

Analysis of the Environmental Impact of Insulin Infusion Sets Based on Loss of Resources with Waste

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Abstract

Insulin pump therapy [continuous subcutaneous insulin infusion (CSII)] requires regular change of infusion sets every 2–3 days in order to minimize the risk of skin irritations or other adverse events. This has been discussed to be a potential burden to the environment. The purpose of this analysis was to perform an environmental assessment of insulin pump infusion sets based on loss of resources occurring during incineration of the discarded products and by means of a lifecycle concept used to weight a material in relation to its rareness on earth and its consumption. In addition to five infusion sets (Inset30, InsetII, Comfort, Quick-set, and Cleo), a patch pump (Omnipod) was also included in this analysis. The annual loss in waste of the so called “person reserve” of 3 days of catheter use was compared with daily consumption of a cup of coffee in a disposable paper cup and to a soft drink in an aluminum can. The weight-based loss in resources through waste for the infusion sets (except for Cleo) corresponded to 70–200% of the loss of resources for a coffee cup (Cleo, 320%; Omnipod, 1,821,600%) and to 1–3% of the loss from an aluminum soft drink can (Cleo, 5%; Omnipod, 31,200%). The loss of resources by use of infusion sets used in insulin pump therapy appears to be low and is similar to the burden induced by the uptake of one cup of coffee per day. The loss of resources with regular CSII is considerably lower than the loss of resources induced by patch pumps.

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Abbreviations: (CSII) continuous subcutaneous insulin infusion

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