Eco-efficiency Analysis
Incontinence Bed Pads

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Reusable or Disposable – is there a clear choice?

Healthcare facilities and hospitals strive to increase the sustainability of their businesses by reducing the impact of their operations and purchasing decisions on the environment as wellUU as their institutions' financial bottom line. Like many industries, the healthcare industry has long debated the pros and cons of reusable versus disposable textiles. Issues around responsible use of resources, energy consumption, laundering activities, total cost of ownership and waste generation have been at the forefront of this debate. To better inform decision makers around these topics Vintex, a leading reusable manufacturer with experts in this field, in close cooperation with BASF, a leading expert in Eco Efficiency Analysis, conducted a comprehensive life cycle assessment to quantify reusable incontinence pads' environmental and economic performance in comparison to competing disposable pads.

What is an Eco-Efficiency Analysis (EEA)?

BASF's Eco-Efficiency Analysis (EEA) is a holistic, life cycle assessment methodology. The methodology has been third party validated by NSF International[1] and looks at a product's environmental impact in proportion to its cost-effectiveness. Results from these studies enable companies to drive more sustainable solutions into the market place and thus make a positive contribution to a better and more sustainable future.

At its basic level eco-efficiency means "doing more with less." EEAs enable identification of efficient production processes and the creation of better products while reducing resource use and pollution along the entire value chain. Eco-efficiency analyses can assist hospital administrators and staff to make informed purchasing decisions that balance patient care, environmental impacts and life cycle costs.

Summary of Incontinence Pad EEA

The scope of the study included the full life cycle of incontinence pads which included all inputs and impacts associated with the production, use and disposal of the product. Figure 1 shows a generic flow diagram illustrating the important life cycle stages considered for the study. For more information, the full results of the 3rd party, critically reviewed EEA can be found at Incontinence Bed Pad Eco-Efficiency Analysis or by typing this full website link below. (http://www.nsf.org/newsroom_pdf/BASF_Incontinence_Bed_Pads_EEA_Final_Oct2012.pdf)

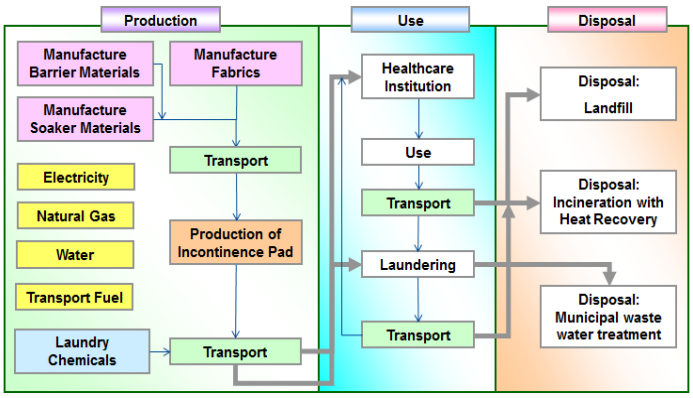

Figure 1: Boundary Conditions of Incontinence Pads EEA

The customer benefit from which all alternatives were compared was defined as barrier protection from liquid voids (1,500 ml/day) over 1,000 patient days while additionally providing the ability to reposition the patient on the bed. The study compared five unique alternatives: 3 reusable vinyl pads and 2 disposable pads.

Figure 2 shows the final eco-efficiency portfolio where the results of the individual disposable and reusable alternatives have been grouped together. Results clearly show that reusable incontinence pads are more eco-efficient than their disposable alternatives. By combining a clearly lower total cost of ownership with a low environmental impact, reusable incontinence pads can contribute to healthcare facilities lowering their operating costs while improving their overall environmental performance.

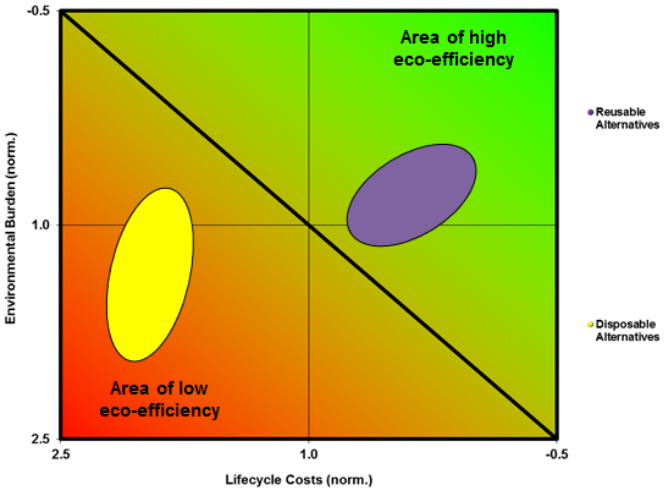

Figure 2: Eco-efficiency Analysis Portfolio- Incontinence Pads

Environmental Impacts

An EEA completes a "cradle to grave" evaluation of the environmental impacts involved in the production, use and disposal of the various alternatives considered.

Environmental impact categories are evaluated in six key areas as depicted in Figure 3:

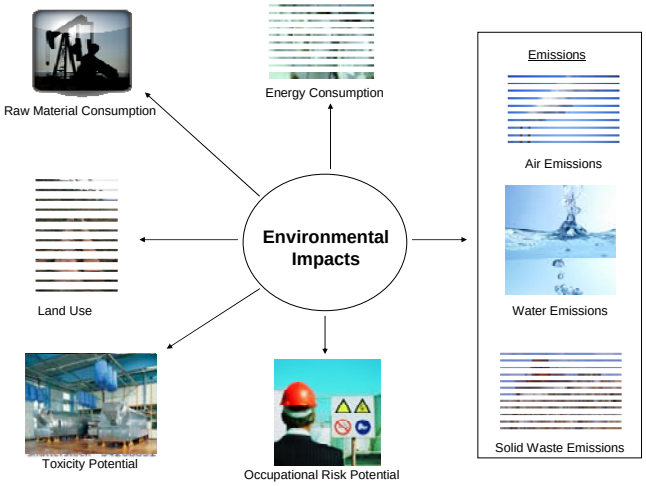

Figure 3: Environmental Impact Categories considered in EEA

Reusable Vinyl vs. Standard Disposable Pads

Figure 4 takes a closer look at the overall environmental impact of the leading, domestically produced reusable loose back vinyl alternative and the baseline standard disposable alternative. Data points indicating the lowest impact are those closet to the centre of the diagram. The assessment clearly shows that the reusable vinyl alternative has a significantly lower environmental impact.

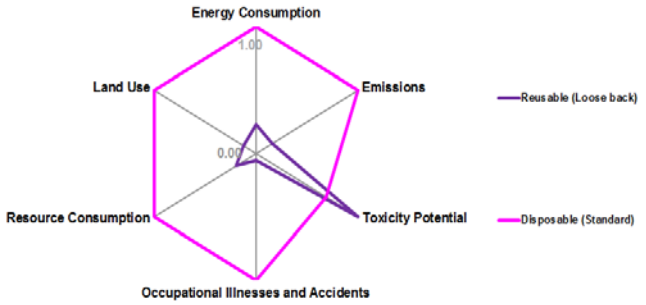

Figure 4: Environmental Fingerprint

In comparison to the standard disposable incontinence pad the domestically produced reusable loose back vinyl alternative:

- Uses 75% less energy consumption over the entire life cycle including offsets for heat recovery through disposable pad incineration.
- Uses 80% less raw materials. Oil and natural gas are precursors for synthetic fabrics, soaker material and energy to create hot water for laundry activities.
- Has 75% less land use. This captured the impacts on biodiversity through land occupation and land transformation associated with soaker materials manufacturing and logistics impact of transporting large quantities of material.
- Has 10% higher toxicity potential with laundry chemicals being the most significant contributor followed by fuel emissions from logistics. Disposable pads' toxicity potential is primarily associated with the manufacturing of its soaker material along with fuel emissions.
- Has 90% less risk potential based on analyzing the number of working accidents, fatalities, illnesses and diseases associated to industries across the full life cycle.
- Creates 85% less emissions. Reusable pads were superior in each of the three emission subcategories analyzed:
    - Creates 70% less air emissions with Global Warming Potential and Acidification Potential being the most relevant.
    - Creates 75% less water emissions. Pre-chain materials used to manufacture disposable products generated greater water emissions than reusable pads' laundry activities.
    - Creates 95% less solid waste emissions as reusables generate dramatically less solid waste due to their inherent durability and ability to be reused.

Life cycle assessments can reveal many interesting facts. Many may assume that a reusable pad would generate greater water emissions when compared to a disposable pad due to its repeated launderings. However, using a cradle to grave environmental impact analysis reveals the significant water emissions associated with disposable pad manufacturing. This is a good example why a holistic life cycle approach must be taken when evaluating alternatives and balancing environmental impacts.

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

Life Cycle Costs Assessment

Complementing the environmental assessment in the EEA is a detailed life cycle cost analysis. Labor and material costs for product creation are combined with costs incurred during use (i.e. laundering for the reusable pad) and the cost for disposal or recycling. Figure 5 shows the total cost of ownership for the study's defined customer benefit.

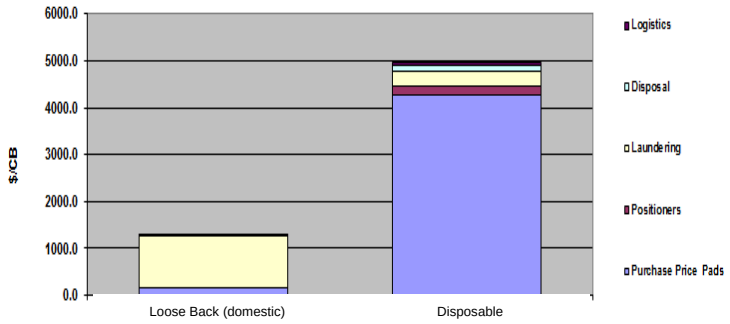

Figure 5: Life Cycle Costs – Modules

Here again reusable loose back pads demonstrated their superiority over standard disposable pads by having significantly lower costs. The actual life cycle cost for a reusable pad is over 70% lower, or 4 times more cost effective, than the disposable alternative.

Clearly, there is a significant financial incentive for healthcare providers to use reusable vinyl incontinence bed pads versus disposable pads.

Final Thoughts

BASF's Eco-Efficiency Analysis enables large amounts of data and the complexities of supply chains to be compiled and assessed and then allows for a comparison of different products with the same customer benefit,

This study of incontinence products reveals that reusable vinyl incontinence pads significantly outperform disposable pads in both environmental impacts and life cycle costs.

The healthcare industry should use these results to make informed purchasing decisions based on a life cycle analysis approach and thereby successfully balance patient care, environmental impacts and life cycle costs**.**

Notes: [1] NSF International is an independent, not-for-profit organization that provides standards development, product certification, auditing, education and risk management for public health and the environment.

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Analysis was performed by BASF according to the methodology validated by NSF International under the requirements of Protocol P352. More information on BASF's methodology and the NSF validation can be obtained at: http://www.nsf.org/info/ecoefficiency

1 Mount Forest Drive
Mount Forest, ON
N0G 2L2

P: 519-323-0100
F: 519-323-0333
www.vintex.com