GREEN TECHNOLOGY ACCELERATOR CENTER

NYSP2I New York State Pollution Prevention Institute

CASE STUDY

NYSP2I Conducts Life Cycle Assessment (LCA) of an Industrial Fiber Drum

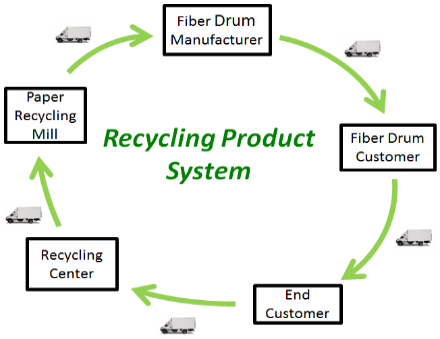
Challenge

Fiber drums are a type of industrial packaging used for transportation and storage of solid and liquid materials. Despite being produced using recyclable fiber, the drums are typically dispositioned to landfill at end-of-life (EOL). There is an opportunity to improve the environmental and economic impacts of these fiber drums by offering recycling services at EOL.

The New York State Pollution Prevention Institute (NYSP2I) at the Rochester Institute of Technology (RIT), scientifically studied the life cycle environmental and economic impacts of various distribution and material reclamation scenarios for an existing fiber drum. The goal of this project was to independently evaluate the scenarios in order to accelerate environmentally friendly and economically preferable systems, ultimately creating jobs and revenue in New York State.

Solution

NYSP2I performed a Life Cycle Assessment (LCA) comparing the environmental and economic impacts of an existing fiber drum product system, consisting of virgin fiber, to a product system consisting of recycled content fiber which is recycled at EOL (recycling product system). The life cycle phases considered included raw material extraction and production, assembly, transportation and EOL management.



Additionally, NYSP2I developed an interactive cost model used to examine transportation scenarios for recycling drum materials in various regions of the country.

Results

NYSP2I LCA results suggest:

- The recycling product system has significant environmental benefits over the existing fiber drum product system, primarily due to the use of recycled content fiber
- The recycling product system has a significant increase in cost due to transportation associated with offering recycling services to end customers

The cost model highlights regions of the United States with greater economic viability providing guidance for targeting recycling service efforts.

The LCA and economic analysis highlighted both the environmental benefits and economic challenges of a recycling product system. Collaboration with paper recycling mills may reduce the economic burdens associated with a recycling product system, ultimately enabling more environmentally friendly service offerings.

CHALLENGE

- Study the opportunity to improve the environmental and economic impacts of industrial fiber drums by offering recycling services for drums, otherwise dispositioned to landfill at EOL

SOLUTION

- NYSP2I performed an LCA and developed an interactive cost model comparing the environmental and economic impacts of an existing virgin fiber drum product system to a product system consisting of recycled content fiber, recycled at EOL

RESULTS

- The recycling product system results in significant environmental benefits over the existing fiber drum product system, primarily due to the use of recycled content fiber
- The recycling product system is not economically preferred due to transportation costs. Collaboration with paper recycling mills may reduce these cost impacts
- The interactive cost model developed by NYSP2I allows the manufacturer to examine regional viability of recycling product systems

NYSP2I PARTNERS

RIT · Rensselaer · University at Buffalo, The State University of New York · Clarkson University

New York Manufacturing Extension Partnership

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RIT Golisano Institute for Sustainability