

Case Study:

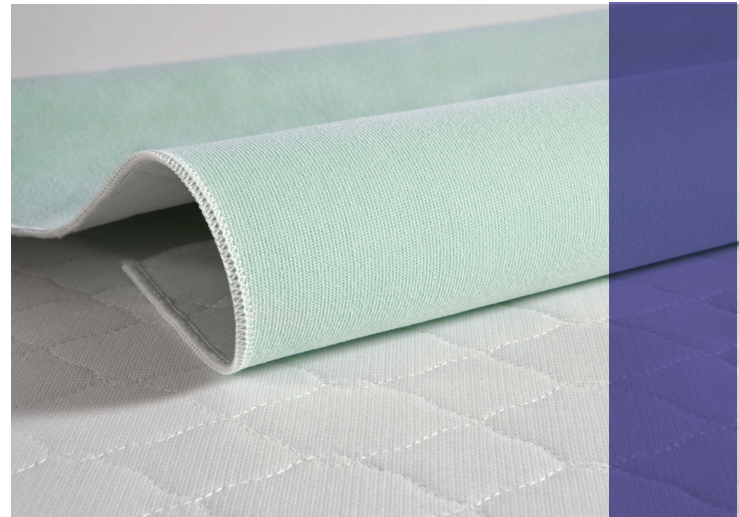
Incontinence Bed Pads Eco-Efficiency Analysis

Like most industries today, healthcare is increasingly concerned with its eco-footprint. Hospitals and other treatment facilities look for every opportunity to utilize more sustainable materials and processes, with an eye on both the environmental and financial bottom lines.

One subject of longstanding debate within the industry concerns the use of disposable versus reusable fabrics and textiles. The topic encompasses a range of considerations, from efficient resource use to total cost of ownership and waste generation.

In an effort to promote a greater understanding of the issue, Vintex Inc., a vertically integrated manufacturer of custom-engineered coated textiles, asked one of its suppliers, BASF Corporation, a leading global chemical company, to conduct a comprehensive eco-efficiency analysis (EEA) of reusable incontinence bed pads compared with disposable pads.

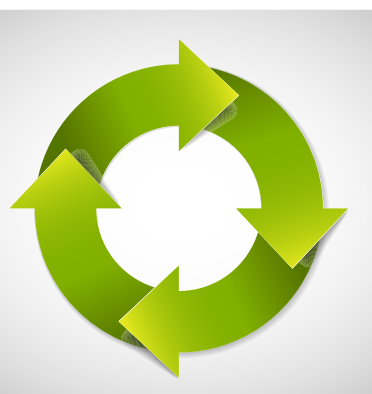
The EEA, a holistic life cycle assessment methodology, looked at the products' overall environmental impact in proportion to their relative cost-effectiveness. NSF International provided third-party validation of the Vintex/BASF analysis.



The Challenge

The scope of the EEA encompassed determining the complete life cycle of five different types of incontinence pads. The analysis examined all inputs (i.e. raw materials, energy used) and impacts associated with the manufacture, use, care and disposal of three reusable vinyl pads and two disposable pads. To objectively assess each alternative's environmental and financial impacts, a metric was determined. The EEA compared each bed pad's ability to, serve as barrier protection from liquid voids of up to 1,500 ml/day over 1,000 patient days and allow repositioning the patient on the bed.

Paul Helsby, Vice President of Sales and Marketing at Vintex, acknowledges that his company's position inside the value chain, along with the complexities associated with conducting an eco-efficiency analysis, posed the greatest challenges.



"We are a critical component within the supply chain, but we don't directly serve end users," Helsby says. "Additionally, we're not a supplier of disposable bed pads, so we needed to gather information about them in a fair and consistent manner." Vintex had no experience conducting

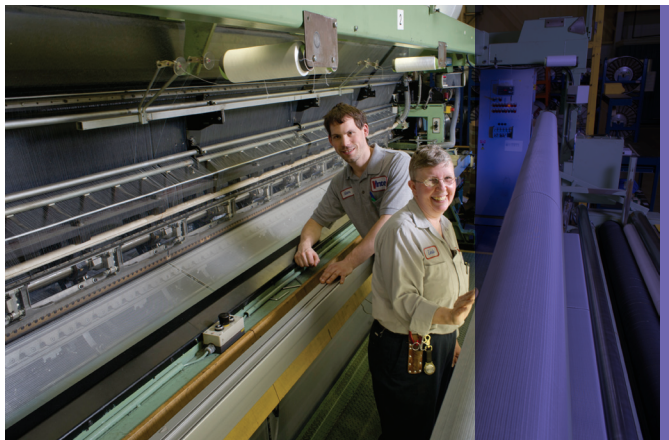
product life cycle assessments (LCAs), so prior to initiating its EEA, the company reviewed NSF's study verification process. Vintex also looked at LCAs conducted by several companies outside of its industry as well as those conducted by one of its suppliers, BASF. After completing its due diligence, Vintex determined that BASF, a market leader in sustainability, was uniquely qualified to conduct the eco-efficiency analysis.

The Process

"We sat down with Vintex and talked about our approach to measuring and communicating sustainability," explains Bruce Uhlman, senior sustainability specialist at BASF. "We initiated an open dialogue to understand their needs, and to discuss how important transparency was across Vintex's supply chain. An eco-efficiency analysis is a balanced way for measuring the relative sustainability of products and is

much more than a company's carbon footprint alone."

At its most fundamental level, eco-efficiency means "doing more with less." The EEA set the goals of clearly identifying the most efficient production processes of incontinence pads, including maximizing resource use while minimizing waste generation throughout the entire value chain.



The project team completed a cradle-to-grave evaluation of the five alternative products' key areas of environmental impact including:

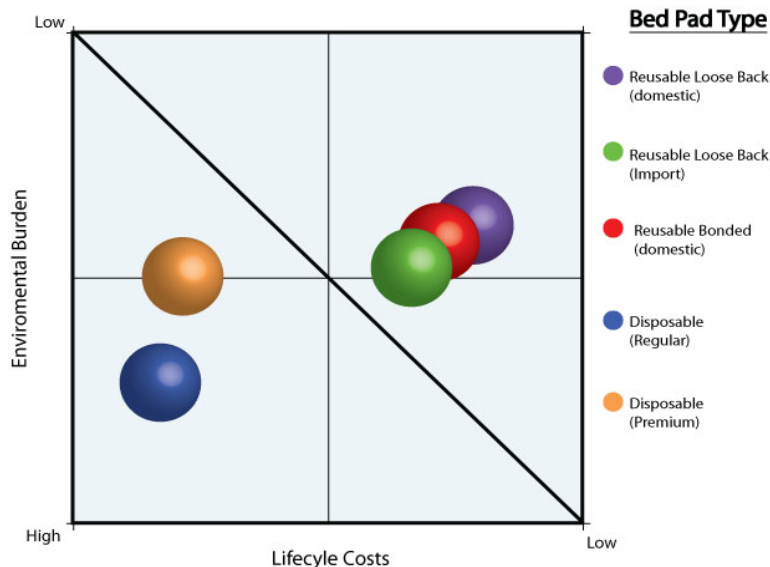
- Energy consumption
- Raw material consumption
- Land use
- Toxicity potential
- Occupational risk potential
- Emissions, including
 - Air
 - Water
 - Solid Waste

The EEA measured economic and environmental impacts over three distinct life cycle stages:

1. Production (including manufacturing), energy use, laundry chemicals and transport
2. Use, encompassing delivery to and use by the healthcare institution, in addition to laundering of the reusable bed pad products
3. Disposal, which included consideration of end-of-life options including landfill, incineration with heat recovery, municipal waste water treatment related to laundering reusables, and recycling



Vintex's eco-efficiency analysis made it possible to compile and assess a significant amount of data, including a look into the complexities of supply chains, and presented a clear comparison of different versions of a product designed to deliver the same customer benefit. The results showed that the reusable incontinence pads combined a lower cost of ownership with a lesser environmental impact than disposables.



The Results

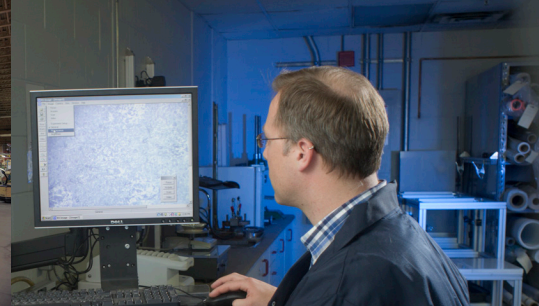
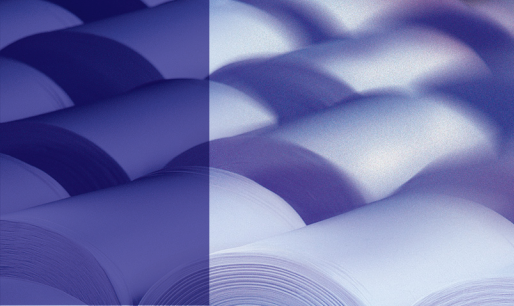
Among key findings, testing showed the best-performing reusable product (loose-back vinyl) consumed 75 percent less energy over its entire life cycle, required 80 percent less use of raw materials and created 85 percent fewer emissions including air, water and solid waste than the standard disposal product.

Overall, the reusable loose-back vinyl pad achieved a 70 percent reduction in overall environmental impact when compared with the regular disposable, and a 45 percent reduction when compared to a premium disposable alternative.

The study did identify two key areas where reusables could further their performance advantage by improving laundering processes and end-of-life practices. "The laundering issue is downstream from us, but we understand the industry continues to introduce more environmentally responsible ways to clean reusable textiles,"

Vintex's Paul Helsby says. "In terms of end of life, despite reusables' long life cycle, we know that some of these products go to landfill. The study will influence our efforts to incorporate more end-of-life options into our products going forward."

Helsby believes that this and other eco-efficiency analyses can assist hospital administrators and staff in making informed purchasing decisions that balance patient care, environmental impacts and life cycle costs.



NSF Verification

The NSF verification process involved a review of two documents prepared by Vintex and BASF for compliance to the criteria in NSF's eco-efficiency protocol P352, Part A: A Validation of an Eco-Efficiency Analysis Methodology. NSF first reviewed Vintex and BASF's guidance document which provided a detailed overview of the eco-efficiency analysis, with a description of the products, materials and processes studied, alternatives considered, potential benefits to customers and key assumptions of the study, among other considerations. NSF then reviewed the second document, a master spreadsheet that contained the Vintex/BASF template of all environmental and financial calculations related to the study.

When product toxicity is an issue, a member of NSF's toxicology team is also engaged to participate in the review. "We start with the final scores listed in the spreadsheet and work back to where the original parameters were input," explains NSF toxicologist Bradley Lampe. "We want to make sure the formulas are entered correctly and calculations are error-free, based on the guidance document. If we notice omissions or have questions, we call them out. All sources of toxicity must be reflected in the total score."

The entire NSF review process generally takes approximately two weeks, depending on the scope of the study. NSF prepares a document with questions and requests for further

information and/or clarification. Issues are generally resolved within one or two communications. "NSF obviously was a critical component of the entire EEA process," says BASF's Uhlman. "They brought another set of eyes to our work, challenged us and questioned our assumptions. Their input made our final report more credible and valuable. The result is a robust analysis that we feel makes a compelling case for reusable pads over the disposable product."

Paul Helsby says Vintex was "pleased but not surprised" by the reusable pads' superior performance as concluded by the eco-efficiency analysis. "We saw the value of a third-party perspective, and having two reputable organizations like BASF and NSF supporting our efforts was invaluable." In addition to looking at issues related to product recyclability, Vintex also is using the EEA to review options for introducing recycled materials and reducing the weight of its reusable product.

"It's fair to say the results will influence our future product development," Helsby adds. "If we're always trying to improve the environmental footprint of this product, we're moving in the right direction."

For more information or to download the Vintex eco-efficiency report can be found at: http://www.nsf.org/newsroom_pdf/BASF_Incontinence_Bed_Pads_EES_Final_Oct2012.pdf or go to www.vintex.com, additionally you may contact paul.helsby@vintex.com



Vintex Inc. is a vertically integrated manufacturer of custom-engineered coated textiles that supplies the healthcare, industrial and commercial marketplaces worldwide



More information on BASF's methodology and the NSF validation can be obtained at: <http://www.nsf.org/info/ecoeficiency> or learn more about the eco-efficiency program, email: sustainability@nsf.org