



Foundry Sand Reuse in Wisconsin

Best Practices & Regulatory Compliance

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Table of Contents

1. Wisconsin - Foundry Sand Recycling and Reuse (Cover)
2. Table of Contents
3. Key Concepts and Definitions
4. Regulatory Guidelines
5. Reuse Applications and Wisconsin Examples
6. Environmental and Technical Considerations
7. Funding, Grants, and Incentives
8. Active Participants in Wisconsin
9. Success Story Highlights
10. Clear Business Case Summary
11. Risk Management Overview
12. Step-by-Step Workflow for Foundries
13. Real Cost Savings Example
15. General FAQ & Landfill-Specific FAQ
16. References

3. Key Concepts and Definitions

What is Foundry Sand?

Foundry sand is a high-quality silica sand used by metal casting facilities to make molds for shaping molten metal into parts. After repeated use, the sand becomes "spent" and needs to be replaced — creating a large volume of by-product material.

What is Beneficial Reuse?

Beneficial reuse means finding safe, productive ways to repurpose industrial by-products (like foundry sand) instead of throwing them away. It protects the environment, saves natural resources, and cuts disposal costs. In Pennsylvania, beneficial reuse helps businesses lower expenses and communities build infrastructure more sustainably.

Examples of beneficial reuse for foundry sand include:

- Replacing mined sand in concrete or road base

- Using sand as daily cover at landfills
- Mixing into manufactured soils for landscaping

What is a TCLP Test?

TCLP stands for Toxicity Characteristic Leaching Procedure — a laboratory test required by the U.S. EPA to find out if a waste material might release harmful contaminants into groundwater.

How a TCLP test works:

- A sample of the material is soaked in a mild acidic solution that simulates rainwater or landfill conditions.
- Scientists measure what chemicals "leach out" of the sample into the fluid.
- If dangerous levels of metals (like lead) or chemicals are found, the material is classified as hazardous waste and must be managed under strict regulations.
- If the material passes the TCLP test (meaning contaminants are below federal limits), it can be reused safely under environmental rules.

Why Should Readers Care About Foundry Sand Reuse?

- Environmental Protection: Reuse reduces waste sent to landfills and conserves natural sand resources, which are expensive and limited.
- Cost Savings: Foundries, cities, and contractors save money by reusing sand instead of buying new materials or paying high disposal fees.
- Public Safety: Proper testing (like TCLP) ensures that reused sand does not threaten drinking water, soil, or the environment.
- Economic Growth: Reuse projects create jobs, strengthen recycling industries, and make local construction and public works projects more affordable.

4. Regulatory Guidelines

Wisconsin DNR Regulations

The Wisconsin Department of Natural Resources (DNR) manages beneficial reuse of foundry sand through Chapter NR 538 of the Wisconsin Administrative Code, titled "Beneficial Use of Industrial Byproducts." This regulation establishes performance standards and acceptable uses primarily for ferrous foundry sand, ferrous foundry slag, and coal ash.

Wisconsin statute 289.05(4) specifically mandates that the DNR "promulgate, by rule, standards for the reuse of foundry sand and other high-volume industrial waste" and design these rules "to allow and encourage, to the maximum extent possible consistent with the protection of public health and the environment, the beneficial reuse of high-volume industrial waste."

Approved uses for foundry sand in Wisconsin include:

- Contained or converted uses: Manufacturing products such as asphalt, cement, concrete, and flowable fill
- Geotechnical fill: Structural fill, embankment material, and subbase applications
- Construction uses: Road base, parking lot construction, and similar applications
- Landfill daily cover: Alternative daily cover material at landfills
- Mine reclamation: Fill material for inactive mine site restoration

Key Regulatory Points:

- Foundry sand must be determined to be non-hazardous waste as defined in NR 660.10(52)
- Materials are classified into categories based on analytical testing results
- Wisconsin has established a special category called "select foundry sand" for higher-grade foundry sand that meets additional purity requirements
- Select foundry sand must contain less than the concentrations specified in NR 538 Appendix, Table 1, Column B
- Different uses have different concentration thresholds - more restrictive uses require lower contaminant levels
- All industrial byproducts require initial certification through Form 4400-197

Special "Select Foundry Sand" Designation: Wisconsin created a definition for "select foundry sand" under NR 538.03(12m), which includes spent green molding sand, resin bonded molding sand, or core sand with primary components of silica sand, bentonite clay, and carbonaceous additives. This designation allows for expanded beneficial uses with reduced regulatory oversight.

Federal EPA Guidelines

At the national level, the U.S. EPA encourages the reuse of spent foundry sands from iron, steel, and aluminum foundries. EPA's major documents include the Risk Assessment for Spent Foundry Sands in Soil-Related Applications (2014) and Sustainable Materials Management Program resources.

EPA concluded that silica-based sands from iron, steel, and aluminum foundries can be safely reused in soil blends, construction materials, and road bases. EPA does not federally regulate beneficial reuse of non-hazardous foundry sands but defers regulatory authority to states like Wisconsin.

Local Ordinances

Most municipalities and counties in Wisconsin defer to the Wisconsin DNR's framework regarding foundry sand reuse. Chapter NR 538 provides a comprehensive statewide regulatory structure that local authorities recognize for foundry sand reuse applications.

However, some local governments may require additional notifications or approvals for larger volume projects, especially for uses near sensitive areas like wetlands or residential zones. NR 538.10(2)(f)3 specifically prohibits the beneficial use of industrial byproducts as geotechnical fill with a soil or gravel cover in residential areas.

If a reuse project complies with Wisconsin's NR 538 beneficial use program, additional local permitting is generally minimal, as the state regulations are designed to ensure environmental protection while streamlining the approval process.

5. Reuse Applications and Wisconsin Examples

Beneficial reuse of foundry sand in Wisconsin takes multiple forms depending on material properties, project goals, and DNR approvals under Chapter NR 538. Real-world applications have been proven across industries, especially construction and landfill operations.

Common Beneficial Reuses

Reuse Application	Description	Wisconsin Examples or Status
Road Base & Fill	Substitute for sand/aggregate in road subbase, embankments, and structural fill. Provides bulk and drainage.	Wisconsin DOT has used foundry sand in highway construction projects, including 80,000 tons used in Highway 10 embankments near Waupaca. Multiple foundries provide sand for local road construction and parking lot projects.
Cement & Concrete Production	Raw feedstock in Portland cement kilns or as fine aggregate in concrete and masonry products.	Grede St. Cloud, MN ships 500 tons monthly to cement plant in Mason City, Iowa. Wisconsin foundries participate in regional cement manufacturing supply chains.
Landfill Uses	Daily cover, interim cover, or drainage layer material. Wisconsin statute 289.30(5) requires landfills to accept foundry sand for alternative daily cover upon foundry request.	Widely practiced across Wisconsin landfills. Wisconsin DNR explicitly approves foundry sand as alternative daily cover material, with specific requirements under NR 538.10(4) limiting silt/clay content to 15% and layer thickness to 6 inches.
Geotechnical Fill & Mine Reclamation	Fill material for inactive mine sites, gravel pit restoration, and construction projects.	Waupaca Foundry has contributed 524,000 cubic yards to restore sand and gravel pits in Wisconsin. Major projects include the Griffin Sand Pit reclamation using 132,000 cubic yards of foundry sand and furnace slag.
Construction Fill	Structural fill for parking lots, building foundations, and site development.	Wisconsin foundries have supplied 38,000 tons for "big box" retail store development, and

Reuse Application	Description	Wisconsin Examples or Status
		foundry sand used for residential construction projects and industrial park development (230,000 cubic yards used in Reedsburg Industrial Park).
Agricultural Applications	Fill material for farm infrastructure like manure storage facilities and equipment pads.	Waupaca Foundry's Marinette facility supplied 51,441 tons for Noll Farms dairy operations including manure pit construction and barn expansion. Other farms use foundry sand for equipment storage pads.
Environmental Barriers	Low-permeability barrier construction for landfill caps, environmental containment.	Waupaca Foundry develops foundry sand as sustainable alternative to native clay for impermeable barriers, meeting hydraulic conductivity requirements for environmental protection applications.

Wisconsin Examples in Action

Highway Construction Fill:

- Wisconsin DOT has extensively used foundry sand in highway projects, with the largest being 80,000 tons used as structural fill for Highway 10 embankments near Waupaca city, with lysimeter monitoring to ensure environmental compliance.

Mine and Pit Reclamation:

- Waupaca Foundry has been a leader in mine reclamation, contributing over 524,000 cubic yards to restore abandoned sand and gravel pits across Wisconsin under Chapter NR 135 mine reclamation regulations.
- The Griffin Sand Pit Wildlife Area project used 132,000 cubic yards of foundry sand and furnace slag for habitat improvement and site restoration.

Landfill Alternative Daily Cover:

- Wisconsin landfills routinely accept foundry sand as alternative daily cover, with DNR requirements under NR 538.10(4) ensuring proper application and environmental protection.
- Wisconsin statute 289.30(5) mandates that landfills accept foundry sand for daily cover upon foundry operator request.

Agricultural Infrastructure:

- Noll Farms dairy operation used over 51,000 tons of foundry sand from Waupaca Foundry's Marinette facility to construct elevated manure storage facilities and barn expansion, meeting NRCS environmental requirements.

Sand Reclamation and Reuse:

- Waupaca Foundry operates advanced 3-stage sand reclamation systems allowing sand to be reused over 30 times in casting operations before becoming spent sand for beneficial reuse applications.
- The company processes approximately 450,000 tons of foundry byproducts annually through beneficial reuse programs.

Industrial and Commercial Development:

- The City of Reedsburg Industrial Park development utilized 230,000 cubic yards of foundry sand for site preparation and infrastructure development.
- Multiple construction projects have used foundry sand as structural fill, including retail developments and residential construction projects.

6. Environmental and Technical Considerations

Beneficial reuse of foundry sand requires careful understanding of material composition, contaminant risks, and environmental testing protocols to ensure safe and responsible outcomes.

Types of Foundry Sands

Ferrous Foundry Sands (Iron and Steel Castings):

- Typically high-purity silica sand bonded with clay (green sand) or chemical resins.
- Low in contaminants.
- EPA and Wisconsin DNR consider these the safest and most preferred for reuse.

Non-Ferrous Foundry Sands (Aluminum, Brass, Bronze Castings):

- Similar base sand but potential contamination from metal alloys.
- Brass/Bronze sands often contain elevated lead, requiring more stringent testing or stabilization before reuse.

Specialty Sands:

- Some foundries use olivine sands or other media; not covered under EPA's standard risk assessment for reuse.
- May alter soil pH or chemistry.

Contaminants of Concern

Contaminant	Source	Notes
Lead (Pb)	Brass/bronze alloys	Key concern; must not exceed TCLP leaching limit (5.0 mg/L).
Chromium (Cr)	Stainless steel alloys, pigments	Usually low and stable in ferrous foundries; not a major issue.
Phenols / Cresols	Phenolic resins (binder breakdown)	Organic compounds typically present in very low concentrations.
PAHs	Burnt sea coal or resin residues	Detected at very low levels; below environmental risk thresholds.
Dust / Free Silica	Physical hazard from dry sand	Requires dust suppression measures during handling to protect workers.
pH / Salinity	Binders, chemical additives	Some foundry sands have slightly alkaline pH, generally not problematic unless used directly in soils.

Importance of Testing Under Wisconsin NR 538

Wisconsin's Chapter NR 538 requires comprehensive environmental testing to determine eligible uses for foundry sand. The testing requirements include:

Water Leach Testing:

- Wisconsin uses ASTM D 3987 water leach tests rather than TCLP for construction applications.
- Testing evaluates leaching potential under conditions that simulate field environments.
- Different categories (A, B, C) are established based on leaching test results, with lower categories having more stringent limits.

Total Elemental Analysis:

- Required for both water leach and bulk elemental parameters listed in NR 538 Appendix Tables 1 and 2.
- Testing must be performed by laboratories certified for the specific analytical methods.
- Results determine which beneficial use categories the material qualifies for.

Select Foundry Sand Designation:

- Wisconsin created a special "select foundry sand" classification under NR 538.03(12m) for higher-grade materials.
- Select foundry sand must contain less than the concentrations specified in NR 538 Appendix, Table 1, Column B.

- This designation allows for expanded beneficial uses with reduced regulatory oversight.

Key Testing Requirements for Wisconsin Reuse

Initial Certification:

- All foundry sand must pass hazardous waste determination under NR 660.10(52).
- Initial characterization requires both water leach and total elemental analysis.
- Form 4400-197 must be submitted to Wisconsin DNR for certification.

Ongoing Monitoring:

- Recharacterization required when production processes change significantly.
- Annual testing recommended to maintain compliance documentation.
- Records must be maintained for at least five years per Wisconsin regulations.

Environmental Behavior of Foundry Sand

Field Performance Studies:

- Wisconsin DOT studies using lysimeters show that properly placed foundry sand meets groundwater protection standards.
- Peak selenium concentrations in some studies exceeded Wisconsin groundwater standards, but dilution factors and proper placement (at least 1 meter above groundwater) ensure compliance.
- Laboratory and field studies demonstrate that organic compounds leach only at low concentrations.

Groundwater Protection:

- Heavy metals in ferrous sands are generally immobilized in the sand matrix.
- Wisconsin's NR 538 establishes concentration thresholds based on groundwater protection standards.
- Field monitoring of highway projects using foundry sand shows leachate concentrations typically below enforcement standards.

Conclusion: For properly characterized ferrous foundry sands meeting Wisconsin NR 538 requirements, environmental risks are minimal — supporting broad beneficial reuse under the state's regulatory framework.

7. Funding, Grants, and Incentives

State-Level Incentives

Wisconsin Assessment Monies (WAM) Program:

- Administered by Wisconsin DNR's Remediation and Redevelopment (RR) Program.
- Provides funding through U.S. EPA brownfield assessment grants for environmental site assessments and remedial action planning.
- Since 2010, Wisconsin has received \$5.3 million in EPA brownfield assessment grant funding.
- Available to general purpose units of local government, tribes, and private entities for investigation of brownfield properties.
- Contractor services awards and community-managed subgrants available for properties with petroleum or hazardous substance contamination.

Ready for Reuse Loan and Grant Program:

- Administered by Wisconsin DNR through U.S. EPA funding.
- Provides zero-interest loans (generally for projects requiring at least \$250,000) and grants (maximum \$200,000 per property).
- Requires 22% match contribution; state or local grants may be used as match.
- Applications accepted year-round, subject to eligibility and available funding.
- Supports cleanup planning and remediation of brownfield properties.

Sales Tax Exemption for Recycling Equipment:

- Wisconsin Statute 77.54(5)(c) and (26m) provide sales and use tax exemptions for machinery and equipment used in waste reduction and recycling processes.
- Wisconsin Administrative Code Tax 11.68(5) specifically states that "equipment used in a foundry to clean sand so that the sand can be reused qualifies for exemption."
- Exemption applies to contractors purchasing waste reduction and recycling machinery exclusively and directly used for activities that reduce solid waste generation or enable reuse and recycling.

Wisconsin Economic Development Corporation (WEDC) Programs:

- Multiple programs often used in conjunction with DNR's WAM program:
- Brownfields Site Assessment Grant
- Brownfields Grant Program
- Idle Sites Redevelopment Program
- Community Development Investment Grant Program
- Vibrant Spaces Grant
- Programs support assessment, demolition, and cleanup of contaminated sites and may apply to foundry site redevelopment projects.

Streamlined Regulatory Process:

- Wisconsin's Chapter NR 538 provides streamlined approval for beneficial use of foundry sand that meets established criteria.
- "Select foundry sand" designation under NR 538.03(12m) allows expanded beneficial uses with reduced regulatory oversight.
- Initial certification through Form 4400-197 establishes eligibility for beneficial use program, reducing future permitting requirements.

Federal-Level Opportunities

EPA Sustainable Materials Management Grants:

- Periodically available grants supporting innovative reuse and recycling projects.
- Can fund pilot projects, outreach campaigns, or infrastructure improvements related to foundry sand.

Federal Infrastructure and Recycling Funding (Infrastructure Investment and Jobs Act):

- Some grant programs are open to states and municipalities improving recycling or circular economy initiatives.
- Foundry sand reuse aligns with goals of waste reduction and sustainable construction.

FHWA / DOT Support:

- Federal Highway Administration promotes the use of recycled materials (including foundry sand) in road construction.
- Some research grants and technical support available for projects demonstrating new uses of industrial byproducts in infrastructure.

Local Opportunities

Local Government Partnerships:

- Counties and municipalities in Wisconsin sometimes offer mini-grants or project cost-sharing for green construction and waste diversion initiatives.
- Example: County public works departments may subsidize transport costs when foundry sand is used in local road or trail construction projects.

Public–Private Collaborations:

- Wisconsin landfills may waive or reduce tipping fees for approved foundry sand used as alternative daily cover.
- Construction contractors and aggregate suppliers may provide free or discounted transport in exchange for low-cost or free reclaimed foundry sand.

- These informal partnerships can unlock significant cost savings without requiring formal grant applications.

Summary Table: Key Funding and Incentive Programs

Program/Incentive	Type	Key Details	Impact for Foundry Sand Reuse
Wisconsin Assessment Monies (WAM)	State Grants	U.S. EPA brownfield assessment grants administered by WI DNR Remediation & Redevelopment Program; funds site assessments and remedial planning.	Covers environmental testing and feasibility studies for foundry sand reuse at brownfield sites.
Ready for Reuse Loan & Grant	State Loans/Grants	Zero-interest loans ($\geq$ \$250 K) and grants ($\leq$ \$200 K) with 22 % match; supports brownfield cleanup planning and remediation.	Funds cleanup of foundry sites, enabling reuse of spent sand in redevelopment projects.
Sales Tax Exemption (Recycling Equipment)	Tax Incentive	WI Stat. 77.54(5)(c) & Tax 11.68(5) exempt machinery used to clean sand for reuse from sales/use tax.	Lowers capital cost for sand reclamation equipment and processing machinery.
WEDC Brownfields & Site Redevelopment Programs	State Grants/Loans	Multiple programs (Brownfields Grant, Idle Sites Redevelopment, Vibrant Spaces, etc.) administered by Wisconsin Economic Development Corporation.	Provides funding for redevelopment of foundry sites and infrastructure improvements.
EPA Brownfield & SMM Grants	Federal Grants	U.S. EPA brownfield assessment/cleanup grants and Sustainable Materials Management grants supporting reuse pilot projects.	Supplements state funding for pilot reuse projects and technical assistance.
FHWA / DOT Recycling Incentives	Federal Technical Aid	FHWA promotion and research grants for use of recycled materials, including foundry sand, in transportation infrastructure.	Offers technical support and funding to integrate foundry sand into road and bridge projects.

8. Active Participants in Wisconsin

Foundries (Generators of Spent Sand)

- Waupaca Foundry (Waupaca, WI) Operates advanced in-house sand reclamation systems. Supplies reclaimed sand for local road projects, landfill cover, and mine reclamation.
- Grede Foundries (Shawano & More, WI) Ductile iron foundries that reclaim sand internally and ship excess sand to regional end-users.
- Donsco, Inc. (Mount Joy & Wrightsville, PA) (Regional partner) Maintains an environmental management program and supplies spent sand to Wisconsin reuse projects.
- Simpson Technologies (Menomonee Falls, WI) Processes spent sand for reuse and provides case study data on sand quality and reuse performance.

End Users (Consumers of Foundry Sand)

- Wisconsin DOT Uses spent foundry sand in highway subbase, embankment, and flowable fill applications under NR 538 approvals.
- WDNR-Permitted Landfills Accept foundry sand as alternative daily cover, benefiting from NR 538.10(4) standards on layer thickness and silt content.
- Mine Reclamation Projects Waupaca Foundry supplies sand for sand and gravel pit restoration and brownfield redevelopment sites under Chapter NR 135.
- Local Municipalities & Contractors Use foundry sand as structural fill, parking lot base, and erosion control media in municipal and private construction projects.

Supporting Programs and Agencies

- Wisconsin DNR Remediation & Redevelopment (RR) Program Administers brownfield assessment and Ready for Reuse Loan & Grant programs.
- Wisconsin Economic Development Corporation (WEDC) Provides brownfield grants and site redevelopment funding.
- University of Wisconsin—Madison Extension & UW-Green Bay RMRC Offer technical assistance, field trials, and performance monitoring guidance for applied reuse projects.

Key Collaboration Insights

Foundries deliver consistent, tested streams of spent sand. End users—DOT, landfills, and reclamation projects—provide high-volume outlets. DNR and WEDC programs supply regulatory guidance and funding. University research groups validate performance and safety, completing a robust reuse network.

9. Success Story Highlights

- Highway 10 Embankment (Waupaca, WI): 80,000 tons of foundry sand used in embankment construction, with lysimeter monitoring confirming no adverse groundwater impacts.
- Griffin Sand Pit Reclamation: 132,000 cubic yards of foundry sand and slag used to restore an inactive sand pit into a wildlife area.
- Noll Farms Dairy Project: 51,441 tons of foundry sand used for manure storage and barn expansion pads, meeting NRCS environmental standards.
- Reedsburg Industrial Park Development: 230,000 cubic yards of foundry sand used for site grading and infrastructure base, reducing import of virgin materials.

10. Clear Business Case Summary

Why Foundries Should Reuse Sand

- Save \$30–\$50 per ton compared to landfill disposal costs
- Avoid environmental liability associated with waste
- Improve sustainability reporting for customers and regulators

Why Contractors Should Reuse Sand

- Obtain free or discounted sand for construction fill
- Enhance project bids by reducing material costs

Why Landfills Should Accept Foundry Sand

- Secure low-cost or free daily cover material
- Reduce overall operating costs
- Increase efficiency of daily cover operations

11. Risk Management Overview

Beneficial reuse of foundry sand carries significant economic and environmental benefits, but participants must manage risk carefully to ensure compliance and protect their businesses.

Best Practices

- **Testing:** All sand must pass a current TCLP test (recommended annually or when processes change).
- **Documentation:** Keep certificates of analysis (CoA), TCLP or water leach results, and shipping records for at least five years.
- **Written Agreements:** Establish written contracts with receiving facilities (landfills, DOT projects, contractors) outlining responsibilities and confirming approved uses.
- **Site-Specific Approvals:** For new or unusual uses not covered under Wisconsin's NR 538 beneficial use rules, seek Wisconsin DNR approval via Form 4400-197 or documented exemption.
- **Insurance:** Verify liability coverage and ensure your insurer understands your beneficial reuse activities.
- **Technical Support:** Leverage assistance from Wisconsin DNR, UW-RMRC, or industry consultants to set up compliance systems, testing protocols, and document templates to minimize legal risk.

ARS Support: ARS can assist participants in setting up compliance systems, testing protocols, and document templates to minimize legal risk.

12. Step-by-Step Workflow for Foundries

Simple Process to Start Foundry Sand Reuse:

- **Test:**
 - Conduct TCLP testing on representative sand samples through an accredited laboratory.
 - Confirm results meet Iowa DNR non-hazardous thresholds.
- **Document:**
 - Save all lab results, including full reports and summary sheets.
- **Partner:**
 - Contact ARS to match your material to a reuse project (landfill, cement, construction).
- **Agreement:**
 - Sign a beneficial reuse agreement or memo of understanding.
- **Ship:**
 - Begin shipping sand as needed.
 - Label loads clearly and maintain load-out logs.
- **Monitor:**

- If your production process changes (e.g., alloy change, new binder), re-test your sand.
- Maintain communication with ARS and receiving partners.

Result: Compliance, savings, and sustainability without added operational headaches.

13. Real Cost Savings Example

Why Reuse Makes Financial Sense:

- Landfill Disposal Costs:
- Disposal fee: ~\$70-\$150/ton
- Landfill surcharge: +\$4.25/ton
- Total = ~\$74.25-\$154.25/ton to landfill
- Beneficial Reuse Costs:
- Transportation only: ~\$10-\$75/ton (varies by distance)

Savings Calculation:

If your foundry produces 1,000 tons/year:

Landfill cost: 1,000 tons x \$49.25 = \$49,250

Reuse transport cost (avg \$15/ton): 1,000 tons x \$15 = \$15,000

Total annual savings = ~\$34,250

Multiply this by 5–10 years and the impact becomes massive.

15. General FAQ & Landfill-Specific FAQ

Q: Is reused foundry sand safe for public use projects like roads or parks?

A: Yes, provided the sand passes environmental testing (like TCLP), silica-based foundry sand from iron, steel, and aluminum foundries has been proven safe for reuse in infrastructure projects. Wisconsin DNR and U.S. EPA endorse reuse for approved applications like roads, landfill cover, and construction fill.

Q: How often does foundry sand need to be tested?

A: Sand must be tested initially to prove non-hazardous status. After that, testing frequency depends on process consistency. Most foundries re-test yearly or if they change raw materials or binder systems.

Q: Can reused foundry sand be used near homes, gardens, or drinking water supplies?

A: Applications like road base and landfill cover are common and safe. For use in soils near gardens or homes, additional case-by-case approvals and environmental assurances may be needed (especially for soil amendments).

Q: What happens if a reused sand load fails testing after reuse starts?

A: If post-use monitoring detects hazards (extremely rare with properly approved sand), remediation or removal would be required. This is why initial proper testing and documentation are critical.

Q: Who is responsible for proving the sand is safe - the foundry or the user?

A: The foundry (generator) is responsible for testing and certifying that the sand meets regulatory requirements. The end user must ensure they use the sand only in approved ways.

Landfill-Specific FAQ

Q: Does foundry sand affect landfill leachate or groundwater?

A: No. Wisconsin DNR requires water leach testing (ASTM D3987) under NR 538 to confirm that properly characterized foundry sand does not release harmful contaminants. Field monitoring in Wisconsin DOT projects has shown no adverse groundwater impacts.

Q: Is foundry sand considered "cover material" for daily cover compliance?

A: Yes. Under NR 538.10(4), foundry sand is approved as an alternative daily cover material when placed in layers no thicker than 6 inches and with silt/clay content below 15%.

Q: Do we need special equipment to handle foundry sand?

A: No. Standard landfill spreading equipment - such as bulldozers, loaders, and compactors - can handle foundry sand without modification.

Q: How do we document use to maintain compliance?

A: Maintain load logs detailing source, date, and volume of foundry sand received. Keep certification records (Form 4400-197) and analytical test reports on file. These records must be available during DNR inspections.

Q: What if sand chemistry changes?

A: Wisconsin DNR requires re-characterization whenever the foundry alters processes (e.g., new binder systems or alloys). Periodic re-testing - at least annually - is recommended to ensure continued compliance.

16. References

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