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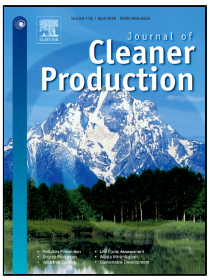

How do supply chain choices affect the life cycle impacts of medical products?

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ABSTRACT

The natural resource based view (NRBV) of organisations suggests that there are two main models used by businesses to achieve short-term sustainability outcomes. They are the product stewardship and pollution prevention models. Here is the case of a New York-based wholesaler of medical supplies. The business aims to develop a more environmentally sustainable supply chain for one of its products - an emesis basin. The emesis basin is currently only offered in high-density polyethylene (HDPE) plastic, which has negative effects on the natural environment. This study aimed to assess how the focus of the business' new business model might affect the overall life cycle impacts of this product. To achieve this, we compared the environmental impacts of the conventional product (Scenario 1– an HDPE basin) with equivalent products supplied via pollution prevention (Scenario 2 – a bioplastic basin) and product stewardship (Scenario 3 – green supply chain management and improvements) scenarios, as well as a combination scenario (Scenario 4). The results show that, in line with expectations, the pollution prevention option – switching to a bioplastic product – has the lowest environmental impacts. Unexpectedly though, the product stewardship option had a greater impact on the natural environment than the conventional HDPE, business-as-usual option. We suggest there may greater environmental gains to be obtained by focusing on one's core business, than by extending influence to the entire supply chain.

KEYWORDS

Natural resource-based view (NRBV); Life Cycle Assessment (LCA); sustainable supply chains; medical supply sector

HIGHLIGHTS

- Four scenarios comparing conventional and bio-plastics considered
- Bioplastic product has lowest environmental impact (pollution prevention scenario)
- Supply chain changes (product stewardship) have higher impact due to transport fuels
- There are benefits to focusing on core business over supply chain integration
- We support deeper inclusion of medical supply industry in sustainability discussion

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