



Review of Regulations and Standards for Recycled Organics in Australia

Final Report for Department of
Agriculture, Water and Environment

Executive Summary

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EXECUTIVE SUMMARY

“Compost quality is of paramount importance to market development.”

Background

Target 6 of the National Waste Policy Action Plan is to ‘halve the amount of organic waste sent to landfill for disposal by 2030’. With increased adoption of food organics/green organics (FOGO) services across Australia, an additional 3.4 Mt of organic materials could be recycled within the decade, putting pressure on the organics recycling industry to provide additional processing capacity and find additional markets for end-products.

The Department of Agriculture, Water and Environment (DAWE) therefore appointed Frontier Ag & Environment and its partners to review the mix of policy settings in the Australian states, as well as national standards, to determine whether current arrangements for organics will meet future needs. Particular attention was given to factors affecting organics processing capacity (e.g., organics processing regulations) as well as those that could positively influence future market development and consumer confidence (e.g., end-product quality standards).

Methods

A review of organics processing guidelines was undertaken, focusing on composting in the states that will have the potential of contributing most to achieving the nationwide goal for Target 6, viz. New South Wales, Victoria, South Australia, Queensland and Western Australia. Collectively, these states accounted for almost 95% of organic materials recycled in 2018-19. The emphasis given to composting is justified by the fact that it is by far the dominant organics processing technology in Australia, and it has the most to contribute to the nation’s capacity to meet Target 6.

The project also considered whether current quality standards for contaminants and impurities (i.e., glass, plastic etc) instill enough consumer confidence to facilitate increased demand for recycled organics (RO) products into the future. Maximum allowable concentrations of contaminants and impurities in RO products were reviewed and compared to those relevant for other organic amendments (e.g., biosolids) or used overseas. Due to recent high-profile cases of contaminated RO products (PFAS and herbicide residues), new and emerging contaminants were also considered, along with compostable plastics.

Over 30 interviews were conducted to capture views from a range of stakeholder along the RO supply chain. The engagement framework we used was based on the ORID discussion method which sets out a structured process for interviewing stakeholders covering Objective, Reflective, Interpretive and Decisional type questions. The focus of the interviews was on the current regulatory/policy landscape and quality management and assurance through product standards as they affect market development of RO products, emerging issues, and future requirements from the stakeholder's perspective.

Finally, findings from the desktop review and insights gained through stakeholder consultation were brought together in a series of recommendations to help secure the future for organics recycling based on circular economy principles.

Key issues in organics recycling

The key issues identified by the desktop review and stakeholder consultation can be summarised as follows:

- **Physical contamination with impurities in FOGO is a serious challenge to the sustainability of the RO industry.** The success by which contamination issues have been dealt with for GO alone varies from one local government area to the next. Yet, the contamination challenge with FOGO is expected to be much greater than GO. Implementing FOGO collection and processing systems while contamination in GO continues to be a problem introduces a high level of additional risk.
- **Some high-risk feedstocks are composted in the country.** High-risk feedstock can be attractive to processors because they receive high gate fees for them. Furthermore, jurisdictions classify feedstock risks differently. The reasons for these differences are not clear but it raises the question as to whether the development of organics recycling guidelines has been founded on a solid evidence base.

“Contamination of feedstock is a serious challenge to the sustainability of the RO industry.”

- **Many local government authorities do not enforce source separation and minimisation of impurities in kerbside organics.** There is often little incentive for Councils to engage in public education and to provide clean GO/FOGO to processors.
- **Limits for chemical contaminants present in organics processing guidelines and the Australian compost standard (AS4454) do not reflect real-world risks.** PFAS is a real concern to all stakeholders and some GO streams are at risk of herbicide contamination, but these chemicals are not tested for as part of AS4454 or as a requirement in the organics processing guidelines.

- When benchmarked against other standards worldwide, AS4454 stacks up reasonably well. However, many stakeholders believe that permissible levels of impurities are not low-enough.
- Opinions vary about whether AS4454 is essential for future market development. AS4454 is a voluntary Standard. Its effectiveness is undermined by a weak regulatory and quality assurance environment where producers at best seek compliance with pasteurisation requirements, and users do not understand the difference between pasteurised product, composted product or mature compost. It is questionable whether certification to the Standard in its current form confers a market advantage for those RO products that are supplied in bulk.

“AS4454 plays an adequate role as a baseline Standard but, for the future, the focus needs to be on development of specifications for fit-for-purpose products.”

- Progress in accessing agricultural markets for RO products varies greatly between jurisdictions. Poor quality product is probably the main factor hindering market development in agriculture. States claiming good access to agricultural markets also claim that it is because their processors have a greater commitment to compost quality.
- The agricultural industries lack confidence in the benefits that can be derived from use of RO products. They are concerned about the risk of contamination and have the perception that RO products are low in value and therefore too costly. It is impossible to effectively market to the agricultural industries when compost quality is not given the highest priority.
- At the same time, end users in agriculture suffer from a massive information deficit. It is difficult to find reliable information on how to use RO products and the benefits associated with them.
- Infrastructure requirements for setting up a world class organics recycling system in Australia is complex, time consuming and expensive because of the need to obtain the buy-in from multiple stakeholders along the organics supply chain.
- Regulatory burden is seen as a major barrier to establishing organics recycling facilities. A solutions-oriented approach to organics regulation is sometimes lacking. Over-zealous application of organics processing guidelines by regulatory authorities can appear to put up roadblocks and risks costly delays in getting new facilities up and running.

“Regulatory burden is a major barrier to establishing organics recycling facilities.”

- Due to the increased supply and risks associated with FO/FOGO, more regulatory pressure will be placed on organics processors. New composting sites will be increasingly harder to find close to the major cities and there will be a need to establish more sites around regional centres and in rural areas. Yet, organics processing guidelines were developed mainly with urban

environments in mind. Blanket application of these guidelines outside urban environments could hinder establishment of lower-tech processing facilities that are appropriate in regional areas but not in urban centres.

- The key challenge for many existing and future organics recycling schemes are not of a technological nature, but to effect behavioural change so that people engage with and actively support organics recycling.

Conclusions and recommendations

Organics and the circular economy

From a circular economy perspective, RO products made from food should be returned to the land, ideally back to the soil used to grow it. Furthermore, all supply chain partners need to be able to derive tangible benefits, ensuring that the circular economy for organics is driven by economic motives. The agricultural industries already derive benefit from the return of farm-derived organic matter (e.g., manures and effluents) back to land.

Farm waste, such as manure, and urban-derived organic materials can be complementary. Yet there is little cross-over between the two systems. Previous attempts to conduct on-farm composting with kerbside collected GO have often failed due to high rates of physical contamination, reinforcing the view of farmers that they should not be a “dumping ground” for the city’s waste. There are also examples of successful on-farm composting trials in Australia and on-farm composting of FOGO in regional areas is an integral part of Austria’s strategy of managing organic waste.

There is also a clear need to increase future processing capacity for organics. One way to do this is to establish a distributed network of facilities across regional areas.

A distributed network of organics recycling facilities is an opportunity to:

- Reduce the regulatory pressure associated with the location of organics recycling facilities around urban areas.
- Increase processing capacity for composting. Processing capacity must keep pace with supply of feedstock.
- Process both farm-derived and urban-derived materials thereby providing an organics processing service to both agriculture and the city.

- Integrate organics processing more closely with agriculture to assist in the beneficial use of products back to farm that truly meet the needs of the market.
- Bring the supply of product closer to market thereby engaging rural communities to build trust in RO products

Policy integration

An integrated approach to policy development is also required if Australia is to remain committed to the application of circular economy principles.

“Explore ways in which an integrated and consistent approach to organics processing could be developed based on an end of waste code.”

We suspect that policy development in organics recycling has not necessarily been based on a sound evidence base since individual States approach the regulation of organics recycling so differently. A case in point is the way in which different jurisdictions approach risks associated with feedstock. Yet, the quality of feedstock has a profound effect on compost quality. It follows that compost quality will have a profound effect on market development and the nation’s ability to meet Target 6 of the National Waste Policy Action Plan.

A consistent approach to the evidence base on which individual regulations are based is urgently needed. The evidence base must also include risk factors associated with end-product use, not just environmental performance at the level of processing facility. A consistent approach to the evidence base would not necessarily hinder the capacity of individual jurisdictions to innovate in regulating organics processing.

There is a clear coordinating role for the federal government in setting the agenda at the national level. The role of individual jurisdictions should remain at the facility level (i.e., environmental performance of the site), whereas the federal government should lead in the development of the overarching policy framework. An ideal model for this is to follow the concept of an end of waste code for recycled organics. The end of waste concept is increasingly being recognized in many jurisdictions, but we have identified specific requirements that should apply for organics recycling.

A piecemeal approach to the roll-out of programs to promote organics recycling is inefficient. If systems are not currently working effectively to manage contaminants in GO, then there is every reason to be concerned that they will be overwhelmed as FOGO collections begin to be rolled out across the country. We see no real value in promoting the use of RO in agriculture unless the issue of contamination is dealt with. Controlling feedstock quality at source will go a long way to minimising contamination risks associated with the use of RO products.

End of Waste Code for compost

An effectively functioning organics recycling system requires federal leadership. For this reason, our first, and most important recommendation, is for the federal government to explore ways in which an integrated and consistent approach to organics processing and generating RO products with low contamination could be developed based on the model of an end of waste code (EoW) for compost as outlined in this report. This is an ambitious recommendation, but it is not completely without precedent such as in other areas of resource conservation (e.g., recycled water and biosolids).

“An effective EoW code involves the implementation of best practice across the whole organics recycling supply chain– not just end-product quality.”

An EoW code for compost has the following basic elements:

- Source-separation is mandatory and maximum tolerable impurity levels are stipulated.
- Clear restrictions on what feedstocks can and cannot be composted.
- The application of an end-product standard (e.g., AS4454) with third-party accreditation.
- Products are manufactured for a designated market sector (as defined by the code).
- Products do not require further processing including maturation or re-screening for use in the designated market sector.
- Products meet any additional customer specifications, as agreed between the supplier and the customer.

An effective EoW code involves the implementation of best practice across the whole organics recycling supply chain – not just end-product quality. EoW compliant organics recyclers are therefore certified to a whole-of-business quality management system by an approved third-party auditor. Furthermore, it would place responsibility for feedstock quality on suppliers of raw materials used for composting.

“Establish a national committee to drive change and to ensure buy-in from all key stakeholders in the development and implementation of an EoW code for compost”

We recommend that the federal government establishes a national committee to drive change and to ensure buy-in from all key stakeholders in the development and implementation of an EoW code for compost.

“We need a National Anti-Contamination Campaign rather than a National Market Development Campaign.” (a processor’s viewpoint)

Supporting recommendations

The following recommendations are essential for the development of a sustainable organics recycling industry, whether or not an EoW code for compost is developed. They are:

- Develop a consistent approach to source separation for kerbside organics. Including standardization of what can and cannot go into FOGO bins, consistent labelling and signage and the roll out of an adequate education program (for the householder).
- Evidence-based information and guidance is urgently needed regarding the degradation of compostable caddy and bin liners and their use as a tool for increasing food waste capture rates and reducing plastic contamination in compost products.
- Initiate a federally funded research program to develop a consistent approach regarding feedstock and contaminant risk.
 - Develop a common understanding of what feedstocks can and cannot be recycled by identifying biological, chemical and physical contamination risks associated with them, and the most effective means of their control.
 - To address the real or perceived risk associated with restricted animal material (RAM) in organics processing and use.
 - Update contaminant limits in end-products to reflect actual risk factors in the feedstocks approved for recycling.

“Good quality compost cannot be made from poor quality feedstock (“rubbish in, rubbish out”).”

- Investigate approaches to incentivize waste producers to take ownership of the contamination issue in kerbside and drop-off collected organics.
 - Funding incentives to promote RO buy-back policies by local government.
 - Develop legislative tools to give processors confidence that they will not be penalized for rejecting contaminated feedstock delivered under contract from local government.

- Ensure council by-laws allow a flexible approach that can deliver desired outcomes.
- Contaminant control systems combined with “carrot” and “stick” measures. For example, rebates for residents participating in kerbside source separation training programs. Stick measures could include barcode technology on bins and readers on trucks so non-compliant loads are not picked up and go to landfill at higher costs.

The following additional recommendations are contingent on improvements being made to feedstock and end-product quality. They are not necessarily less important, but their successful implementation would be undermined without having first addressed compost quality issues. They are as follows:

- **Update and expand state-based organics processing guidelines.**
 - To reduce barriers of entry for smaller regional organics processing facilities.
 - To develop and promote best practice guidelines for on-farm co-composting of agricultural and municipal organic residues.
 - To cover wet and dry anaerobic digestion and the beneficial use of digestate.
- **Conduct a study to consider what a distributed network of organics recycling facilities might look like in each State.**
 - Considering combinations of municipal and agricultural organics, collection systems, processing technologies, secondary processing (i.e., value-adding) and end markets.
 - Considering opportunities for integration with distributed energy systems (e.g., on-farm anaerobic digestion).
- **Initiate a federally funded research and extension program on the use of recycled organics in agriculture to develop fit-for-purpose product specifications and end-product guidelines for specific applications and markets, including the use of lower grade RO products (B grade compost) for example in remediation projects.**
 - Consider opportunities for delivery, e.g., through the CRC program.
 - Opportunities for integration of RO product use into the National Soil Research, Development and Extension Strategy.

- Establish a Compost Knowledge Hub that will collate, host and disseminate independent and un-biased information of a scientific and practical nature specifically for current and potential future users of RO products.