

# Metered Dose Inhalers – Waste, Climate, Sustainability

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# Why focus on Metered Dose Inhalers?



- Contain propellant gases with high global warming potential (1400 times of CO<sub>2</sub>)
- A small subset of larger work in our management of medical gases
- Aligns with our sustainability Kaupapa - decarbonising the health system and creating positive environmental outcomes

<u>GAS</u>	<u>GWP100(CO<sub>2</sub>eq)</u>
CO <sub>2</sub>	1
Methane	32
Sevoflurane	130
Nitrous oxide	300
R-134a /Norflurane/HFA1345a/1,1,1,2 TFE	1300
Desflurane	2540



# The size of the price

- Close to 3 million MDIs prescribed and dispensed in New Zealand.
- Largely used and disposed of in the community
- Potential to recover 90% of the materials left in the MDI after use



## Recycling MDIs Bay of Plenty



- MDI can be recycled at nine selected hospital and community pharmacies across Bay of Plenty
- Customer can recycle for free
- Inhaler sent to Gaiatech for recycling



# The process and results



- Pharmacies send MDI to Tauranga hospital pharmacy
- Inhalers consolidated and sent to Gaiatech
- Inhalers disassembled into its component parts, plastic, metal, and residual gas
- Canisters pierced under controlled conditions to safely extract the remaining propellants.

- We can recover 90% of the materials including the gas
- Approximately 63% of the MDI mass was recovered as recyclable solids (plastic and metal).
- The complex molecules of propellant gases will break down into safe and inert elemental components such as elemental fluorine, hydrogen and carbon



# Learnings from the trial and key takeaways

- The trial proved the feasibility of the collection and recycling processes in a small scale, as well as the likely cost per unit.
- There was strong support from the community, GP clinics and pharmacies
- While logistics work in small scale, it needs to be explored further for a national programme
- Funding is a significant barrier. A sustainable programme needs a commercial plan.



# Next steps

- Engage with manufacturers and Pharmac to design sustainable commercial models for recycling.
- Continue seeking other funding avenues for a nationwide take-back programme.
- Contact [hnzsustainability@tewhatuora.govt.nz](mailto:hnzsustainability@tewhatuora.govt.nz)

