



6 December 2021

Ministry for the Environment
Waste Strategy and Legislation
Ministry for the Environment
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Kia ora koutou katoa

Re: Taking responsibility for our waste; A tertiary healthcare perspective

About the New Zealand Society of Anaesthetists (NZSA)

The NZSA is a professional medical education society which represents over 750 anaesthetists in New Zealand. Our members include specialist anaesthetists in public and private practice, and trainee anaesthetists. Our key roles are advocacy, facilitating and promoting education, and strengthening networks of anaesthetists nationwide. The NZSA's Environmental and Sustainability Network is made up of anaesthetists from throughout the country, and the Network helps to inform our advocacy work on environmental sustainability with their knowledge and expertise.

Introductory notes

The NZSA welcomes the opportunity to provide input into the Government's proposals for a new national waste strategy and to comment on some of the issues and options that pertain to us in the healthcare sector, for developing new, more comprehensive waste legislation.

We applaud the Ministry for making proposals which take a long-term view with pragmatic, workable steps towards waste reduction and using an iterative process towards a circular economy in Aotearoa New Zealand. We welcome the Ministry contributing to the formation of a global circular economy by influencing market forces, international strategy and manufacturing practices through New Zealand legislation and joining forces with international initiatives such as the Global Alliance for Circular Economy and Resource Efficiency.

We have divided this submission into four key sections; 1. Procurement 2. Nitrous oxide 3. Volatile anaesthetic agents and 4. General pharmaceutical waste. There are also comments on 5. Recycling, 6. Food waste, 7. Education and 8. The potential benefits afforded by the transition to Health New Zealand. Sections 2. and 3. on waste nitrous oxide and volatile anaesthetic agents, respectively, have the strongest overlap with emissions reduction strategy.

1. Procurement

Scope 3 emissions typically exceed all other emissions from hospitals and acute medical services by a factor of 3 to 6 times scope 1 and 2 emissions – Procurement and capital projects are likely to make up a large proportion of these emissions (pers. comms., Rick Lomax, Associate Sustainability Advisor, Beca, January 2021). To help tackle this, we have to join a global drive to adopt circular economy principles when purchasing medical goods and devices. We can reduce what we use, whilst still providing a first-class medical service through initiatives such as those outlined in the Choosing Wisely campaign (<https://www.choosingwisely.org/>).

Packaging is a great place to start to reduce waste from healthcare procurement and we applaud the New Zealand Government's stand on packaging; legislate to make it reusable, biodegradable or recyclable.

As the procurement of medical goods is primarily overseen by bodies, such as Pharmac, which have significant purchasing power, there may be additional leverage to extend the prior focus on monetary value, clinical efficacy, and safety to also include a new value set of minimising environmental and social impacts along supply chains. Product evaluation, audits and reporting should include not only cradle-to-grave life cycle analysis (LCA) but also cradle-to-cradle materials circularity indices such as the MCI (developed by the Ellen MacArthur Foundation, <https://ellenmacarthurfoundation.org/material-circularity-indicator>). Reusable devices and reprocessing single-use medical devices (as occur in the US and on a smaller scale within New Zealand, <https://www.medsalv.com/>) goes some way towards increasing circularity within this field of specialist equipment. This will require a change in the business model of many companies and distributors; where selling less and simply providing a better service is rewarded.

Local infrastructure, processes and expertise will need to be reinstated to allow seamless reprocessing, maintenance and repair of devices that does not compromise quality or sterility. We would like to see the Government encourage and facilitate New Zealand-based companies to take up these challenges (in manufacture, supply and reverse logistics / reprocessing) allowing for expansion of local employment and improved community wellbeing, together with improved resilience for New Zealanders against future supply chain blockages. To this end, we support the Government's objectives towards forming legal obligations to support a right to repair and encourage product durability. We also encourage the Government to set up rigorous audit of measurement and reporting of scope 3 emissions, including procurement within our healthcare systems and to apply offsetting penalties that are divided fairly between manufacturers, distributors and end users in line with the Carbon Neutral Government Programme (CNGP) and future extended producer responsibility legislation (Product Stewardship Bill).

Further refinement in 'designing out waste' should be encouraged by supporting materials research and development towards using non-petrochemical or, as an interim measure, more recycled feedstock, improving modular design to facilitate repair and upgrades and using materials which not only last longer but can also be recycled easily and locally in Aotearoa New Zealand.

2. Medical nitrous oxide

A national campaign to reduced medical nitrous oxide waste is underway at the ground level, however, this would be well supported by government initiative. Emissions in tCO_{2e} from medical nitrous far exceed that of all the other medical gases (principally anaesthetic volatile agents), by a factor of around 9 (New Zealand DHB data, pers. comms., Margriet Geesink, Sustainability Manager, Northland District Health Board, June 2021), especially since the global drive to stop using desflurane (which has a massive global warming potential over 100 years (GWP₁₀₀) compared to the other anaesthetic volatile agents) and using minimal fresh gas flows for optimal efficiency of volatile anaesthetic use. Nitrous oxide is used by multiple subspecialties; however, the main users are labouring women. Systems for nitrous scavenging, capture and breakdown are commercially available in Scandinavia and other parts of Europe (<https://www.medclair.com/>). As an emissions reducing initiative, nitrous capture and destruction provides a relatively cheap and immediately available solution and should be considered a priority for any new hospital build and then retrofitting older facilities after ensuring leaks and waste are managed optimally (see <https://www.youtube.com/watch?v=OreKYfF0d8s>).

3. Anaesthetic Volatile Agents

Anaesthetic volatile agents are potent greenhouse gases. Anaesthetic volatile capture technology (VCT) is available and anaesthetic volatile reuse is being practiced in Germany and being trialled in other areas of Europe, Canada, and the US. This is a great example of circular pharmaceutical practice – for us to share these potent GHG molecules just as we share the oxygen we breathe. The destruction of anaesthetic volatile agents is more difficult but research in our own country has workable and scalable solutions (pers. comms., Saeid Baroutian, Department of Chemical & Materials Engineering, University of Auckland, November 2020).

Since the technology for the safe collection and reuse / disposal of medical gases exists, we would like to pose the question of how much of the responsibility for safe collection and disposal do the producers of these medical gases and volatile agents have?

4. General Pharmaceutical Agents

In New Zealand, all medical (except cytotoxic*) waste ends up in landfill and the terminal leachate from these landfills eventually goes to wastewater treatment plants. Many toxic drug residues are likely to enter the aquatic environment via this route. The Cawthron Institute and others are presently measuring propofol (our main intravenous anaesthetic and sedative agent) residues in wastewater samples from around Aotearoa New Zealand. If significant concentrations are found further hazard characterisation and risk to receptor species will be determined. Safe disposal of many pharmaceuticals requires either incineration or some other means of high temperature / pressure destruction. The technology for this has been developed in Aotearoa New Zealand (pers. comms., Saeid Baroutian, Department of Chemical & Materials Engineering, University of Auckland, November 2020). We would like further research and enquiry into safe pharmaceutical disposal practices in a New Zealand context.

* Exported to Australia or Europe for incineration.

5. Recycling

Although we accept that recycling is the lowest value cycle in a circular economy, we acknowledge the need to invest in infrastructure and technology that is lacking in New

Zealand, especially in the interim years, while we still rely heavily on petrochemical-based plastics. We also support the Government in encouraging manufacturers to use recycled feedstock through MCI reporting (see above) and marking goods and packing clearly, using materials that are easy and economically viable to recycle.

Many (especially smaller) hospitals in Aotearoa New Zealand have good waste segregation, however, this is lacking in many large centres due to poor staff engagement, and a lack of local infrastructure. We would support legislation that tightens up the audit and reporting of waste data (amounts, segregation, and final destinations) from New Zealand's healthcare facilities. This could be integrated into the CNGP.

The NZSA supports increases in waste disposal levies to help fund the necessary infrastructure to support the reverse logistics and processing required for improved resource recovery and a circular economy.

6. Food waste

We support initiatives to reduce food waste by careful supply management, minimising food miles, safely redistributing unused food to those in need, and keeping waste out of landfill by using efficient, local composting and commercial-scale anaerobic bio digestion. Food packaging should again fall under the same legislation of having to be reusable, biodegradable or recyclable.

7. Education

The NZSA supports education of waste minimisation strategy in schools, community groups, businesses, industry, and higher education, including our own College's (Australian and New Zealand College of Anaesthetists) examination curriculum.

An education and awareness campaign, especially in the workplace, is necessary to shift people's opinion of 'normal practice' from throwing everything away to reprocessing everything; from 'that just goes in the bin' to 'surely you don't throw that away.'

We whole heartedly agree that there a cultural shift is needed towards climate and environmental goals. We must also acknowledge the inseparable link between the health of our environment and the health of our own population.

8. Health New Zealand and the Transition Unit

The formation of Health New Zealand presents us with an opportunity to set strong long-term strategy and lay the foundations for transformational regenerative change.

Sustainable Healthcare Aotearoa (SHA - formerly the Sustainable Healthcare National Network) is a group of enthusiastic individuals with significant expertise in this field. The NZSA supports greater collaboration between the SHA and the Ministry to work together on creating strategy and policy for more resource efficient healthcare that benefits our populations through excellence in environmental stewardship.

Through Health New Zealand (or even prior to the transition from DHBs to HNZ in July 2022) we would like to see the Government ensure that every health region and major hospital has a high-level Sustainability (Resource Efficiency and Emissions and Waste Reduction) Manager.

Final comments

Given the cost and resource constraints involved, together with the time to effect both social and infrastructure changes, we understand that waste minimisation and the shift towards a circular economy will require sustained effort over many years. It will need to be carefully orchestrated in a staged process that tackles priority areas first. However, the healthcare industry is in a good position to make dramatic waste reductions immediately – in short, through shifting procurement values and contracts towards reusable medical products and improving waste segregation for recycling.

We thank the Ministry for driving these initiatives and look forward to working together to effect real change at the ground level.

Yours sincerely, ngā mihi nui

A handwritten signature in black ink, appearing to read 'Sheila', written on a light-colored background.

Dr Sheila Hart
NZSA President