

IP3.02: Management of hazardous waste, substances and pollutants (led by CSIRO & Monash)

Chemicals in waste streams pose challenges to waste reuse strategies and to achieving National and State waste policy action plan targets. Even trace levels of chemicals in waste materials can result in a hazardous waste classification, and in some cases, the trigger limits for hazardous waste classification are not well characterised. The presence of chemicals of potential concern (CoPC) can impact recyclability and the safe reuse of materials in the economy.

Through partner, stakeholder and the Department's engagement in RP1, we identified and co-designed three key themes for prioritisation of research for RP2 and beyond, including:

- 1) understanding the chemicals in current and emerging wastes
- 2) de-risking the future through safe waste reuse and resource recovery, and
- 3) enhancing information flows and assessment for improved outcomes and governance on hazardous wastes.

Underlying these three key themes of research are critical data gaps on the composition/mass of chemicals in our wastes, their potential release to the environment, and the safe reuse potential of our waste streams. These are recurring issues for risk-based decision making, and de-risking the management and treatment of wastes, including the safe reuse of recovered resources.

These themes will be addressed through one multiyear project that aims to build national capability and generate quantitative data and methodological guides that can be used for evidence-based risk management of CoPC identified in our wastes and in repurposed materials. RP2 will start to build a knowledge platform for concentrations of chemicals of potential concern in waste streams, and in subsequent years, provide an indication of leachable components from these waste streams, and their behaviour under field or reprocessing conditions. Information sharing and hazardous waste governance will be enabled through improved baseline compositional and leachability data.

The expected outcomes and value for this RP2 project include:

- Input to a co-designed set of guidelines for robust and representative waste sampling, characterisation, and risk assessment (reporting) for waste tyres and e-wastes
- Quantitative analytical methods and datasets for the composition, detectable limits and concentrations of chemicals in e-wastes and waste tyres before and after processing
- Input to a framework for waste sampling, characterisation and risk assessment that is sought to be transferrable to other emerging wastes and re-purposed materials in the future
- Facilitation of strategic management of wastes and their hazardous components, leading to economic environmental and social benefit, which is a long-term outcome we expect of the Hub.

IP3.02.01 Understanding chemicals of concern in our wastes and recovered resources

Project	Milestones - Outputs	Timeline	Due date	Responsible person
IP3.02.01	Signing of contract		01-Jul-22	UNSW
	Scopes refined to agree type and locations of e-waste and tyre wastes.		30-Jul-22	Leaders of analytical chemistry and leaching projects with Boxall and IP co-leads
	Analytical methodologies outlined for evaluation		30-Jul-22	Project team

Project	Milestones - Outputs	Timeline	Due date	Responsible person
	Sampling strategy for waste types drafted		31-Aug-22	Project team
	Circulation of draft priorities to include within RP3 – leaching and bioavailability studies.		01-Aug-22	Naomi Boxall, Greg Davis, Mitzi Bolton
	Analytical update for characterisation of CoPC		01-Oct-22	Project team
	Methodology for determining total leachable components		01-Oct-22	Project team
	Anticipated RP3 commencement (leachability and bioavailability)		31-Jan-23	Project team
	Draft report outlining approach to waste sampling, characterisation, and reporting. Feedback from co-design team and DAWE.		03-Feb-23	Project team
	Final RP2 report.		30-Apr-23	Naomi Boxall, Greg Davis, Mitzi Bolton – plus some of key R&D leaders