CASE STUDY

New York State Pollution Prevention Institute

NYSP2I Supports AeroSafe Global with its Comparative LCA of Reusable and Single-Use Cold Chain Shipper Solutions

Challenge

AeroSafe Global (ASG), a provider of cold chain shipping solutions and logistics services, sought to compare the benefits of reusable ASG solutions to conventional single use cold chain shipping solutions, such as expanded polystyrene (EPS), polyurethane (PUR), and curbside recyclable (CRB) shippers.

Solution

ASG requested assistance from NYSP2I to update its previous ISO 14040/44 compliant life cycle assessment (LCA). For this project, NYSP2I worked with ASG and partnered with EarthShift Global to provide a more comprehensive review of ASG's reusable cold chain shipper solutions and their impact on the environment.

Results

- As a general trend, when comparing solutions and configurations, ASG's solutions tend to have 8-95% lower environmental impacts than single-use EPS across global warming potential (GWP), cumulative energy demand (CED), and freshwater consumption (FC) categories.
- Compared to single use EPS, PUR, and CRB solutions, ASG solutions result in a three to twelve-fold decrease in waste generation and a five to twenty-fold decrease in landfill waste generation.
- ASG has the opportunity to positively influence customer choice pertaining to shipping distance, mode of transportation, and return rates through outreach and education.

AeroSafe Global

AeroSafe Global (ASG) is a leader in biopharmaceutical cold chain solutions, providing Cold Chain as a Service (CCaaS) to biopharmaceutical companies, ensuring the safe and sustainable delivery, and effective use of pharmaceuticals to end-users. Its comprehensive services include high-tech reusable thermal packaging, supply chain outsourcing, temperature verification, and a cold-chain intel platform to improve performance and mitigate risk throughout the supply chain. Through its industry-leading reuse program, ASG delivers outstanding reliability and significant sustainability benefits that address the entire supply chain life cycle.

"Working with NYSP2I has been a truly beneficial partnership for AeroSafe Global. Their expertise and support played a pivotal role in our project to conduct a comparative LCA of our reusable and single-use cold chain shipping solutions. From the outset, NYSP2I demonstrated exceptional dedication and proficiency, assisting us in securing grant funding for the project. Furthermore, their efforts in creating a comprehensive case study showcased their commitment to not only support AeroSafe Global but also to highlight sustainable practices within the industry." ***Danner Hickman, AeroSafe Global***

Challenge

Traditionally, cold chain shipping solutions were designed to be single-use packaging and insulation systems. However, single-use packaging is under increased scrutiny due to a greater awareness of its environmental impacts during production, product excursions and container disposal. As pharmaceutical companies seek to reduce their overall environmental impact in their supply chain, reusable packaging solutions can help to address and support both packaging waste and carbon reduction initiatives.

Building on a previous ISO 14040/44 compliant LCA analysis, ASG sought to:

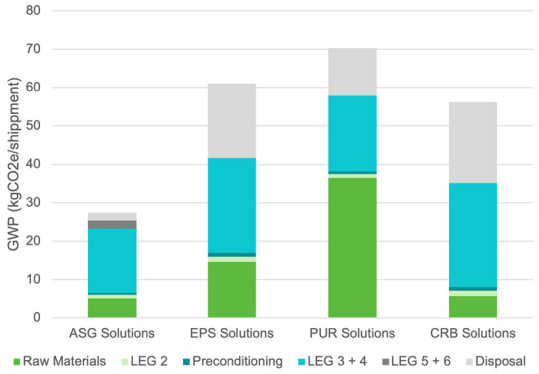
- Determine the environmental impact of its cold chain shipper solutions from cradle-to-grave.
- Compare the environmental impact of its cold chain shipper solutions to single-use standard shippers such as expanded polystyrene (EPS), polyurethane (PUR), and curbside recyclable shippers (CRB).
- Identify and measure how customer interaction with its shipper solutions affects ASG's environmental footprint, including the impact of shipper return rates and different transportation methods.

Solutions

ASG requested assistance from the New York State Pollution Prevention Institute (NYSP2I) to update its previous ISO 14040/44 compliant LCA. For this project, NYSP2I worked with ASG and partnered with EarthShift Global (EarthShift), to provide a more comprehensive review of ASG's reusable cold chain shipper solutions and their impact on the environment. The objective of the LCA study was to determine the overall environmental impact of ASG's cold chain reusable shipper solutions and integrated reverse logistics system using 17 of its most frequently used solutions as the basis for the study. The LCA study considered several environmental factors including global warming potential (GWP), cumulative energy demand (CED), freshwater consumption (FC) and total waste. The LCA also compared ASG's solutions to conventional, single-use, cold chain shipper solutions and provided recommendations to further improve on ASG's existing business model.

Results

- As a general trend, when comparing different shipment solutions and size configurations:
  - ASG shipments tend to have 8-95% lower environmental impacts than conventional EPS and PUR shipments across GWP, CED, and FC categories.
  - ASG shipments have 11-72% lower impacts than curbside recyclable (CRB) shipments.
- Compared to single-use EPS and PUR solutions, ASG solutions result in a three to ten-fold decrease in waste generation and a five to twenty-fold decrease in landfill waste generation.
- Compared to CRB solutions, ASG solutions result in a six to twelve-fold decrease in total waste and a nine to nineteen-fold decrease in landfill waste through a solution's overall lifecycle.
- Distance traveled, mode of transportation, and shipper return rates are customer-made decisions that can significantly influence the overall environmental impact of a shipping solution. ASG's high-tech packaging and associated supply chain services and expertise allow it to positively influence customer behavior such as switching to outbound ground transportation shipping, potentially resulting in a smaller overall environmental footprint.



Average contribution by shipping solution to GWP impacts, cradle-to-grave, baseline scenarios

Partners

AeroSafe GLOBAL
585-328-2140
info@aerosafeglobal.com
aerosafeglobal.com
460 Buffalo Road, Suite 200
Rochester, NY 14611

For more information please contact us:

585-475-2512
nysp2i@rit.edu
rit.edu/nysp2i
111 Lomb Memorial Drive, Bldg 78
Rochester, NY 14623

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