to account for variability of naturally occurring soil constituent levels. Additional sampling may be required to adequately establish background concentrations of constituents depending on the size of the area affected. Appropriate procedures may be obtained from the Michigan Department of Environmental Quality's (MDEQ) "Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria" dated 2002.

Containment During Blasting: All wastes including paint chips, abrasive materials, dust, mist, water, and other airborne material (hereafter known as wastes) must be prevented from entering the environment, contained, and collected for proper disposal. This should be accomplished by completely enclosing the portion of the structure being abrasively blasted with tarpaulins or other suitable material. Enclosures must, at a minimum, meet the following conditions:

1. Tarpaulins or other suitable material shall be tightly secured at the seams. Burlap or other open web material that would allow wastes to escape is not acceptable.
2. Tarpaulins or other suitable material must extend to the ground level or to the level of a solid work platform and must be fastened securely to the ground or platform to prevent lifting by the wind.
3. Seams or overlaps between tarpaulins or other suitable material must be secured along the length of all seams or overlaps to prevent the escape of wastes from the enclosed area.
4. Ground cloths or solid platforms must be placed under the enclosed work area.
5. If wind direction changes and/or the wind velocity is too great to allow effective containment of wastes, blasting operations must cease until that time in which proper wind direction returns and/or wind velocity is reduced to allow effective containment.
6. Whenever the containment structures are not containing waste as expected, blasting shall cease until corrections are made.
7. If wet or water abrasive blasting techniques are employed (although not encouraged due to difficulty in containing water), all runoff water must be contained and must not be allowed to enter either directly or indirectly any storm sewer inlet, waterway, surface water, wetland, private property, groundwater, public property or soil.

8. If the structure is located over a waterway, surface water, or wetland, barges and/or temporary platforms should be placed beneath the enclosed area. To capture fugitive wastes, a downstream boom should be placed to retain any lighter debris for collection and proper disposal.

MANAGEMENT OF WASTES

General Requirements: All wastes, contaminated soils, and debris shall be collected daily after blasting has ceased or before the onset of inclement weather (e.g. rainstorm) and stored in containers located at the work site or taken to a permanent or temporary storage location that is properly licensed, until the waste and debris have been characterized through representative sampling and analysis. At a minimum, the following will apply:

1. The waste containers must be covered with waterproof lids or coverings, at all times, except when adding or removing other wastes, debris, and materials.
2. The waste containers must be stored in a secured area protected from inclement weather and shall not be located in a storm water run-off course or exposed to standing water. Containers shall not be stored immediately adjacent to roads, waterways, or drainage areas and shall be stored in a manner that would prevent them from being tipped over.
3. The waste containers must be labeled in compliance with applicable environmental laws.
4. The wastes collected and stored in the waste containers shall be representatively sampled and tested in accordance with the Toxicity Characteristic Leachate Procedure as found in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," being EPA publication SW-846, Update V, to determine if the collected wastes are hazardous wastes under State and Federal law.
5. After testing, hazardous waste shall be properly transported and disposed at a hazardous waste disposal facility licensed under Part 111 and solid waste shall be disposed at a landfill licensed under Part 115, or in accordance with permits and approvals granted under other applicable State and Federal environmental laws.
6. All contaminated soils and waters shall be remediated to applicable standards under Part 201 and disposed in accordance with applicable environmental laws. This may require re-testing of surrounding soils for comparison with the background samples.

7. In order to place abrasive blasting material outside a licensed disposal area, the material must be declared inert pursuant to Part 115. For assistance, please call Mr. Duane Roskoskey at 517-582-3445.

ADDITIONAL RECOMMENDATIONS SPECIFIC TO PART 115 OF NREPA

A generator must properly characterize their waste per Part 111 and the Federal Resource Conservation and Recovery Act. These laws require that a generator characterize their wastes to determine if those wastes are hazardous wastes. Wastes can be hazardous wastes due to high leachable concentrations of metals, such as lead, chromium, zinc, and cadmium, or organics. Because the possibility exists that abrasive blasting wastes will be characterized as hazardous wastes after generation has begun, owners of structures and their contractors should be in compliance with all Part 111 generator requirements, such as labeling, personnel training, containment and storage, emergency preparedness and prevention, and have a contingency plan as soon as abrasive blasting waste and contaminated soils are generated. If analytical results later confirm the waste is not hazardous waste, the hazardous waste labeling could be removed. If the owner or contractor decides not to comply with generator requirements as soon as blasting wastes are generated, and later analytical results confirm the waste to be hazardous, the owner and contractor will be in violation of all applicable generator requirements and subject to the enforcement provisions and penalties of Part 111.

If the owner or contractor has transported, sorted off-site, or disposed of blasting wastes that were later confirmed hazardous by testing, the owner and contractor would be in violation of the transporter and treatment, storage, and/or disposal requirements of Part 111. Therefore, the MDEQ does not advise that the blasting waste be removed to a nearby facility that is not licensed as a storage facility to receive hazardous wastes from off-site. Unless licensed under Part 111, a facility must not receive the waste until it is determined to not be a hazardous waste.

As stated earlier, wastes must be stored in a secure manner if they remain at the blasting site while testing is being conducted. The waste should, therefore, be characterized as soon as possible and adequate security and collection must be provided until the waste is removed. An option to avoid unsecured storage is to transport the material as a hazardous waste via a licensed hazardous waste hauler to a licensed hazardous waste disposal facility. Still another option would be for the owner or contractor to seek a permit under Part 111 for limited storage facilities or obtain a Part 111 business license for a transfer facility. A transfer facility would allow the owner or contractor to receive wastes from off-site for ten-day storage.

Part 111 does allow the use of chemicals added to the blast material prior to blasting to effectively immobilize hazardous waste constituents. This activity does not constitute hazardous waste treatment when reagents are added prior to use.

SUMMARY

The intent of these recommendations is to help ensure that abrasive blasting operations are conducted in a manner that is protective of the environment and human health and in compliance with environmental laws. However, their use does not in any way remove liability from the owner or contractor for resource damages resulting from the abrasive blasting operation.

In addition, owners and contractors must ensure their blasting operations are in compliance with all public health and worker safety laws and are urged to contact the appropriate agencies.

Additional questions should be directed to your appropriate Waste Management and Radiological Protection Division District Office.

Revision 1.3: This revision replaces all previous versions.

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