

Durez Corporation Focuses on Hazardous Waste Reduction



Durez Corporation

Durez Corporation (Durez), a division of Sumitomo Bakelite North America, Inc., is a resin manufacturer located in Niagara Falls, New York. The production of different resins involves a range of chemical reactions, which take place in heated reaction vessels or kettles under atmospheric pressure or vacuum.

Challenge

The hazardous waste managed at Durez is distillate by-product from production kettles, spent solvent used for cleaning, and various other small streams. Approximately 92% of the waste is the distillate material which is sent to a permitted incinerator for treatment. Some of the resins that Durez produces utilize reactants which result in significant amounts of non-hazardous distillate waste. However, due to the current waste treatment set-up, most of the waste (hazardous and non-hazardous) is mixed together and increases the reported amounts of hazardous waste. If the non-hazardous component could be segregated and removed from the incinerator pathway, the annual amount of hazardous waste would decrease below a threshold that would save the company a significant amount in hazardous waste fees.

Durez had already implemented segregation of a portion of the non-hazardous waste, treating it separately from the mixed hazardous waste stream described above. Segregation of the remaining non-hazardous waste stream was not possible due to the lack of room and versatility of the current treatment system (system flush/cleaning between different batches and required sampling). In a previous NYSP2I project, it was determined the most effective process to be reverse osmosis (RO) plus activated carbon to manage Durez's waste. Pilot-scale separation tests were conducted to validate potential segregation options and economic analysis performed indicated a very favorable payback period.

Challenge

- Durez wanted assistance with the implementation of a viable, sustainable hazardous waste reduction process.

Solution

- NYSP2I partnered with Insyte Consulting (Insyte) to validate RO and activated carbon as cost effective approaches to reduce the amount of hazardous waste generated at Durez's facility.

Results

- Data obtained validates RO as an effective technology.
- Carbon tests indicated that carbon alone can cost-effectively filter the resorcinol distillate.
- Installing a production-scale carbon system to filter the resorcinol solution would allow for segregation and reduction of hazardous waste, with a payback of less than one year and saving Durez approximately \$50,000 annually over 5 years.
- It is estimated at Durez will reduce approximately 1,500 tons/year of hazardous waste reduced annually.

Solution

The New York State Pollution Prevention Institute (NYSP2I) partnered with Insyte Consulting (Insyte) to assist with further validation and implementation of a process to reduce hazardous waste generated at Durez’s facility. NYSP2I set up an on-site test using a high-pressure membrane system to provide Durez firsthand experience with RO technology and evaluate performance over extended periods. A supplemental test was performed to determine the feasibility of activated carbon alone (without RO). The goal of the RO and carbon testing was to determine whether resorcinol could be cost-effectively removed from the distillate stream to allow segregation of the non-hazardous material from the hazardous waste stream.

Results

Both RO and carbon alone were able to effectively separate resorcinol as cost effective approaches to reduce the amount of hazardous waste generated at Durez’s facility:

- The test runs performed by NYSP2I produced flux results similar to the smaller-scale tests performed in the previous project.
- 10% of RO concentrated resorcinol solution would need to be disposed of as non-hazardous waste.
- Carbon tests indicated that carbon alone can cost-effectively filter the resorcinol distillate, with lower initial capital costs and similar operating costs as compared to RO.
- Durez intends to install a production-scale carbon system with a payback of less than one year and approximately \$50,000 in savings annually over 5 years.
- It is estimated at Durez will reduce approximately 1,500 tons/year of hazardous waste reduced annually

“The NYSP2I team was great to work with. They used a cross-functional approach to help identify the areas in which they could provide the biggest impact. The knowledge and experience of the team was instrumental in developing a solution that was both practical and cost efficient.”

Barbara Pilmore
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