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10 October 2025

Dear Dr. Helen Prifti,

Re: AORA's response to the draft biosolids Resource Recovery Order and Exemption

Thank you for the opportunity for AORA and other stakeholders to comment on this complex regulatory issue, and the opportunity to provide practical and specific expertise to inform a regulatory approach that necessarily considers risks but also maintains and drives benefits of resource recovery activities.

The following pages of this response, together with associated reports, outline AORA's clear position that while controlling chemical contaminants of concern is important, the draft biosolids Resource Recovery Order and Exemption ('the draft RROE') is premature, overly conservative, and misaligned with real-world operations.

The rapid imposition of extremely low contaminant limits, without consideration of background levels, limitations in testing methodology, or system-level interactions, risks halting composting activities, undermining market confidence, and diverting material to landfill unnecessarily. These far-reaching operational and economic impacts highlight the need for a more measured approach to regulation that aligns with practical realities of the organics recycling industry.

Given these considerations, AORA asserts that a comprehensive Regulatory Impact Statement (RIS) should be undertaken before finalising the draft RROE. A RIS would provide a more transparent, evidence-based assessment of costs, potential unintended consequences, and the alignment of modelled risks with real-world system dynamics.

AORA acknowledges the complex and serious nature of the risks presented by emerging chemical contaminants of concern. AORA additionally recognises the need for a sophisticated and resilient multi-hazard framework approach to regulation in this area that measures modelled risks against prematurely abandoning practices that are known to be

beneficial, including practices that currently counter other risks across the wider resource recovery system.

AORA favours a partnership approach in working with the NSW Environment Protection Authority ('the EPA') and other stakeholders in the development of the most 'fit for purpose' regulation that carefully translates theoretical and modelled risks onto current practice. AORA asks that the EPA fully considers the benefits that the organics recycling industry provides, contributing to resource recovery targets and protection of the environment.

However, with specific concerns on the regulatory approach to date (see following pages of this response), it is the strongly held view of AORA and our members that the draft RROE requires considerable redrafting and justification/explanation. Some of the concerns relate to industry impact and what work has been done to assess consequences to the wider organics industry. Significant concerns relate to the way in which modelled impacts and indicators of possible risk have been understood in relation to soil amendments and the practical use thereof.

AORA is seeking additional work to be completed, along with ongoing consultation, to address various points of uncertainty prior to gazettal of a revised biosolids RROE.

We can see a path forward where additional evidence and insight leads to strong resource recovery and circular outcomes, as per the EPA's own targets, and where unintended consequences are avoided, all while keeping human and ecological health impacts top of mind.

We trust that this response will be given due consideration not only to the individual draft RROE and its future implementation but also to the wider issue of managing contaminants of concern and achieving maximum benefits from organics recovery. We welcome any ongoing opportunities to work with the EPA on providing feedback to updated regulatory directions in this area.

Sincerely,



John McKew
National Executive Officer, AORA

Role of AORA and notes on this response

AORA is the National Peak Body for the organics recycling industry. The mission of AORA is to maximise the recycling and reuse of organic materials while promoting understanding of these activities and their significant benefit to Government, allied industries and to the general public. Organics recycling is a small yet impactful industry in Australia and is a critical contributor to National and State-level circularity and resource recovery goals.

Each year AORA reports on the economic impact of the industry. Organics recycling in Australia can be considered advanced and efficient on a global scale, yet on the other hand has great ambition to provide ever-growing benefits with innovative improvements in the recycling and use of organic materials wherever possible.

Despite widely acknowledged benefits of organics recycling, and the use of resulting soil amendment products, multiple challenges hamper growth of the industry. AORA advocates on behalf of our members and the wider industry to address those challenges.

On the specific challenge of emerging chemical contaminants it bears repeating that the organics recycling industry is at the mercy of upstream effects, with limited opportunity to control chemical contaminants that may enter recycling pathways via multiple routes and where testing for certain chemicals remains unreliable and imposes significant cost. As AORA has stated previously, emphasis needs to be placed on regulating these chemicals as close to their source as possible (e.g. in consumer goods or in their use in other industries) as opposed to overburdening an industry that exists as a passive receiver and has few practical options for limiting ongoing, yet slow accumulation into feedstock material.

AORA prepared a thorough submission to the EPA's 2023 Biosolids Guideline review process. The comments below are additive to that submission as all points in that submission remain valid. EPA provided no response to the points made in the 2023 AORA submission and those points seem to have been largely ignored in drafting the biosolids RROE.

AORA commissioned SESL to provide the technical portion of this response. The SESL submission, titled 'NSW EPA Draft Biosolids RRO/RRE Independent review' is to be read in conjunction with this submission. AORA has also seen an early version of a report by EnRiskS, prepared for Hunter Water, in response to the NEMP 3.0 and draft biosolids RROE. These reports and those relied upon in our 2023 submission as well as a full understanding of the updates and supporting documents on the NEMP 3.0 informed the position in this response.

Far reaching industry and economic impacts

Should the draft RROE be gazetted in its current format, there are far-reaching and severe impacts on industry. These impacts don't just touch the organics recycling industry but also have ramifications for water authorities, landfill managers and others.

Due to the size of the impacts predicted AORA strongly suggests that a full regulatory impact assessment be carried out by the EPA. The points below only give an initial indication of the full impact, which will take additional work to properly quantify.

Currently, approximately 25% of all biosolids in NSW go to composting¹, this is more than 100,000 wet tonnes per year of material. This material is then added to other feedstocks so that the overall composted product volume is hundreds of thousands of tonnes. This composted product has multiple uses. Additional industries and economic activities are supported with soil health improvements and other benefits. The water authorities are supported with a favourable economic route for resource recovery of the biosolids material.

As written, **the draft RROE has the effect of abolishing composting of biosolids entirely and severely limiting raw biosolids application to land more generally.**

Given that the technical advice we have obtained raises what we see as legitimate concerns on how the EPA's risk assessment was applied in preparation of the draft RROE, it is our position that this significant impact on industry cannot currently be justified.

Ensuring evidence-based and transparent regulation through a RIS

While the EPA has advised that a RIS is not required on the basis that these instruments do not amend legislation, that interpretation overlooks the functional effect of such orders and exemptions. In practice, these instruments operate to 'switch off' parts of the *Protection of the Environment Operations Act 1997 (POEO Act)* and its Regulation, thereby altering the way those statutory provisions apply. This is, in substance, a change to the regulatory framework itself.

A RIS is required whenever a proposed regulatory change is likely to impose an economic, environmental, or social impact on the community. The draft RROE clearly satisfy those criteria. It would therefore be best practice, and consistent with the intent of the legislation, for the EPA to prepare a RIS so that the costs, benefits, and potential unintended consequences of these exemptions are transparently assessed.

¹ 'Biosolids Production and End Use Survey – Australia 2022/23', PSD for the Australia & New Zealand Biosolids Partnership

A proper RIS process also aligns with the findings of *Report No. 1 of the Select Committee on PFAS* (September 2025), which was critical of the EPA’s lack of foresight and transparency in managing chemical contaminants. Recommendation 12 of that report (calling for an independent review to determine the financial impacts of PFAS contamination on local water utilities) essentially mirrors what a RIS is designed to do. Expanding that kind of comprehensive analysis to the draft RROE would strengthen public confidence and demonstrate that the EPA has applied proper due diligence to a policy change that is, in effect, regulatory in nature.

While the EPA may view the proposed instruments as administrative updates, their legal and practical consequences go far beyond mere procedural adjustment. The introduction of new contaminant thresholds, soil testing requirements, and exemptions from key provisions of the POEO Act constitutes a significant regulatory shift. Undertaking a RIS would ensure that this change is justified, evidence-based, and consistent with principles of good governance and transparency expected of a modern environmental regulator.

The practical and economic impacts described in this submission illustrate why careful, evidence-based regulation is essential and why a RIS is necessary before implementation.

Considerations on the composting industry in general

The common concern across all AORA members is the overall impact on market confidence for all recycled organics products, especially FOGO and Garden Organics. When you compare the limits proposed in the Biosolids A/B unrestricted use grade, with the PFAS in the NSW EPA “What’s the GO with FOGO” report, it is easy to see that at least half of the composts tested will not meet the unrestricted use grade. Whether or not there has been a reduction in PFAS since this work was done, this is the latest publicly available data on PFAS in GO and FOGO. AORA strongly recommends the EPA prepare messaging to protect the GO and FOGO compost markets, to minimise impact as a result of the rollout of any revised Biosolids RROE.

The compost manufacturing industry only works if there is an end use for compost products. When the market loses confidence in use and safety of compost products, in this case by implication and comparison to the restrictions and limits on biosolids, then there is no outlet for compost products, leaving sites overstocked with product, and in a worst case, unable to continue to receive feedstock.

It is imperative that the EPA controls the narrative to preserve confidence to the community that compost products are safe, in order to preserve and promote the beneficial use of compost on land.

Some practical considerations on biosolids composting

The following points relating to the operation of composting facilities render conditions under the RROE impractical. These points illustrate how they collectively render composting of biosolids under the proposed conditions no longer viable:

- Testing results from biosolids generators do not arrive simultaneously at composting sites with the biosolids. The many weeks required to obtain testing results would prevent timely application to land requiring additional storage capacity that does not currently exist and adding significant cost even if that capacity could be developed over time.
- The same applies to retesting of composted product where site application has already been planned and may be scheduled to occur prior to test results being available.
- Application to land prior to test results being available bears little risk currently because reliable assumptions can be made based on average test results, and because results commonly result in classification as Grade A or B rendering product suitable for unrestricted or restricted use 1.
- This is a very different situation with the proposed PFAS thresholds where there is extremely low confidence that any biosolids would return a result of grade A/B, including following composting where other feedstock materials may also breach the very low threshold values proposed.
- The points above illustrate the difficulties of accepting or rejecting materials at the compost facility gate, which is not a practice that commonly occurs currently. Instead, facilities operate as passive receivers who must address issues of physical contamination after the fact. Assurances are relied upon for chemical contaminants.
- Delaying processing is not an option due to site constraints at existing facilities. Every square metre of a composting facility contributes to the viability of the operation. Facilities do not have 'spare room' to temporarily store biosolids when received.
- Separation of batches to allow for pass/fail testing and to ensure that only 'failed' batches were sent to landfill would further place restrictions on movement of materials through processing facilities.
- Significant financial risk (opportunity cost, labour costs etc) would have to be endured during processing while waiting to receive test results. This is on top of PFAS

testing costs (an additional \$1138-2350 per sample on top of current testing requirements), as well as any costs to dispose of 'failed product'. Loss of revenue from sale of product is an untenable risk in the context of batches that have high uncertainty whether they would meet proposed thresholds or not.

- The limited number of laboratories providing PFAS testing will result in longer delays in obtaining test results.
- There is a lack of confidence around availability of 'clean' feedstock to blend with biosolids. The EPA 'What's the go with FOGO' report highlighted background levels in GO (most results above 1 µg/kg for PFOS) and FOGO composts. It is unknown at this point what the contributing pathways are for PFAS content in green waste.
- Dilution of biosolids in the background of other feedstocks (1:3 or less) is not expected to achieve grade A/B under the proposed thresholds. The draft RROE as written only allows for composted product to enter unrestricted use, so the result is no other option besides disposal to landfill for large quantities of composted material.
- The addition of biosolids to compost recipes results in more beneficial compost with optimal nutrient balance and rich sources of organic matter in different forms. Without the biosolids content the benefits of the composted product may be reduced, further diminishing revenue for compost facilities.
- Processors will need to source alternative feedstocks to replace biosolids and its valuable nutrient content but there are limited alternatives and these alternatives bear their own costs and operational constraints. Considerations of possibly lower tipping fees, purchasing feedstocks and the risk of other physical and chemical contaminants make for complex business decisions.
- The marketability of biosolids compost products has been built on its consistency of form, high beneficial nutrient and trace element content, high margin of safety with respect to pathogens and ease of use. In particular, Class A biosolids-based products currently have good market acceptance in landscaping and agriculture. Changes to compost recipe endanger these market pathways, with increased costs, more complex user restrictions and unfounded assertions on the products safety. These impacts affect the overall viability of not only the biosolids products industry but all organics facilities.

- Market conditions for compost and biosolids use can be highly localised. Seeking alternative feedstocks, disposing of failed batches and supplying end users are all effected by transport distances. Recipe changes and site relocation are ‘make or break’ conditions for entire operations.
- Disposal costs may include paying the landfill levy, but no industry prices their gate fees with the end product going to landfill. How does the industry budget for any portion of their product being classed as Grade C, and under the RROE, not to be supplied to a consumer, and so becoming a liability instead of a saleable item.
- Shifting to alternative feedstocks also involves new capital investment and process changes. Alternative feedstocks such as food waste or manures will have different processing requirements, necessitating new equipment. Alternative feedstocks such as animal mortalities bear their own complex regulatory burdens and considerations, whilst FOGO has an increased risk of physical contaminants that need to be managed.
- New equipment and processes may also add to labour and energy costs, further undermining viability of composting activities. New equipment or vehicles necessarily comes with added maintenance costs.
- Biosolids contribute gate fees to composting facilities similar to other feedstocks, with the conclusion that abandonment of this material will results in large reductions in revenue.
- Any disposal of composted biosolids based on highly conservative assumptions of risk has significant impact on the perception of risk by both end markets and also the general public. As soon as a batch of ‘contaminated’ compost is disposed of all nuance in the modelling and careful assumptions and interpretations fall by the wayside in the eyes of the press and others.
- There is a high risk of any individual batch failing due to very low contaminant thresholds that are indistinguishable from background levels of PFAS. In the face of uncertainties around testing reliability and limits of reporting, this is not a risk that processors can manage. The resulting effect would be for all composting of biosolids to cease.

While most of the points above relate to composting of biosolids, many similar considerations also apply during the application of raw biosolids to land. The timing of soil testing of all biosolids and composted biosolids application as proposed in the draft RROE is highly impractical. The flexibility and autonomy of biosolids users is severely impacted and the required stakeholder engagement and notification as requested by EPA and the Water authorities makes the short timeframe of testing (no more than 3 months prior to an application) completely impractical and will not provide beneficial information. Also, the scope of 'any other waste' could be construed very broadly and therefore opens suppliers and users to legal risk.

Economic impacts outside the organics recycling industry

Biosolids composting is currently an economic option for resource recovery from wastewater treatment plants. This resource recovery activity has been considered a safe activity for decades, has made a valuable contribution to agriculture, and has historically led to high demand for composted biosolids product. The use of composted biosolids, even in landscaping uses provide multiple environmental benefits that are not currently accounted for.

If biosolids cannot be composted, the generators (wastewater treatment plants) are forced to use other, often more expensive, management options, such as direct application to land, landfilling or incineration. New treatment processes, at different stages of sewage treatment or biosolids treatment such as advanced filtration or pyrolysis are not yet confirmed as economical or remain in early R&D stages of potential implementation.

Any of these costs on water treatment return directly or indirectly as costs to households, either via Local Councils or Water Corporations.

Landfills do not want to take biosolids, or at the very least may require additional and costly dewatering of biosolids to allay concerns of odour. The potential for PFAS to reappear in landfill leachate is also a real concern, and would incur further expensive rehabilitation costs. Returning landfill leachate to water treatment facilities would not provide a solution. Landfilling of biosolids would also take up valuable putrescible landfill airspace that is already in very short supply. Despite EPA's considerable efforts, the diversion of food waste from putrescible landfills is not likely to leave an adequate gap in the near term. To manage the risks on landfills, landfill operators will demand higher fees to accept low grade biosolids (in addition to the landfill levy).

Agricultural users of composted biosolids value the transformed organic matter content and also the added nutrients that these products provide. There are not necessarily other products that could replace these benefits, and not in the short term.

Areas of concern regarding regulation of chemical contaminants of concern in biosolids and other organic materials

‘Chemical contaminants of concern’ in this response refer to the specific chemicals as listed in the draft RROE, namely PFOS, PFHxS, PFOA, HHCb (Galaxolide) and Triclosan with particular emphasis on the treatment and modelling of PFAS chemicals.

Measuring risks and wider system impacts against resource recovery targets

The EPA as a regulatory body has a responsibility to enact regulation to protect, restore and enhance the quality of the environment in NSW while also reducing any risks to human health. Minimising risks from any chemical contaminants is paramount, but the EPA also oversees, regulates, and assists waste management activities towards these same aims of protecting and enhancing the quality of the environment.

AORA and its members are concerned that the draft RROE has been prepared without adequate consideration of the **wider system impacts**. We want to avoid an outcome where considerable volumes of biosolids or biosolid products are no longer deemed suitable for use and therefore must be sent for disposal in landfill is an outcome. As it stands, the draft RROE does not protect against this risk. This is in the context of a significant degree of uncertainty around the real levels of risk to human or ecological health from PFAS in compost or different grades of biosolids).

In developing its regulatory approach the EPA must assess the **benefits provided by current organics recycling activities**. AORA believes that these benefits, particularly those relating to mitigation of PFAS risk, have been largely ignored. With the limited timeframe provided to outline these benefits, and how they counteract specific risks (e.g. transfer of PFAS chemicals from soils to plants), we strongly suggest that this concern forms the basis for

more work to address the factors currently contributing to uncertainty in modelling and to **match the regulatory approach to real-world system interactions**.

The EPA 2023 Biosolids Guidelines Review noted that a tiered approach might be appropriate where **thresholds could be reduced over time**. This approach would consider the relatively gradual risk with PFAS chemicals, in their potential for slow accumulation; while also accounting for recently implemented national bans on the three PFAS chemicals of concern; and time for changes in multiple sources of these chemicals to ‘wash through the system’. A tiered approach also provides time for alternative treatments to be further developed and tested at sewage treatment plants or elsewhere, and for laboratory test methods and capacity to be further formalised and implemented.

The draft RROE in its current version seems to be asking for an accelerated approach that is not warranted in the context of a lack of alternative treatments, the current sophistication of chemical testing methodology and the **significant degree of uncertainty in risk modelling** as applied to soil amendments specifically.

Market confidence and public perception of organic soil amendments more broadly

The organics recycling industry exists not merely to take advantage of organic resources but also to mitigate various risks such as the environmental and economic costs of waste disposal, mitigation of climate effects of landfilling and the protection and restoration of soil quality. Many of these benefits remain officially ‘unaccounted for’ due to a lack of extensive research support and analytical characterisation. But while benefits may not be fully quantified, they are nonetheless widely acknowledged.

Market support for the beneficial reuse of organics is ongoing work. Current opportunities for innovation in the field are perhaps larger than ever before. Yet market confidence also relies on risk management frameworks that have been imposed, and also to the **perception of risks** to business models, end-users and to the general public.

Setting regulatory threshold values too low, too quickly will have far reaching consequences, not only to the treatment of biosolids but to the broader organics recycling industry. The EPA seem to acknowledge this in their previous position, putting forward the **possibility of a tiered approach in the 2023 Biosolids Guideline Review**. Initiation of any new regulation at a lower margin of safety and careful translation of screening values into threshold values

would fit with the very recent introduction of national level bans on the PFAS chemicals of concern.

While a guideline value can be applied in different ways (see further discussion below), regulatory values such as Maximum Allowable Soil Contaminant Concentrations (MASCCs) have distinct **legal and business operation impacts**. Processors and end users will overlay these very real risks with their own conservative assumptions as to viability of an activity. The too rapid withdrawal of certain waste management activities or the abandoning of activities or batches or material could have significant impact on resource recovery targets.

AORA is of the view that additional sources of confusion have been introduced in the way that guideline values have been translated to regulatory limits in this case. For further details see the attached technical report from SESL (particularly section 5.1) and other associated reports. The multiple questions that have been raised as to how the modelling or available data have led to the choice of threshold values further highlights the caution that needs to be employed to clearly **communicate the safety and value in recycled organics**. For example, strong statements from the EPA that explain that worst case scenarios have been contemplated may assist in avoiding misinterpretations from others, including the press.

Correct application of indicator values as translated in regulatory instruments

The draft RROE draws on background materials such as the federal PFAS National Environmental Management Plan 3.0 (NEMP 3, as updated from the NEMP 2, and incorporating supporting documents), the UK Environment Agency's derivation and use of soil screening values, the NSW EPA's Biosolids Guideline Review, earlier internal documents such as various human health and ecological risk assessments (HHERAs), and scientific references therein.

Detailed modelling covering many interacting components and scenarios have been investigated with aims towards thorough analysis of risk of the chemicals of concern. New research on these chemicals is being released all the time. Yet, **considerable sources of uncertainty in the modelling exist** and limited empirical data (e.g. PFAS detections in human food grown under specific circumstances) continue to hamper robust models that fully explore the risk landscape. In fact, the more recent scientific literature, including those as cited and resulting in changes between NEMP versions 2 and 3 mostly serve to highlight the large degree of variability in results that only confirm rather than reduce uncertainty in the underlying parameters and the resulting modelling.

Some of the reports listed above, notably the UK Environment Agency guidance, duly note these sources of variability and accordingly **caution against moving directly from guidance and screening values directly into regulatory instruments** that impose real world penalties. In some cases, the detailed factors contributing to variability in the data are clearly outlined and emphasised. A notable factor that is highly relevant to soil amendment products and recycled organics is the impact of organic matter/carbon on the dissociation kinetics of particular PFAS chemicals with implications for leaching, uptake, bioavailability and transfer under different scenarios.

AORA holds the view that screening or indicator values have been misapplied as regulatory limits in the draft RROE and that these sources of confusion have greater implications for how organic materials and these chemicals of concern are treated (and perceived) in future. The attached SESL report highlights elements and calculations that require further assessment.

It is worthy to note that while Several European countries have introduced limits (e.g. Germany 0.1 mg/kg, Austria 0.1 mg/kg Belgium < 15 µg/kg)² for PFAS-substances in composts a single global "acceptable limit" for PFAS in compost does not yet exist.

Implications due to the current state of PFAS testing

Setting regulatory levels that bring real world consequences impacting multiple businesses, utilities and the public need to be made in the context of **reliable testing results**. In this case, limits of reporting as requested should align with what is currently achievable with detection of PFOA, PFOS and PFHxS in high organic matter samples.

There are considerable concerns that the limits of reporting as asked for in the draft RROE are unachievable with soil, biosolids or compost samples. In addition, inter-replicate variability in the presence of these matrix materials, as well as inter-lab variability and contamination concerns during handling and testing, particularly at the very low levels as proposed is **at odds with the burden of testing** (at multiple points) that the draft RROE proposes.

Considering the likelihood of variable results, even from very carefully sampled and handled testing, there does not seem to be any justification to take the absolute maximum

² Wilkinson, K. and Jasonsmith, J., 2024. *A Critical Assessment of Standards and the Supply Chain for Producing High-Quality Recycled Organic Products Stage 1 Technical Report for the Review of AS4454: Australian Standard for Composts, Soil Conditioners and Mulches Project*. Report for Department of Climate Change, Energy, the Environment and Water.

concentration from testing into consideration against threshold values. Standard scientific principles allow for replicate samples to capture a measure of variability and take that into account when comparing to threshold values. From EPA conducted testing of sewage treatment plants and composting facilities it is known that variability on the order of 2 µg/kg of PFOS/PFOA is commonly observed and inter-replicate variability on the order of 10 µg/kg is not uncommon.

Practical implementation of a new RROE in line with existing Biosolids

Guidelines

Operability of the draft RROE under current interpretations of the NSW EPA Biosolids Guidelines raises **multiple points of confusion**, arising from different classification schemes and potential end uses and the interaction with proposed thresholds with consideration of other contaminants but also nutrient levels. There also appears to be some confusion as to how application rates of biosolids or biosolid products under either restricted or unrestricted uses interacts with determined risk pathways.

AORA strongly suggests that **more work needs to be completed to clarify how a new RROE will work in practice**, both with biosolids and also composted biosolids products. AORA is available to work with the NSW EPA to evaluate (and minimise) the impact of regulatory options and to develop a practical transition plan that minimises landfilling.

Considerations of background/ambient PFAS levels and their support (or otherwise) of risk assessment approaches

It is noted that there is a 28-year history of biosolids applications to soils (directly or in products) in NSW. There is an abundance of documented sites that could be investigated to obtain helpful data that could potentially highlight and quantify risks of accumulation in real world settings. This data would serve to strengthen or tighten modelling approaches and therefore could be used to provide greater certainty around the best pathways for beneficial use of biosolids.

Extensive testing of soils and biosolids requested in regulation in a less targeted way and using very low limits that are already known to be similar to background/ambient levels of e.g. PFOS would not achieve the same outcome. In contrast, there is the risk of unnecessarily limiting certain activities on a wholesale level rather than **providing insights into sites or areas of particular concern**.

If evidence is gathered that points to ongoing accumulation of chemicals of concern, then it is worth remembering that the most impactful point for regulatory efforts are upstream in the supply chain. A timely, carefully considered, and sophisticated approach to regulation by the EPA could help address these fundamental concerns (see below).

Amounts of PFAS in other feedstock materials from EPA's own work (What's the Go with FOGO) and other studies³ show that background levels of PFAS in materials such as commercial compost and potting mixes have been observed in the range of 1-15 µg/kg, with PFOS in particular being seen in green waste compost at levels higher than the newly proposed thresholds. EPA have not provided updated data to show any changes in these ambient levels. PFAS could potentially enter green waste and other feedstocks by multiple hypothetical pathways. Business decisions regarding the future market confidence cannot be made without clear empirical data to further characterise feedstocks and eliminate risk pathways.

Addressing sources of chemical contaminants

There is a risk in applying regulation at the 'end-of-pipe' may result in delaying more effective action further up the supply chain. The risk of PFAS chemicals in particular (and the 3 PFAS chemicals of most concern) is based on the potential for these chemicals to slowly accumulate in biological systems. Controlling trace amounts of these chemicals at one potential point of accumulation is an apparently simple solution that can have negative ramifications for other parts of the system.

The largest beneficial impact will always be limiting these chemicals at source. These efforts have commenced in the form of National bans on the use and import of the three PFAS chemicals. A program of measuring chemicals of concern during the application of biosolids could potentially **help track the effectiveness of measures** such as the National bans. However, this will only occur if absolute maximum concentrations are carefully chosen to be protective but allow beneficial application to land to continue as a commercially viable activity.

³ Sivaram et al. (2022) "Per-and polyfluoroalkyl substances (PFAS) in commercial composts, garden soils, and potting mixes of Australia." Environmental Advances 7: 100174.