**Waste 2024 Conference Abstract Submission**

**(for face-to-face Conference which includes live broadcast)**

Circular Interventions for Medical Plastics

*My presentation is relevant to the following topic area(s).*

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| [ ]  | **Aboriginal community waste management** (projects, results, planning, what else to be done) | [ ]  | **National waste policies & programs** (new schemes, opportunities & recent results) |
| [ ]  | **CDS** (new schemes, new containers, innovations) | [ ]  | **Organics** (food only vs FOGO, implementation strategies, new services) |
| [x]  | **Circular economy** (case studies, right to repair, trials, new materials targeted) | [x]  | **Plastics** (plastics recycling, plastics recovery schemes, small and large scale plastics projects) |
| [ ]  | **Climate change** (new innovations, strategies & policies) | [x]  | **Problem & hazardous waste** (asbestos, clinical & medical, illegally dumped hazardous waste, systems for managing hazardous materials) |
| [ ]  | **Collections** (innovations, new systems, vehicles, challenges) | [ ]  | **Procurement** (recent process developments, case studies, planning) |
| [ ]  | **Disaster waste management** (bushfires, floods, pandemic) | [ ]  | **Project Planning** (projects currently planned, challenges and barriers, planning controls and conditions, project management) |
| [ ]  | **Economics** (business cases, data gathering, planning for financial impacts, reviews & analyses) | [ ]  | **Product stewardship & extended producer responsibility** (current & planned schemes, new materials to be captured by schemes, local schemes for recovery) |
| [ ]  | **Education** (behaviour change, community engagement, social media, planning FOGO education) | [ ]  | **Recycling & resource recovery** (post China Sword, and export bans, market insights & updates) |
| [ ]  | **Energy from Waste** (projects, case studies) | [ ]  | **Regional issues** (regional responses to waste settings, collaboration, joint projects) |
| [ ]  | **Grants** (major waste grants, outcomes & processes) | [ ]  | **Social enterprise** (new entrants, recent endeavours, case studies) |
| [ ]  | **Infrastructure & planning** (FOGO capacity, new material recovery planning) | [ ]  | **State based issues** (policies, strategies, responses & challenges, border transitions) |
| [ ]  | **Innovative projects** (sustainability innovations, artificial intelligence, case studies) | [ ]  | **Strategic waste planning & policy** (stakeholder engagement, strategy development, waste policy impacts and opportunities) |
| [ ]  | **Landfill & facility management** (facility operations management, strategic planning, facility budgeting) | [ ]  | **Technology** (innovations, must haves, how technology will improve or assist with waste responsibilities, AI) |
| [ ]  | **Legislation, regulations & levies** (major updates, monitoring & enforcement, response to changes in regulations) | [ ]  | **Tenders & contracts** (planning, implementation, contract management, innovations, systems & approaches) |
| [ ]  | **Litter & illegal dumping** (prevention, new management systems & innovative & smart initiatives, surveillance) | [ ]  | **Waste projects** (planned waste infrastructure, how to plan & scope, budgeting, understanding what is required, governance & process planning, case studies) |
|  |  | [ ]  | **Other** |

[ ]  **Proposed Panel Discussion** -Proposed topic & participants suitable for key issues that may be addressed by a Panel of presenters. For this category suggest your topic & who you will arrange to attend and present (maximum of 5 panel members).

**Presenter information**

**Presenter name:** Rebecca Larkin

**Presenter position:** Senior Environmental Consultant

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**Biography**

Rebecca is a senior consultant in the Circular Economy team at MRA and has previously worked across the auditing and strategy & commercial teams. She has a passion for supporting organisations and governments incorporate circular economy and sustainability principles. She brings her research and analysis skills, utilising data to drive changes higher up the supply chain away from the end-of-life management of waste. Recently, Rebecca has led material flow and waste baselining projects to help organisations understand where inefficiencies and opportunities for impact lie and to develop circular economy roadmaps and zero waste strategies.

Prior to becoming a waste and circular economy consultant, Rebecca worked as a medical researcher and was astounded by the amount of single use plastic in the lab. She saw the opportunity to make a significant impact in the research and healthcare sector and understands the challenges faced in a clinical environment.

**Abstract Summary**

In 2022, the New South Wales healthcare sector generated over 24,000 tonnes of waste, costing $16 million, with plastic accounting for 25-48%. Challenges in adopting circular solutions include a preference for single-use plastics and complex stakeholder networks. The NSW EPA enlisted MRA to trial three circular interventions for medical plastic in hospitals and healthcare facilities: a logistics model for reusing ice bricks (cold transport), reusable plastic in surgeries, and redesigning theatre waste recovery. The project also identified systemic solutions, including policy frameworks and funding incentives, for sustainable healthcare waste management.

**Abstract**

Healthcare is the largest generator of waste in the NSW public sector with over 24,000 tonnes generated in 2022 and disposal estimated to cost $16 million per year. It is estimated that plastic comprises between 25% and 48% of waste in the healthcare sector. The challenges faced by the sector for circular solutions for plastic waste include: preference for single-use plastic, limited space for managing waste, the complex network of stakeholders and processes at healthcare facilities, lack of waste composition data and product information, and a lack of a consistent approach to waste management across different facilities.

To deliver on one of the commitments made under the NSW Plastics Action Plan, the NSW EPA engaged MRA to research, design and implement trial interventions to divert medical plastic waste from landfill. The objectives of the project were to:

1. Assist medical plastic waste generators transition to circular economy outcomes for plastic waste;
2. Research, identify and trial innovative methods and new ideas to reduce and recover plastic wastes in medical settings;
3. Develop case studies and factsheets to broaden the adoption of the trialled innovations;
4. Identify mechanisms on a system wide scale that support long-term outcomes for plastic waste avoidance and recovery.

Based on consultation with stakeholders in the healthcare sector, 10 interventions targeting medical plastics were identified and 3 were selected for trials in healthcare facilities. The 3 trials and their results are summarised below.

1. Ice brick reuse trial

A reverse logistics transport model to return plastic ice bricks used for cold transport of pharmaceutical deliveries from regional labs back to the supplier for reuse. A total of 1096 ice bricks (1200kg) were collected during the 8-week trial across 8 Health Pathology labs utilising the existing courier network (no additional cars required). If expanded to all 60 labs, this intervention could divert approximately 60,000 ice bricks from landfill each year. Th system proved successful and should be expanded to other healthcare facilities and additional ice brick suppliers.

1. Reusable holloware in theatres trial

Common single-use plastic items used in surgery packs and disposed of to landfill include holloware such as bowls, kidney dishes and gallipots. During the trial, reusable holloware items were procured and sterilised in-house to replace single-use holloware in select surgeries. If expanded to all public hospitals, over 33 million single-use plastic items could be diverted from landfill each year. The intervention had the added benefit of increasing the hospital’s supply chain sovereignty.

1. Redesign of theatre waste handling to reduce contamination in baled plastics.

Each day, approximately six 1100L bins, or 48kg, of plastic waste is generated and disposed of to landfill in one hospitals’ theatre department. Some clean plastic waste is suitable for recycling, including sterilisation wrap, device packaging, clear soft plastics, syringes and clean single-use holloware. Due to limited space, multiple trips to the loading dock are required each day to ensure there is bin capacity for theatres staff to dispose of waste between surgeries. The trial introduced baling equipment into the theatre waste room to reduce the trips required each day and remove the risk of contamination. During the trial, approximately 240kg of plastic was baled and diverted from landfill each week. If expanded to all public hospitals, this intervention could divert almost 3000 tonnes of plastic per year.

In addition to the practical findings the trials identified mechanisms such as policy and product stewardship for medical plastic supplies, procurement guidelines for hospitals, funding incentives that would encourage reusable options over single use and consistent best practice waste services across the sector.