



Foundry Sand Reuse in Connecticut

Best Practices & Regulatory Compliance

Abrasive Removal Services (ARS)

Kelley, Iowa

Phone: (515) 720-7081 | Email: team@abrasiveremovalservices.com

Table of Contents

1. Connecticut - Foundry Sand Recycling and Reuse (Cover)
2. Table of Contents
3. Key Concepts and Definitions
4. Regulatory Guidelines
5. Reuse Applications and Connecticut Examples
6. Environmental and Technical Considerations
7. Funding, Grants, and Incentives
8. Active Participants in Connecticut
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 (formally referred to as "casting sand" in Connecticut regulatory documents) is high-quality silica sand used in metal casting to create molds and cores. Connecticut's precision manufacturing sector—particularly in the Naugatuck Valley and Hartford corridors—generates significant volumes of spent sand that remains physically stable but is no longer suitable for internal casting loops.

What is Beneficial Reuse?

In Connecticut, beneficial reuse is the utilization of a solid waste in a manufacturing process to create a product or as an effective substitute for a commercial product. This practice is specifically designed to reduce the state's reliance on waste-to-energy (WTE) incineration and out-of-state landfilling.

What is the TCLP Test?

The **Toxicity Characteristic Leaching Procedure (TCLP)** (EPA Method 1311) is the mandatory protocol used to determine if spent sand is hazardous. In Connecticut, only sand characterized as non-hazardous is eligible for the "Special Waste" designation and subsequent beneficial reuse authorizations.

4. Regulatory Guidelines

CT Dept. of Energy and Environmental Protection (DEEP)

CT DEEP regulates spent foundry sand as a "**Special Waste**" (non-hazardous industrial solid) under the state's solid waste management framework.

Specific Legal Citations:

- **Connecticut General Statutes (CGS) Section 22a-209f:** Authorizes the Commissioner of DEEP to issue general permits and individual Beneficial Use Determinations (BUDs) for the reuse of solid waste.
- **CGS Section 22a-209d:** Provides a specific statutory exemption for "casting sands used as landfill cover," allowing for simplified diversion to permitted municipal landfills.
- **Section 22a-209-1 (Regs. Conn. State Agencies):** Outlines the foundational definitions and permitting requirements for solid waste facilities and special waste handling.

Approval Mechanisms

1. **General Permit (GP):** DEEP may issue statewide permits for specific high-volume materials.
2. **Beneficial Use Determination (BUD):** A case-by-case approval for specific generators and end-users. A formal DEEP BUD application is required for non-exempt uses like structural fill.

5. Reuse Applications and Connecticut Examples

Application	Description	Connecticut Context
Landfill Daily Cover	Used at permitted MSW landfills for odor control.	Specifically exempted and prioritized under CGS 22a-209d .
Road Sub-base	Foundation layer for transportation projects.	High potential in state-led highway expansion and bridge projects.
Asphalt/Concrete Additive	Fine aggregate in paving materials.	Viable for Connecticut's localized asphalt and pre-cast concrete markets.
Manufactured Soil	Blending with organics for landscaping.	Often used in regional brownfield remediation and industrial site capping.
Controlled Low-Strength Fill	Flowable fill for utility projects.	High demand in urban centers like Hartford and New Haven for trenching.

6. Environmental and Technical Considerations

The Connecticut Waste Crisis

Connecticut is currently facing a critical shortage of in-state disposal capacity following the closure of the MIRA Hartford waste-to-energy facility. This has resulted in:

- **Skyrocketing Disposal Costs:** Fees have transitioned from ~\$70/ton to over **\$135/ton**.
- **Logistics Challenges:** Much of the state's waste is now "long-hauled" to landfills in Pennsylvania or Ohio, increasing the carbon footprint and cost of disposal.

Leaching and Characterization

Because Connecticut relies heavily on groundwater and proximity to the Long Island Sound, DEEP requires rigorous characterization of "Special Waste." For un-bound structural fill, foundries must ensure sand meets the state's most conservative Remediation Standard Regulations (RSRs).

7. Funding, Grants, and Incentives

DEEP Recycling Business Grants

While primarily focused on municipal waste, DEEP occasionally offers grants for "Commercial and Industrial Waste Diversion" that support the procurement of recycling equipment for industrial manufacturers.

Sustainable Materials Management (SMM)

Connecticut's SMM programs encourage foundries to adopt "Circular Economy" practices. Facilities that implement sand reclamation can leverage these programs for technical assistance and recognition as "Green Manufacturers," which is increasingly valued in aerospace and defense supply chains.

8. Active Participants in Connecticut

Major Foundries:

- **The Taylor & Fenn Company** (Windsor) - High-quality ferrous (iron and steel) sand casting.
- **Sycast Inc.** (Hartford) - Precision aluminum casting and machining.
- **J.E.T. Corp** (Bridgeport) - Specialty bronze and aluminum sand foundry.
- **Atlantic States Cast Iron Pipe** (Regional service) - Ductile iron casting.

Potential End-Users:

- **MIRA Dissolution Authority (MDA)** - Significant user of Alternative Daily Cover (ADC).
- **O&G Industries** (Regional) - Major Connecticut civil contractor and asphalt producer.
- **Tilcon Connecticut** - Large-scale paving and aggregate supplier.
- **New Haven Solid Waste & Recycling Authority** - Infrastructure aggregate consumer.

9. Success Story Highlights

Hartford-Windsor Synergy: Precision manufacturing foundries in the Windsor industrial corridor, such as **The Taylor & Fenn Company**, have successfully partnered with regional landfills to provide non-hazardous casting sand for daily and intermediate cover. By utilizing the statutory exemption in CGS 22a-209d, these facilities avoid the skyrocketing MSW rates at regional transfer stations (which currently exceed **\$136.00 per ton**) and mitigate the logistical burden of out-of-state waste transport. These initiatives provide landfills with high-performance, low-cost cover material while ensuring that local industrial byproducts support the regional circular economy rather than adding to the state's waste crisis.

10. Clear Business Case Summary

1. **Avoidance of WTE Surcharges:** Saving up to **\$136.00 per ton** at current MIRA/MDA rates.
2. **Reduced Transport Burden:** Beneficial reuse sites are often 50–100 miles closer than the out-of-state landfills currently used for Connecticut waste disposal.
3. **Regulatory Streamlining:** Utilizing the CGS 22a-209d landfill cover exemption provides the path of least resistance for large-scale sand diversion.

11. Risk Management Overview

- **Hazardous Cross-Contamination:** Foundries casting leaded alloys must be extremely vigilant; accidental mixing of hazardous and non-hazardous sand can trigger massive liabilities under RCRA Subtitle C.
- **BUD Reporting Compliance:** Case-by-case BUDs require strict adherence to monitoring and annual tonnage reporting. Failure to report can result in the revocation of the reuse status.

12. Step-by-Step Workflow for Foundries

1. **Analytical Profiling:** Conduct a full 40-parameter chemical characterization, including TCLP.
2. **Exemption Verification:** Check if the intended use (e.g., ADC) fits the CGS 22a-209d statutory exemption.
3. **BUD Application:** If using for fill or as a product ingredient, prepare and submit a formal DEEP BUD request.
4. **Logistics Coordination:** Secure a hauler authorized to transport "Special Waste."
5. **Implementation:** Maintain daily diversion logs and annual characterization updates for DEEP review.

13. Real Cost Savings Example

Scenario: A Hartford-area foundry producing 2,000 tons of sand annually.

- **Disposal Cost (at \$136/ton MSW rate):** \$272,000
- **Reuse Program (BUD Fees + Testing + Local Logistics):** \$75,000
- **Annual Savings:** \$197,000

15. General FAQ & Landfill-Specific FAQ

Q: Can I use foundry sand for residential fill in Connecticut?

A: This is highly restricted and would require meeting the state's RSR soil-risk levels for residential zones; industrial reuse is the recommended path.

Q: Are tipping fees higher in New Haven than Hartford?

A: New Haven rates are currently around **\$122.60/ton**, while Hartford MIRA rates have reached **\$136/ton**, making reuse profitable statewide.

16. References

1. **Connecticut General Statutes § 22a-209f:** Beneficial Use of Solid Waste.
2. **Connecticut General Statutes § 22a-209d:** Materials Not Considered Solid Waste.
3. **CT DEEP:** Beneficial Use of Solid Waste Guidance and BUD Application.
4. **MIRA/MDA:** FY 2026 Adopted Disposal Fee Schedule.
5. **City of New Haven:** 2025-2026 Transfer Station Rates.
6. **EPA SMM Technical Guidance:** Foundry Sand in Transportation Applications.