

Covestro LLC spends over \$17 million annually on disposal of hazardous waste materials generated at its U.S. facilities). But just because the waste is hazardous does not mean it can't be reused as a substitute for another material in a new market or product application. Before the Road Map, PSRA, the BE and LIPC faced significant challenges: complex regulations; insufficient knowledge of the regulations; and a start and stop approach to review ideas. So we made the Road Map to guide our review and ensure reuse ideas are compliant with legal requirements. Our new Road Map will make is easier for our colleagues and customers to *make their hazardous waste reuse ideas a reality* while facilitating Covestro's drive to circularity. As you'll see below, it starts with an idea, the idea goes through the review process and ultimately Covestro saves money in lower hazardous waste disposal costs.



Major Takeaways:

- Hazardous waste disposal is very expensive. It's legal but complicated to reuse it.
- Value of our innovation: all costs are in-house and benefits are in waste disposal savings and possible sale of waste for products
- Insight for innovation: no real "eureka!" moment; just had to get smarter to meet needs of colleagues, customers, and the market
- Sustainability: aims to reduce our hazardous waste footprint; targets triple bottom line People: Serves colleagues, customers, the industry, the market. Planet: Works to turn a negative good into a positive product. Profit: Will save money; helps rethink the utility and application of hazardous waste.

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Y Product used as a binder for recycled carpeting material to make composite siding and trim building products. No additional RCRA hazards.

The Business Case:

Bottom Line: Streamlined the regulatory process for our colleagues / customers to make hazardous waste reuse ideas a reality and facilitate Covestro's drive to circularity. Benefits: Anticipate meaningful cost savings on disposal or revenue generated by selling our hazardous waste for use in a product. Turn a negative cost and a burden into a positive product and an asset □ Wide range of internal and external customers.

Ripple Effect: anticipate it will incentivize other Covestro entities to develop similar hazardous waste to product road maps. **Circular:** key component of the circular economy is to transform our waste streams into a value proposition, i.e., a resource.

Example 1:

Applying the Road Map: TDI Residue Bitumen Mix as Additive in Flooring Cement (PM)

Customer Check:

Belter Tech: Mission to develop sustainable construction products from waste

Satisfies RCRA's Product Substitution:

Y Product used as an additive to partly replace aggregate in cement mixes used for flooring in commercial buildings and reduce the amount of cement used. No additional RCRA hazards.

EPA's Recycling Legitimacy Criteria:

Product similar to analogous raw material (aggregate) with limited processing as a suitable replacement with a guaranteed established market able to utilize.

Example 2: Applying the Road Map: HDI Residue as Binder for Recycled Carpet to Make Building Products (CA)

Customer Check:

• RISE Building Products: Mission is recycling and re-purposing synthetic fibers and polymer waste that would otherwise be sent to landfills.

Satisfies RCRA's Product Substitution:

EPA's Recycling Legitimacy Criteria:

Y Product similar to analogous raw material (binder) with limited processing as a suitable replacement with a guaranteed established market able to utilize. Increase recyclability and valuable ingredient.



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