

WHITE PAPER

Crushing the Cost of Medical Waste: Size Reduction Solutions for Vial and Ampoule Disposal

CRUSHING THE COST OF MEDICAL WASTE

Pharmaceutical, biotech, and diagnostics companies face mounting pressure to reduce both operational costs and environmental impact. One persistent challenge is the disposal of regulated medical waste (RMW), particularly glass and plastic vials containing residual liquids. Incineration and specialized landfilling of this waste are costly, energy-intensive, and increasingly incompatible with corporate sustainability goals.

Schutte Hammermill offers an in-house solution: the WA Series industrial hammer mill paired with a vibroscreen dewatering system. This combination reduces volume of waste by up to 90%, enables regulatory reclassification, and eliminates the need for costly off-site processing. The result? Reduced disposal costs, streamlined compliance, and tangible progress toward waste reduction goals.

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KEY TAKEAWAYS

- Schutte Hammermill's WA-36H system with vibroscreen enables **on-site size reduction of medical waste**, reducing volume by up to 90% and significantly lowering disposal costs.
- Crushed and dewatered waste can often be **reclassified from regulated medical waste (RMW) to non-hazardous solid waste**, streamlining compliance and reducing hauling requirements.
- The system meets CDC, OSHA, and state-level criteria for safe disposal, supporting **ESG goals** by diverting waste from incineration and landfill.
- **Compact, low-maintenance, and easy to operate**, the solution delivers fast ROI, often in under 18 months, and integrates seamlessly into existing waste handling processes.

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SINGLE USE WASTE: A COSTLY BOTTLENECK

Glass and plastic vials, ampoules, and single-use containers are a ubiquitous byproduct of pharmaceutical and laboratory operations. When these items retain liquid contents or are classified as biohazardous, they fall under RMW regulations that require treatment via incineration, autoclave, or specialized landfill—all expensive and carbon-intensive.

These costs are not limited to weight-based tipping fees. RMW handling incurs high costs per tub, per pallet, and per transport manifest. The bulkiness and fragility of glass vials further complicate logistics, increasing the number of hauls and regulatory steps required for safe handling.

SUSTAINABILITY AND COMPLIANCE PRESSURES

With ESG standards now embedded into corporate governance, medical manufacturers are seeking to reduce waste and improve sustainability metrics. Yet mixed or contaminated glass and plastic waste often falls outside the scope of recycling and circularity programs. The inability to separate, clean, and densify these materials on-site hinders progress toward zero-waste targets.

On-site size reduction and separation offer a proven path forward, transforming regulated waste into recyclable or low-cost, non-regulated

solids. Schutte Hammermill systems are engineered to meet these demands.

SCHUTTE HAMMERMILL WA SERIES: ENGINEERED FOR MEDICAL WASTE

The WA-36H industrial hammer mill is built for rugged performance, designed to process high-impact, abrasive materials like glass and dense plastics. When paired with a stainless-steel vibroscreen, the system can:

- Crush glass and plastic vials to dense, uniform particles
- Separate residual liquids from solids through vibration
- Reduce overall volume by up to 90%
- Render waste unrecognizable, meeting key declassification criteria

These features enable many users to reclassify RMW as non-hazardous solid waste, significantly lowering costs and simplifying disposal.

FROM REGULATED TO ROUTINE: DECLASSIFICATION PATHWAY

One of the most impactful benefits of this solution is the ability to achieve regulatory reclassification of waste material. In most jurisdictions, regulated medical waste (RMW) must be rendered non-infectious, unrecognizable, and safe for disposal before it can be downgraded to municipal solid waste (MSW) or other less-restrictive categories.

By crushing vials and separating residual liquids, the WA-36H system meets key criteria for:

- **Render unrecognizable:** Output no longer resembles its original form

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- **Elimination of free liquids:**
Dewatering screen separates fluids, reducing risk and weight
- **Densification:** Reduces the potential for scavenging or exposure

These transformations can enable facilities to shift from high-cost, high-regulation disposal channels to more affordable and less-regulated pathways. For companies operating in multiple states or countries, this flexibility is especially valuable in navigating complex and varied regulatory environments.

PROVEN ROI

The financial case is compelling. Even modest savings in disposal cost per ton result in rapid payback. The adjacent ROI calculator reveals that systems running a single 8-hour shift per day can recover capital costs in under 18 months. Ongoing savings are realized through:

- Lower per-ton disposal rates
- Reduced container and pallet usage
- Fewer transportation hauls
- Simplified compliance documentation

COMPACT FOOTPRINT, TURNKEY INTEGRATION

The complete system fits within a 40-foot layout and includes:

- 60 ft³ stainless steel hopper with integrated conveyor
- WA-36H hammer mill (150 HP recommended)

- Vibroscreen dewatering unit with liquid discharge
- Discharge chute for solids

Designed for easy integration into existing waste handling infrastructure, the is self-contained and can be integrated upstream of existing waste packaging or recycling streams.

OPERATOR-FRIENDLY, LOW MAINTENANCE

Maintenance is minimal, with wear part replacement estimates provided in the calculator. No high-skill labor is required to operate the system, and remote monitoring options are available. Stainless components ensure compatibility with pharmaceutical hygiene standards.

WHY ACT NOW

- Regulatory scrutiny on waste classification and incineration is increasing
- Sustainability commitments are creating pressure to show progress
- Landfill and hauling costs continue to rise

This is the moment for forward-thinking operations and sustainability leads to evaluate how in-house size reduction can drive both compliance and cost savings.

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READY TO REDUCE COSTS AND WASTE?

Access our free ROI calculator to how this system could reduce your disposal costs and environmental footprint, or contact Schutte Hammermill for a customized system layout and quote.

ABOUT SCHUTTE HAMMERMILL

Schutte Hammermill has been a leader in size reduction technology since 1928. With a commitment to innovation, quality, and customer satisfaction, we design and manufacture equipment that meets the evolving needs of industries worldwide. To learn more, visit www.hammermills.com.

Regulatory References:

- CDC Guidelines (2003): Medical waste may be disposed of as solid waste once rendered "non-infectious and unrecognizable" — *Guidelines for Environmental Infection Control in Health-Care Facilities*.
- OSHA 29 CFR 1910.1030: Requires that contaminated items be rendered unrecognizable and incapable of reuse — *Bloodborne Pathogens Standard*.
- California Medical Waste Management Act: Permits onsite treatment and reclassification when waste is no longer recognizable and contains no free liquids.