

84% Greenhouse Gas Emission Reduction with a Reusable Sharps Container



US Hospitals are striving to reduce their Greenhouse Gas emissions. Targeting supply chain points and replacing disposable with reusable items are among recommendations to achieve this. Annually US hospitals use 35 million disposable or reusable sharps containers generating GHG in their manufacture, use, and disposal.

Objectives

To determine the volume of Greenhouse Gas (GHG) Emissions from a large US hospital derived from the purchase, treatment, transport and disposal of single-use sharps containers.

Design and Methods

Using a life cycle assessment, global warming potential of a disposable sharps container and Daniels reusable Sharpsmart container were assessed. GHG emissions (CO₂, CH₄, N₂O) were calculated in metric tons of carbon dioxide equivalents. Unit process GHG were collated into the following:

- Plastic pellet manufacture and container manufacture
- Transport to and from hospitals
- Decanting/washing of reusables; attrition replacement of reusables
- Treatment of waste; transport of residues to landfill

Average CO₂e was calculated over 2 years.

Data was analyzed using CHI2 and significance set at $p \leq 0.05$.

Results

With Daniels Sharpsmart, the hospital reduced its annual GWP by 127 MTCO₂e (-83.5%) and diverted 30.9 tonnes of plastic and 5.0 tonnes of cardboard from landfill. Using Sharpsmart reduced the number of containers manufactured from 34,396 disposable containers to 1,844 reusable sharps containers in year 1 only. The reduction exceeds the 2020 reduction target for US federal hospitals.

Conclusions

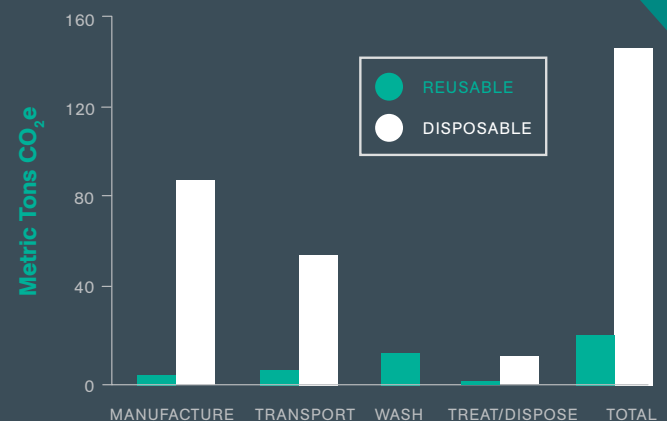
54% of greenhouse gas emissions in hospitals are derived from supply chain goods and services.

The study indicates sharps containment GWP in US hospitals totals 100,000 MTCO₂e and if reusable sharps containers were used nationally the figure could fall by 64,000 MTCO₂e which, while only a fraction of total hospital GWP, is a positive sustainable step.

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RESULTS

CARBON FOOTPRINT DISPOSAL VS REUSABLE



Results showed that in converting to the Sharpsmart reusable sharps container, the facility had per annum:

- ▶ 84% reduction in GHG associated with sharps container usage
- ▶ 127 metric ton reduction in GHG
- ▶ 93% reduction in the manufacture of sharps containers
- ▶ 99.9% reduction in the number of plastic sharps containers landfilled.

Terry Grimmond* and Sandra Reiner^

*Grimmond & Associates New Zealand; ^Northwestern Memorial Hospital Chicago
An LCA of Disposable vs Reusable sharps container in a large US hospital. Waste Management and Research 2012;30:639-642