

### **Timeframe for the new regulatory approach**

#### **Has the EPA determined what the new regulatory approach for biosolids will be?**

Not yet – the EPA is continuing to gather and analyse relevant information and to engage with stakeholders to inform its decision-making. The EPA welcomes feedback and submissions from stakeholders to ensure that issues that are relevant to stakeholders are considered in the decision-making process.

#### **When will the new draft regulatory approach and any transition arrangements be released for consultation?**

We currently intend to consult with stakeholders in early 2024 on the draft regulatory approach, including any transitional support needs and any interim regulatory measures that may be needed while we are developing and implementing the new regulatory approach. We understand that our stakeholders desire regulatory certainty. We will continue to make information available to stakeholders as the EPA progresses this reform. Please let us know if there is a particular issue that you would like more information about and we will take that into consideration in our ongoing stakeholder engagement.

#### **What will be included in the regulatory approach?**

We are open to stakeholder feedback on what regulatory actions you would like the EPA to consider to address our review findings; we will consider this feedback and other relevant information in developing the new regulatory approach. The state-wide sampling program completed earlier this year will provide more information on contaminants present in biosolids in NSW and will help inform any transitional arrangements and any interim regulatory measures that may be needed.

#### **What transition period does the EPA envisage for implementing the new regulatory approach, noting that transition arrangements are critical given the significant investment implications for the community?**

We would like more information from you about what your transition needs and timeframes are likely to be. Your feedback will be considered with other relevant information in developing the new regulatory approach. Those details are important, so please include them in your submission. We also intend to seek feedback from stakeholders again on their transition needs and timing during the planned consultation on a draft regulatory approach in early 2024.

## Source control

**Will the EPA consider regulating potential chemicals of concern at their source? While PFAS has a national approach looking at a phase out, others like Triclosan and galaxolide are common in everyday products.**

Source controls may be appropriate for some contaminants. For others, alternative approaches may be needed. This could include product stewardship/design standards to replace harmful chemicals with less harmful ones, and education and behaviour change initiatives for communities to be provided with information about the contents of consumer products. We're seeking your views on what approaches you think we should consider in developing the new regulatory approach.

**Would the introduction of source controls make investment in processing and infrastructure to improve the quality of biosolids outputs redundant over time?**

Many of the contaminants we're considering in this review are persistent 'forever' contaminants. While source control may be part of the solution, it will likely be a longer-term action.

An example is the Commonwealth's current consultation on the proposed scheduling of PFAS and PBDEs under its Industrial Chemicals Environmental Management Standard (IChEMS) reforms. If the reforms come into effect in their current form, they will effectively ban the importation and use in manufacture of these chemicals in Australia over time. However, those actions won't be effective in mitigating short to medium-term harm. Additionally, we know from previous examples, such as Chlordane, that even once banned, these chemicals can remain in the environment for a very long time.

## Potential changes to Policy

**How is the EPA considering resource recovery and the waste hierarchy in their approach to biosolids management to avoid biosolids just being diverted to landfill, with all its associated costs?**

The waste hierarchy, the [resource recovery framework](#) and the Government's [Circular Economy Policy Statement](#) are part of the policy settings which will guide our future regulation of biosolids. At all times, biosolids reuse for land application must confer a benefit, be fit-for purpose and must not result in harm to human health or the environment. We understand it is important for our new regulatory approach to balance the benefits biosolids provide to land in terms of carbon and nutrients, with the risk of harm from pathogens and contaminants.

Please outline in your submission anything you would like the EPA to consider in addressing these challenges. We also need to consider the possibility of other uses for biosolids – such as for energy recovery, biochar use on land or in manufacturing for example. There is potential to consider grant funding or support for research and development for other beneficial uses.

**Has the EPA consulted with biosolids users, such as farmers?**

Yes. We engaged early on in our review process with the NSW Farmers' Association, the Department of Primary Industries (Agriculture), the NSW Food Authority and agribusiness regarding our review of biosolids regulation. We welcome input from landowners, farmers, businesses, and the community as we progress development of new regulatory settings for biosolids.

## **Are you considering a proportionate approach for smaller sewage treatment plants, similar to the risk-based licensing approach?**

Yes. We are interested in applying a risk-based and place-based approach. The 2023 biosolids sampling project was based on water catchments to inform our understanding of how differing trade waste inputs and sewage treatment plant configurations may be influencing biosolids quality. Therefore, a proportionate approach may be a possible outcome.

## **Past funding for sewage treatment plants upgrades has focused on effluent quality. Is the EPA considering possible incentives for plant upgrades to improve biosolids quality?**

The EPA is engaging with the Department of Planning and Environment and the Independent Pricing and Regulatory Tribunal (IPART) as long term capital investment in sewage treatment infrastructure and changes to sewage treatment processes in the longer term may be options needing consideration.

## **Will a regulatory impact statement be done to assess whole of system implications of the regulatory change?**

A regulatory impact statement is typically completed when changes are made to regulations. While not required for amendments to a resource recovery order and exemption, or a guideline, there is the potential for us to produce something similar, for example a cost-benefit analysis, to assess the impacts of changes in requirements to our stakeholders.

## **How would biosolids reuse that is different to the current agricultural land application be managed?**

Resource recovery orders and exemptions may be needed for the land application of other biosolids products. Any reuse of waste for land application must meet the core principles of the resource recovery framework. Waste for reuse, including biosolids, must be beneficial or fit for purpose and not cause harm to human health or the environment.

## **Will a new regulatory approach address the issue of high-water content in biosolids with regards to transporting to beneficial reuse sites including agricultural sites?**

It is good practice to reduce water content in biosolids. Reducing transport costs and minimising risks of pollution from spills and leaks are some of the benefits. We are open to looking at all options, as we want to identify all issues and challenges and we encourage this to be raised in submissions.

## **PFAS National Environment Management Plan (NEMP) 3.0**

### **Why is there a difference between the proposed PFOA limits in the NSW regulatory review and NEMP 3.0?**

The overall risk assessment approach and supporting documents for PFAS conducted for this review were provided to the National Chemicals Working Group (NCWG) who adopted the general process for deriving thresholds for the Draft National Environment Management Plan (NEMP) 3.0.

When we completed the risk assessment for PFOA, there were no national Australian guidelines on ecological values for PFOA. The NSW technical review adopted the soil ecological risk analysis process from the UK and developed interim soil ecological guideline values relevant to Australian soils.

As the national approach (NEMP 3.0) was developed, the draft ecological soil criteria derived were based on the Canadian approach, to be consistent with the national guidance on PFOA. The PFOA biosolids thresholds were adjusted to reflect the most sensitive endpoint, which were the newly derived

soil secondary ecological guideline values presented in NEMP 3.0. Therefore, the difference in general terms is the use of updated data, and that the thresholds were based on the Canadian risk assessment process, rather than the UK process.

### **Will NSW EPA adopt the same values as NEMP 3.0?**

Yes. If NEMP 3.0 is adopted by the Australian and New Zealand Heads of EPAs (HEPA), we will use the national guideline values.

Feedback from consultation on NEMP 3.0 is being reviewed by the HEPA National Chemicals Working Group (of which the NSW EPA is a member) and will be considered as part of this review.

## **Technical analysis**

### **Why are dairy thresholds used for PFAS for all land uses, rather than just banning biosolids use on dairy farms?**

The published risk assessments show the key pathways that were assessed for potential exposure risks to human health and the environment. From that, the most sensitive pathway was chosen to protect human health and the environment, both now and in the event of possible land use changes in the future.

In the case of the PFOS and PFHxS, dairy thresholds were developed as this was identified as one of the key sensitive endpoints. While dairy was the most sensitive pathway for PFOS and PFHxS, other scenarios posed similar exposure risks to that of grazing cattle. For example, fodder grown on biosolids amended soils containing PFAS. Similarly, for PFOA, the ecological endpoints posed the same level of potential exposure risks as that of the dairy pathway. Therefore, although the most sensitive pathway was used, there may be other risks present that result in similar thresholds. It is important that all human health and ecological pathways are protected.

### **Can you explain how and when the margins of safety outlined in Table 4 would be applied, that is, in which situations?**

The margins of safety given in the NSW Biosolids Regulatory Review Issues Paper Table 4: *Risk-based contaminant thresholds for unrestricted use biosolids, restricted use biosolids and MASCC at three margins of safety* were derived from the acceptable exposure values. The margin of safety is essentially the buffer that is built into deriving a threshold value to provide confidence that there will not be unacceptable risk to human health and the environment from exposure to the chemical(s).

For example, a Margin of Safety of 2 means that the threshold value given is around half of the level at which there is understood to be an unacceptable risk (Margin of Safety of 1 is a Risk Quotient of 1 and a Margin of Safety of 2 is a Risk Quotient of 0.5). This buffer becomes particularly important for groups of chemicals like PFAS compared with a single chemical such as Triclosan. PFAS are a family of many related chemicals, but the risk analysis is based on only three specific chemicals (PFOS, PFOA, PFHxS). One approach to account for multiple PFAS present in biosolids is by applying a larger margin of safety.

Therefore, it is important to recognise and understand that the margins of safety do not need to be the same for every chemical. This could mean that a lower margin of safety may be applied for Triclosan, and a higher margin of safety applied for PFAS.

The EPA will decide which margin of safety will apply based on the nature of the risk posed by each contaminant and taking into consideration stakeholder feedback. The margin of safety selected will also consider that the 2023 sampling data is showing that biosolids are a highly heterogeneous product.

The EPA will also consider whether there could be a staged approach to decreasing the thresholds, that is, increasing the margin of safety over time. For example, we could adopt a Margin of Safety of 1 for

PFAS now but set a goal of moving to a lower threshold (Margin of safety of 2 or more) over time. Let us know how the different margins of safety (and their corresponding contaminant thresholds) may impact your business and/or management of biosolids.

### **The EPA sampled biosolids from sewage treatment plants across rural and metropolitan areas in NSW in 2023. Were there any differences in the results for chemical contaminants and pathogens, including PFAS? Do you consider these results reliable?**

Seventy-five sewage treatment plants were sampled to assess contaminants in biosolids at the point of production. Preliminary findings show that PFAS is present in all samples, and there appears to be no correlation with high PFAS levels and known sources. Galaxolide and triclosan were detected in 97% and 99% of samples respectively, while results for PBDEs and chlordane are still to come. A summarised report will be posted on our website once data analysis is complete, with participating facilities each receiving their own results.

### **Will the Hazard Analysis and Critical Control Points (HACCP) approach be applicable to all biosolids end uses? How would it work in practice?**

All biosolids reuse options have the potential for pathogen exposure, so the HACCP framework has potential benefit for all end uses. The HACCP approach relies on a customised risk analysis of the activities taking place. If the HACCP approach was implemented, each biosolids producer would need to complete their own analysis, identify key quality control aspects and then document and implement its own controls.

However, the review is seeking feedback on the proposal to adopt the HACCP approach. We encourage you to provide your opinions with examples on how it may work in practice, for your business.

### **What is the EPA's position on outputs of anaerobic digestion and composting biosolids that can't meet proposed limits?**

If new regulatory limits are introduced and they cannot be met, biosolids or outputs of anaerobic digestion of human sewage will not be able to be land applied. For processes that include sewage sludge inputs, such as anaerobic digestion and composting, the EPA is considering whether they should be subject to the same regulation as biosolids. It is noted that composting may reduce the concentration of some contaminants and pathogens, but does not reduce other contaminants (e.g. metals, PFAS). The EPA does not support dilution of contaminants to achieve regulatory requirements.

### **Has the EPA considered the impacts on climate change and greenhouse gases of different biosolids treatment options, including landfilling, thermal treatment or anaerobic digestion?**

The EPA has a critical role in protecting the environment from the threat of climate change and in delivering actions that will support NSW to achieve net zero emissions by 2050. Consistent with our [Climate Change Policy](#) we will consider climate change as part of our decision-making on a new regulatory approach, using the best available evidence and knowledge.

### **Are there any new requirements for stability monitoring or odour management? Will any changes to these have an effect on land management options?**

Odour levels correlate well with stabilisation levels of the final product and these two factors impact land management options. The stability report provides several recommendations for changes and we are seeking comments on those proposals.

**The proposed new thresholds decrease permitted copper (Cu) and zinc (Zn) concentrations, but these are often needed for crop fertilization. If biosolids exceed these thresholds, they may be substituted with other fertilizers that could contain other contaminants, such as PFAS, for which they aren't tested. Can you please comment?**

The National Biosolids Research Program data informed the review of heavy metal thresholds including Cu and Zn. The new limits are based on the impact to soil microbial function and ensures that the nutrient cycling that they perform to make nutrients available to crops is not impacted. PFAS is present in a wide range of consumer products and the Commonwealth government is currently consulting on reforms which, if the current version is implemented, will ban the use of some PFAS chemicals in products and manufacturing processes in Australia which will see PFAS eliminated in products like fertilisers and pesticides over time.

**Are there any considerations around the phosphorus recovery from biosolids and wastewater (like what is being done in the European Union)?**

Biosolids are a source of carbon and other beneficial nutrients, including phosphorus. The aim of our review is to ensure that these resources can be safely reused. Please provide your views on phosphorus recovery and how it could present an alternative treatment pathway for biosolids.

**There are inconsistencies in the field application process of biosolids. Can these be refined?**

We welcome comments on biosolids management and any concerns about inconsistencies we should be considering as we develop a new approach.

**Are there any (new) proposed pathogen monitoring targets for the new S1 and S2 stabilisation grades? Can you please clarify how the proposed stabilisation categories (s1 & s2) will be defined?**

The biosolids regulatory review has not yet considered the pathogen thresholds. We are seeking feedback on the proposal to include the hazard analysis critical control points (HACCP) approach, and the potential impacts and benefits on facilities which that approach may have. Once we understand what types of controls may be adopted by operators, we can consider possible thresholds. This could, for example, include a combination of HACCP and targets, and measurement of indicator organisms rather than direct measurement of pathogens.

**In the "new guidelines" will there be differentiation between application rates on non-food end uses i.e. forestry/mining as opposed to cropping and fodder crops?**

No. The threshold values have been derived based on the most sensitive exposure pathway. Maximum application rates will protect human health and the environment now and into the future, noting that land uses change over time (for example mining land can be rehabilitated for grazing after mining has finished).

**Has the EPA done any sampling to check whether there has been uptake of these chemicals in forage/fodder or is this based on assumptions?**

The EPA has not sampled forage/fodder or completed an uptake assessment. We have relied on research conducted by others, and relevant to the NSW context, to inform our risk assessments.

The potential for uptake of the chemicals was assessed based on general scientific literature on field and experimental data on the transfer of the chemicals from soil into plant material. This means that different and relevant transfer factors were used where available, based on the plant type being assessed (fruit



and vegetables for human consumption or grass and grain for fodder). This approach is consistent with national and international risk assessment approaches, where transfer factors are used in deriving other types of guideline values.

### **Has the EPA consulted with NSW Health regarding the human health aspect of biosolids application?**

Yes. NSW Health was engaged as part of early consultation on our review work. We will continue to engage with NSW Health and other NSW government stakeholders as we develop our new regulatory approach.

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