



Foundry Sand Reuse in Maryland

Best Practices & Regulatory Compliance

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3. Key Concepts and Definitions

What is Foundry Sand?

Foundry sand is high-quality silica sand used in metal casting to create precise molds and cores. In Maryland, this sand is generated by a diverse industrial base ranging from precision aerospace casting in Baltimore to architectural hardware in Hagerstown. After multiple reuse cycles, the sand is removed as **spent foundry sand (SFS)**. Maryland law increasingly recognizes this material as a viable "clean fill" or a valuable ingredient in recycling processes like asphalt production.

What is Beneficial Reuse?

In Maryland, beneficial reuse refers to the practice of diverting non-hazardous industrial byproducts from landfills to productive applications where they serve as functional substitutes for virgin materials. This process is governed by the Maryland Department of the Environment (MDE).

What is the TCLP Test?

The **Toxicity Characteristic Leaching Procedure (TCLP)** (EPA Method 1311) is the standard test required by MDE to verify that industrial waste is not hazardous. In Maryland, only non-hazardous SFS is eligible for the simplified "Clean Earthen Fill" exemption or inclusion in the Maryland Recycling Act (MRA) credit system.

4. Regulatory Guidelines

Maryland Department of the Environment (MDE)

The **MDE**, specifically the Land and Materials Administration, regulates the disposal and reuse of solid waste under the state's Environment Article.

Specific Legal Citations:

- **COMAR 26.04.07.04C(5)**: "Exemption for Clean Earthen Fill." This is the primary regulatory pathway for un-bound reuse in Maryland. To qualify, foundry sand must be rigorously characterized as uncontaminated "earthen material."
- **Maryland Recycling Act (MRA)**: MDE recognizes specific beneficial uses, such as incorporation into **asphalt**, as contributing to the state's mandated recycling rates.
- **COMAR 26.04.07.26**: Outlines the requirements for "Special Medical or Industrial Waste," which can include SFS if it does not meet clean fill criteria.

The MRA Survey

Foundry waste used in asphalt must be reported annually to MDE under the "Other Materials" category of the MRA Tonnage Reporting Survey. This ensures that both the foundry and the receiving county receive credit toward state recycling goals.

5. Reuse Applications and Maryland Examples

Application	Description	Maryland Context
Asphalt Additive	Used as fine aggregate in hot-mix asphalt.	Explicitly recognized for recycling credit under MRA guidelines.
Clean Earthen Fill	Structural fill for construction sites.	Potentially exempt under COMAR 26.04.07.04C(5) if certified.
Landfill Daily Cover	Alternative Daily Cover (ADC).	Widely used at the Quarantine Road (Baltimore) and Alpha Ridge landfills.
Road Sub-base	Foundation layer for transportation projects.	Subject to MDOT engineering specifications and MDE case-by-case approval.
Cement Raw Material	Silica source for cement production.	Potential for use in regional kilns (e.g., in neighboring PA or WV).

6. Environmental and Technical Considerations

Baltimore Tipping Fee Crisis (2025-2026)

- **Quarantine Road Landfill (Baltimore City):** The gate rate transitioned from \$67.50/ton to **\$135.00 per ton** effective November 1, 2025. This massive increase has

made beneficial reuse the only economically viable option for high-volume foundries in the city.

- **Baltimore County (Eastern Landfill):** Commercial rates have reached **\$125.00 per ton**.

Leaching mobility

Maryland's proximity to the Chesapeake Bay results in strict oversight of any material used in un-bound structural fill. Foundries must ensure that SFS used as "Clean Earthen Fill" meets MDE's conservative environmental screening levels for heavy metals and binder residues.

7. Funding, Grants, and Incentives

MRA Recycling Credits

Counties that meet or exceed their MRA recycling goals are often eligible for additional state funding for waste management infrastructure. Foundries that provide high-tonnage diversion data for asphalt or fill help their counties secure these state resources.

Maryland Department of Commerce

The state offers "Green Business" tax credits and "Manufacturing Expansion" loans for facilities that invest in waste-reduction equipment. Thermal sand reclamation systems, which reduce the total volume of SFS generated, may qualify for these industrial incentives.

8. Active Participants in Maryland

Major Foundries:

- **Danko Arlington, Inc.** (Baltimore) - Advanced non-ferrous and ferrous sand casting for defense and aerospace.
- **American Alloy Foundry, Inc.** (Baltimore) - Iron and specialty alloy casting.
- **Lacy Foundries LLC** (Baltimore) - Pattern development and iron/aluminum casting.
- **Vinnetti's Bronze Foundry** (Baltimore) - Specialized fine art and memorial casting.
- **Blaine Window Hardware** (Hagerstown area) - Specialized hardware casting.

Potential End-Users:

- **MDOT (Maryland Dept. of Transportation)** - Major consumer of aggregate for highway expansion.
- **Allan Myers** (Regional) - Major civil contractor and asphalt producer.
- **Gray & Son, Inc.** (Timonium) - Large-scale paving and aggregate supplier.
- **Baltimore City DPW** - Major user of Alternative Daily Cover (ADC) at city-owned landfills.

9. Success Story Highlights

Baltimore Harbor Diversion Loop: Precision foundries in South Baltimore, including **Danko Arlington, Inc.**, have successfully established "Clean Earthen Fill" programs for their spent mold sand. By certifying the material under COMAR 26.04.07.04C(5), these facilities provide a localized aggregate source for major infrastructure and port-related expansion projects. This diversion strategy allows foundries to bypass the Baltimore City gate fees (currently **\$135.00 per ton**) while contributing to the city's mandatory recycling rates under the Maryland Recycling Act (MRA). These initiatives demonstrate the economic and environmental value of integrating high-quality industrial byproducts into Maryland's urban development and port infrastructure.

10. Clear Business Case Summary

1. **Avoidance of Gate Fees:** Directly saving up to **\$135.00 per ton** in Baltimore City.

2. **Reduced Transport Burden:** Beneficial reuse sites (local construction/asphalt) are often within 10 miles of the foundry, compared to the long-haul disposal at regional landfills.
3. **Regulatory Security:** Utilizing the Clean Earthen Fill exemption removes the "waste" stigma, allowing the foundry to market SFS as a construction product.

11. Risk Management Overview

- **Pollution Standard Violations:** Foundries must ensure that un-bound sand does not impact local groundwater, particularly in the sensitive Chesapeake Bay watershed.
- **MRA Reporting Compliance:** Failure to meticulously track and report diverted tonnage to MDE can result in the loss of recycling credits for both the foundry and the county.

12. Step-by-Step Workflow for Foundries

1. **Comprehensive Characterization:** Conduct a full 40-parameter chemical profile and TCLP analysis.
2. **Clean Fill Verification:** Compare data against MDE "Clean Earthen Fill" benchmarks.
3. **MDE Notification:** Inform the MDE Land and Materials Administration of the intent to utilize the COMAR exemption.
4. **Partner Identification:** Secure a delivery contract with an MRA-recognized end-user (e.g., an asphalt plant).
5. **Annual Tonnage Reporting:** Submit the MRA survey documentation by March of each year.

13. Real Cost Savings Example

Scenario: A Baltimore City foundry generating 2,500 tons of sand annually.

- **Disposal Cost (at \$135.00/ton Gate Rate):** \$337,500
- **Reuse Program (Testing + MRA Reporting + Local Logistics):** \$75,000
- **Annual Savings:** \$262,500

15. General FAQ & Landfill-Specific FAQ

Q: Can I use foundry sand for residential landscaping in Maryland?

A: Only if it is certified as "Clean Earthen Fill" under COMAR 26.04.07.04. Most foundries focus on industrial/civil projects to minimize long-term liability.

Q: Are Prince George's County fees rising?

A: Yes, rates are projected to reach **\$90.00/ton** by July 2026, making sand reuse profitable across the entire Baltimore-DC region.

16. References

1. **COMAR 26.04.07:** Maryland Solid Waste Management Regulations.
2. **Maryland Department of the Environment (MDE):** MRA Tonnage Reporting and Recycling Resources.
3. **Baltimore City DPW:** Quarantine Road Landfill and Transfer Station Fees.
4. **Baltimore County:** Eastern Sanitary Landfill User Fees.
5. **Maryland Recycling Act Reporting:** Baltimore City MRA Guidance.
6. **EPA SMM Technical Guidance:** Foundry Sand in Transportation Applications.