76% Carbon Emission Reduction with Reusable Sharps Container

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Introduction

Hospitals need lessen their environmental impact.

Waste reduction using reusable sharps containers over disposable containers is well established, but such studies are not Life Cycle Assessments (LCA.

This study represents the first "cradle to grave" LCA comparing the two systems.

Methods

- Using "before/after" data from 850 bed US hospital, the LCA compared ABS reusable against polypropylene disposable sharps containers.
- The study examined carbon dioxide equivalent CO_2e emissions for container production, delivery, collection, processing, and content/bin disposal.
- Internationally accepted unit energy consumptions were utilised for each step in the LCA, including:
  - plastic pelleting
  - container manufacture
  - overseas shipping if applicable
  - trucking to warehouse
  - trucking to and from healthcare facilities
  - autoclaving of waste
  - decanting/washing of reusables
  - attrition replacement of reusables
  - trucking processed waste to landfill
  - landfill decomposition.
- Average annual CO_2e emissions were calculated over a 10 yr use of each system.

Figure 1.
Reusable sharps collector
(Sharpsmart, Daniels Sharpsmart Inc. Chicago IL.)

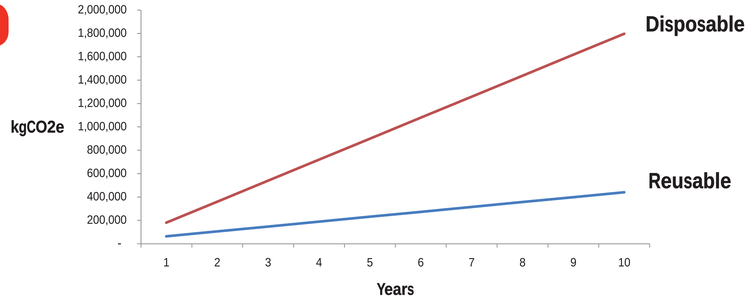
Results

CO_2e Emissions / yr

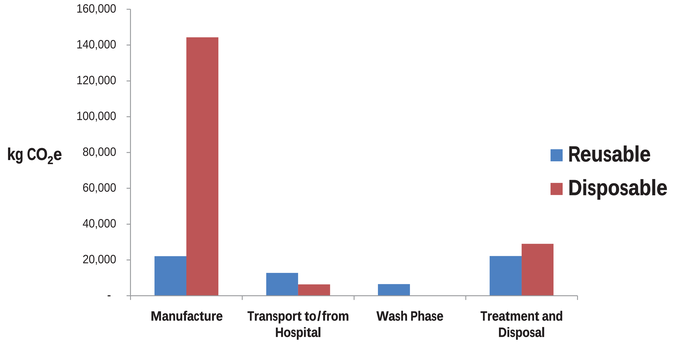
Disposable containers	Reusable system
180 tons CO_2e /yr	44 tons CO_2e /yr

Reduction with Reusable = 136 tons/yr (76%)

Cumulative CO2 Emissions



Carbon Emissions by stage



Conclusions

The Sharpsmart reusable sharps container system…

- Significantly reduced CO_2e emissions
- Provided resource efficiency and reduction in waste
- Achieved sustainable consumption and production by saving 136 tons of CO_2e/yr.
- The findings may not be extrapolatable to all reuseable sharps container systems.

Acknowledgements

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Disclosure

TG is a consultant microbiologist to The Daniels Corporation.
Waterman were retained by Daniels to design the LCA model

for further information

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