



Comments form:

PFAS National Environmental Management Plan consultation draft

We welcome comments or suggestions on the draft PFAS National Environmental Management Plan. There are questions throughout the plan copied into this document. You can respond to these questions or make comments on any aspect of the Plan. This form also includes all the section headings if you have specific points that you would like to make on the text.

Your comments will help the development of the Plan. Please indicate below or clearly state if you would like your contribution to remain confidential. Note that Freedom of Information access requirements will apply to all comments, even those marked and treated as confidential. Accordingly, your comments may be released to the public.

Written submissions, including those using this form, should be emailed to **PFASNEMP@epa.vic.gov.au**
Mail:

PFAS NEMP Consultation Feedback
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If you would like to receive email updates on the PFAS NEMP, including details of opportunities for further participation in its development, please email us at **PFASNEMP@epa.vic.gov.au**

Please supply your comments by Monday, 25 September 2017

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QUESTION 1: Is the proposed purpose and scope, including the initial focus on PFOS, PFOA and PFHxS of the PFAS NEMP appropriate to address legacy PFAS contamination issues. What else would be required to enable a nationally consistent approach that enables decision making? Why do you think this? What are the priority areas where national consistency would be desirable?

AIP welcomes the development of the PFAS NEMP with a view to it providing a transparent, nationally consistent approach to the management of PFAS in the environment. AIP members have a strong interest in policy relating to PFAS, both in relation to the legacy impacts and ongoing use of PFAS firefighting foams for emergency situations for large bulk fuel fires.

AIP supports that the NEMP should take a risk based approach and build on the existing effective contamination and remediation regulatory environment across Australia. AIP does not believe there are sufficient shortcomings with the existing regulatory system that would require a new or dedicated regulatory/legislative arrangement. AIP requests that it be clearly justified where there are unique characteristics and requirements for PFAS compounds that cannot be adequately addressed through the existing regulatory system, or without appropriate amendment to the system.

Furthermore, the approach to be adopted under the PFAS NEMP should be considered in a manner that is equally applicable to any new Chemicals of Potential Concern (COPCs) to avoid repeating or re-inventing this process for future COPCs.

The NEMP's initial focus, as outlined in the consultation draft, is on PFOS/PFOA/PFHxS, with a view to expanding this as more PFAS chemicals are identified. AIP believes that any decision to expand to include particular other PFAS chemicals should be based on information regarding their toxicity and bioaccumulation risk and not on the basis of their numerical/proportional presence.

AIP also notes that in Europe, regulators are increasingly interested in effect-based analytical approaches to monitoring soil and water quality. These approaches look at the whole sample toxicity instead of looking at the individual constituents. While the field is in its infancy, AIP considers there is value in Australia considering a similar approach.

AIP agrees that it is appropriate for a document prepared by HEPA to focus on the assessment and management of legacy PFAS contamination, however several states are developing policies for the operational management and disposal for firefighting foams and AIP proposes that consideration also be given to coordinating the development of a nationally-consistent framework in this area.

In this respect, an operation policy for firefighting foams would need to recognise that there remain some emergency situations, particularly large bulk fuel tank fires, where it is appropriate for the current time to use PFAS-containing foams until the efficacy of PFAS-free firefighting foams is established in these applications. AIP requests that HEPA work closely with impacted industry sectors, such as the petroleum industry, to develop and adopt appropriate management strategies for the use of PFAS firefighting foams until such time as effective fluorine free foams become available. It is appropriate that the NEMP acknowledges the need for a collaborative approach in this area and provides for a process.

AIP sees the Guiding Principles as being broadly appropriate and the intent to harmonise interim state guidelines. However, AIP requests a clearer basis for the development of the TDIs and exposure scenarios, a clearer communication of the derivation of the revised numbers, and assessment of the impact on policy and operations of those numbers. AIP believes it is also important to clearly identify a relevant peak government body for setting these values, given the overlap under current arrangements within the Commonwealth Department of Health with different TDIs (particularly FSANZ and EnHealth).

AIP welcomes the recognition of a risk based approach. AIP agree that actions should be proportionate to the risk, be informed by science and consider economic and social matters, while also considering the limited remediation options and other uncertainties.

AIP also believes that any proposed testing regime (i.e. TOPA) should only be used as a 'guide' for development of management options. They should not be used to inform specific management options. This will ensure development of site specific management solutions and facilitate continued innovation in the management space.

AIP also notes the footnote definition on best practice, namely that *"a best practice is a method that has been generally accepted as superior to alternatives because it produces results better than those achieved by other means or because it has become a standard way of doing things"*. Given the emergence of these contaminants and the continued rapid industry learning and innovation taking place, it would be reasonable to allow any form of treatment which is demonstrated as effective such as via pilot plant trials. The guiding principles should therefore not place restrictions on new and emerging approaches and processes to address emerging issues.

QUESTION 2: What information would further inform the Australian occurrence of PFAS-contaminated materials and sites? Can you contribute to this information? What might limit your ability to provide this information?

The occurrence of PFAS in consumer goods such as sunscreens, cosmetics, etc, is well documented. These form a more direct exposure pathway to humans than the hypothetical risks from onsite soils or groundwater (unless there is a confirmed groundwater use pathway). A number of studies¹ undertaken on liquid discharges from waste water treatment facilities in Australia have demonstrated widespread use across urban areas, and subsequent re-distribution of biosolids generated from such facilities back into the community.

As such, in order to be accurate and reflect the dispersion of such materials into the community, AIP believes that the scope of data collection will need to be broad ranging.

Specifically, in relation to information sourced from contaminated site investigations, industry requires appropriate regulatory authorities (ARA) to determine the appropriate parameters and testing methodology first, prior to significant costs being incurred for sampling and analysis. Industry should not be required to repeatedly re-assess sites as ARAs identify new concerns, unless it can be clearly demonstrated that there is sufficient incremental value in undertaking such testing.

The plan should also be cognisant of existing, effective industry site risk assessment practices. While AIP acknowledges that there is likely to be some locations that would benefit from an undertaking of a "PFAS stocktake", this must also recognise these industry risk management strategies and site assessments. A stocktake can only be justified where there is sufficient risk to warrant that activity.

¹ Thompson, J, Eaglesham, G, Reungoat, J, Poussade, Y, Bartkow, M, Lawrence, M & Fueller, JF 2010, 'Removal of PFOS, PFOA and other perfluoroalkyl acids at water reclamation plants in South East Queensland Australia', *Chemosphere*, vol. 82, pp. 9–17.

Gallen, C, Drage, D, Broomhall, S, Kaserzon, S, Baduel, C, Gallen, M, Banks & A, Mueller, J 2014, *National snap-shot of POPs in Australian-sourced landfill leachate and biosolids*, ENTOX, The University of Queensland, Australia.

[Gallen C, Drage D, Eaglesham G, Grant S, Bowman M, Mueller JF](#). Australia-wide assessment of perfluoroalkyl substances (PFASs) in landfill leachates. *J Hazard Mater*. 2017 Jun 5;331:132-141. doi: 10.1016/j.jhazmat.2017.02.006. Epub 2017 Feb 24.

Utility companies now undertake routine testing of discharge quality for PFOS (and report evidence of it in the waste stream): https://www.powerwater.com.au/networks_and_infrastructure/water_services/pfas

AIP welcomes the specific reference in the NEMP of taking into consideration the need to maintain operations at critical facilities such as bulk fuel storage facilities when considering site contamination assessments. This consideration should also be extended to considering effective firefighting strategies and management practices. Again, AIP encourages HEPA to work with impacted industries.

QUESTION 3: What priority environment and human health criteria should be included in the PFAS NEMP. Can you provide any resources, such as technical reports or reviews, that should be considered?

As there remains considerable uncertainty around health based guidance values assessment, management and remediation measures should not be driven solely by a precautionary principle whereby an unknown impact necessitates a requirement to “do something”. Rather, there should be exposure pathway identified exists before triggering further assessment, management and remediation.

There is also considerable uncertainty relating to guideline ecological protection values for fresh and marine water. This uncertainty needs to be reflected in the NEMP and a clear process for addressing this uncertainty should be outlined.

AIP requests that criteria for marine environments be developed. AIP understands that CRC Care have engaged with the Department of Environment and Energy in relation to the derivation of marine Guidance Values, and that CRC Care have been requested to submit their draft values as part of the National Water Quality revision process. An update on the status of the plan for finalisation in Section 3.6 would be of value.

AIP is principally concerned with ensuring that the exposure scenarios and the preparation of risk pathways follow accepted approaches. AIP and Member Company experience over recent years in relation to the development of relevant PFAS guidance documents has highlighted the importance of such approaches, having witnessed concerns expressed by peer-reviewers on approaches taken in relation to a range of criteria, such as the basis for setting surface water criteria.

QUESTION 4: What resources (e.g. explanatory notes or guidelines) would be useful to accompany criteria values to explain how and why these values are set and what they mean for assessment of a contaminated site? How should the plan include or reference these resources?

AIP recommends inclusion of explanatory notes on:

- how guidelines should be applied (for example, as outlined in section 3.12 relating to Investigation levels for soils)
- recognition where and how there is uncertainty in the guideline values and how this may impact the outcome of the assessment
- the technical basis for setting Tier 1 criteria would allow risk assessors to undertake site specific risk assessments
- consideration of leaching potential
- acknowledgement of the complexities associated with source identification and fate and transport
- consideration of background concentrations and other sources when developing conceptual site models.

Also, AIP notes from its experience in the development of the CRC Care PFAS Guidance Documents, that there is a tendency for compounding of conservative assumptions in the derivation of criteria.

For a more useful application of Tier 2 (site specific) assessments, there needs to be a clear basis under which risk assessors could adopt pragmatic substitution of the original assumptions used to develop the Tier 1 screening criteria (as is the case with risk assessments for any other potential contaminant of

concern). A clear articulation of the derivation of the assumption would provide a clear basis for Auditors and ARAs to accept those pragmatic substitutions in higher-level risk assessments. For example, Section 5.2 refers to engagement with local community to determine the appropriate exposure scenario for a specific setting. When undertaken, this engagement may lead to an increase in site specific criteria relative to Tier 1 values. Auditors /ARAs need to be provided a basis for accepting the outcome.

QUESTION 5: What are your observations of site assessment and management for PFAS-contaminated sites? Can you provide brief examples or case studies where a site assessment and management approach worked well and led to a good outcome on the site? Why do you think this worked well?

AIP's observation is that current implementation of PFAS regulation has been, and continues to be, inconsistent. As discussed in Question 2, many potential sources of PFAS exist. To date regulators have focussed their attention on sites with legacy issues associated with firefighting foam. It is anticipated that EPAs will further expand their focus to other sources over time.

With respect to site assessment and risk-based frameworks, AIP considers it is key that there is flexibility with regard to development of additional PFAS- specific site assessment objectives, guidance and/or tools. Toxicology and bio-accumulation impacts will be better understood into the future and current perceived potential risks may be proven to not present a risk or present a potential risk at concentrations orders of magnitude above current published thresholds. Therefore, flexibility to update the PFAS NEMP in a short timeframe is highly recommended.

QUESTION 6: What other PFAS specific resources are needed to accompany the ASC NEPM? What should these resources include? Are the important site investigation prioritisation factors identified?

AIP supports the factors identified in section 2.9 for consideration when prioritising sites for assessment.

As a general guiding principle, AIP believes that Australia's current regulatory approach to contaminated site assessment and remediation has been largely effective and workable for industry. AIP has welcomed a number of public statements by EPAs at consultation workshops recognising the preferred approach of using the existing regulatory architecture as feasible and to work to identify and demonstrate those areas where there is a unique regulatory requirement for PFAS substances vis-à-vis other contaminants.

Much of the discussion in Section 5 reflects this, generally outlining standard risk assessment and remediation methodology. The value in this section is where there are exceptions to standard practice particularly around PFAS fate and transport.

The subsequent discussion in sections 7.1-7.3 in recognising ubiquitous sources in the environment are appropriate.

Other AIP Comments:

1. Contaminated Site Management Section 5.3

Will the PFAS NEMP provide guidance on how the acceptability of each of these pathways will be assessed?

2. Contaminated Site Management Section 5.5

AIP support this approach to the management of sites subject to all types of contamination including PFAS. AIP member companies do note, however, from first-hand experience that there are, inconsistencies across regulators regarding their support or otherwise of this approach. The NEMP should ensure consistency of approach with respect to the ongoing management of PFAS contamination across all jurisdictions.

3. Contaminated Site Management Section 5.6 -

AIP notes that the last sentence in this section is contradictory to the previous sentences. We consider the intent of section 5.6 is to outline that where there is a higher risk from site disturbance that in-situ mobility reduction should be considered. The last sentence implies that regardless of higher risk arising from disturbance that excavation for disposal and destruction is preferred which we consider is not the intent (as per section 5.7).

4. Terminology issues

As a minor point, AIP notes that fate and transport of PFAS is often loosely described in the plan. For example, it is not clear in Section 5.1 whether the authors intended to discuss PFAS in the water column (i.e. surface water) or are actually referring to migration in groundwater. As such, AIP recommends that the terminology in the NEMP needs to be consistent with other regulatory guidance documents.

QUESTION 7: What experience have you had with the effective or ineffective containment of PFAS-contaminated materials and soils? Do you have examples or case studies that you can provide?

QUESTION 8: What principles may be applicable to treatment and remediation of PFAS-contaminated materials. Why do you consider these principles important?

AIP agrees that the real impediment to remediation is the lack of cost-effective remedial techniques relative to risks associated with PFAS contamination. Other than sections 5.20 –5.23, it is not clear how the adapted ASC NEPM hierarchy will assist potentially responsible parties to manage groundwater plumes which is the primary concern associated with PFAS impacts. Sections 5.20-5.23 should be considered at the start of the section on Remediation and Treatment with the “preferred options” being considered once remediation has been considered as feasible. Remediation will not always be the “preferred option”.

In addition, AIP believes that if there is no net benefit to remediation (per sec 5.20) then management measures should be explored. However, current approaches to Institutional Controls, to provide barriers to potential creation of active pathways, are ineffective in most jurisdictions and yet vital for the protection of human health. For example, the ability to prevent groundwater abstraction is fundamental to this at a cadastral lot level. GRUZ (groundwater restricted use zone) are not uniformly implementable or enforceable. It is also unclear how this marries with intergenerational equity, if remediation is potentially worse than leaving insitu with institutional controls.

With specific regard to the drafting of the “most preferred option”, an additional bullet point is required to state off-site treatment and beneficial re-use at any location will be subject to regulatory approvals. This practice is currently approved by the VIC EPA and we are aware of approvals being sought in QLD and South Australia.

QUESTION 9: What treatment criteria and remediation objectives should be considered for inclusion in the PFAS NEMP? Please provide details explaining the nature and basis for these criteria and objectives.

AIP considers that PFAS should not be treated differently to other COPCs and that we should not limit ourselves with specific treatment criteria or remediation objectives, other than:

1. A need for a clear remediation objective and scope of work which clearly demonstrate that post treatment/remediation of the material is suitable for the proposed end use and that required approvals (where relevant) are in place to re-use; and
2. Ensuring appropriate approvals are in place for the transport and off-site treatment/destruction/disposal of the waste stream. This should also allow for cross-border transfers if they provide better (safer, more protective) options than within the state. This specifically applies to far-reached locations near state borders.

QUESTION 10: While noting that jurisdictions have individual approaches for setting specific landfill disposal criteria, what is your experience with the development of PFAS disposal criteria? Should the PFAS NEMP provide levels below which a material is non-contaminated or levels above which the PFAS content must be destroyed? Can you provide examples of applicable criteria, including how they were developed?

The NEMP should not provide levels above which the PFAS content must be destroyed as this would contradict this draft plan which has articulated that in-situ immobilisation or management can be a preferred option once the net benefit evaluation has been complete.

Again, it is important to demonstrate where PFAS compounds are sufficiently different to warrant an approach different from existing regulatory practice.

QUESTION 11: What performance standards would be most helpful to provide clarity for industry and the community for the establishment of new treatment and remediation technologies?

Performance standards for treatment and destruction facilities need to be consistent and look to demonstrate best practice where technology has been proven.

A key consideration is to ensure that the compliance costs do not make the destruction or treatment avenue commercially uncompetitive. This could potentially stop industry following HEPAs preferred hierarchy which includes off-site destruction or treatment.

Proof of Performance (PoP) trials are common place for emerging and innovative treatment processes and thus any performance criteria should be agreed between the licenced facility and relevant regulator. A consistent approach to the evaluation of PoP trial objectives and scopes should be adopted across the regulated jurisdictions. The key objective of PoPs is to demonstrate that the treatment or remediation process does not impact human health or have an adverse environment impact and is focused on treatment/remediation of the material for re-use or off-site disposal under agreed site specific or end use specific approvals.

As with previous questions, AIP considers current practices for mature COPCs (other than considerations of bioaccumulation etc) to be sufficient to address PFAS risk.

QUESTION 12: What are your views on the introduction of a PFAS specific waste code? For example: PFAS compounds or any material containing PFAS compounds.

Should the Government wish to pursue a PFAS specific waste code, AIP believes that it should be developed using the same process as other contaminants currently listed under relevant waste codes.

However, AIP recommends that there may be an opportunity to look at the entire waste management practice in Australia. Such an approach would consider whether there is a basis for a unique system of rules for PFAS, or alternatively whether to establish the most responsible and cost-effective approach for all regulated wastes/contaminants.

QUESTION 13: What other analysis methods are required (e.g. biota)? Are you able to provide suitable methods from recognised sources?

To assist regulators, local Government and industry in understanding the potential risks, AIP supports a transparent approach whereby regulators are open to sharing their data with respect to baseline and ambient data for receptors across Australia.

AIP also notes that in Europe, regulators are increasingly interested in effect-based analytical approaches to monitoring soil and water quality. These approaches look at the whole sample toxicity instead of looking at the individual constituents. While the field is in its infancy, AIP considers there is value in Australia considering a similar approach.

QUESTION 14: The PFAS NEMP is expected to include a number of best practice approaches to community and stakeholder engagement resources to be used by the jurisdictions. Based on your experience, what has worked well when engaging on PFAS-related issues?

AIP recognises that there is heightened community concern relating to PFAS. Transparent communications to concerned impacted communities will be a key function of the NEMP, particularly around the emergence of the science, and what governments and industry are doing to respond.

AIP notes that there are many current Australian guidance documents on stakeholder engagement and communication. AIP also notes that the ASC NEPM also contains plain English best practice approaches as outlined in section 8.7. Rather than redocumenting exclusively for PFAS, AIP recommends the plan refer to this existing practice.

QUESTION 15: HEPA is expected to consider research programs in priority areas. What areas would you recommend? Why would these be important research priorities? As research is completed, do you have suggestions on the best way to make this information available?

While in no way exhaustive, AIP considers the following as priority areas for research:

- Improved understanding of PFAS fate and transport
- Derivation of exposure scenarios
- Epidemiological studies to verify health impacts associated with PFAS exposure across populations to verify basis for precautionary principle given the widespread population-wide exposures to PFAS compounds for many years via consumer products, general exposure, etc.

QUESTION 16: What does success of the PFAS NEMP look like to you? How would you evaluate the success of the PFAS NEMP in meeting your expectations? What is your expectation on timing for the delivery of various components of the PFAS NEMP as well as the achievement of outcomes? How often should the outcomes be assessed?

AIP supports a pragmatic, risk based approach to the NEMP. Such an approach should ensure transparency for the community and the ability for regulators, government bodies and industry to work together to ensure assessment and remediation outcomes that deliver the highest environment, social and economic net benefit.

Some key outcomes/metrics include:

- considered basis for establishing Tier 1 criteria, and basis for undertaking Tier 2+ risk assessments
- considered basis for Responsible Parties adopting strategies for soil and groundwater
- prioritised research to better understand the relationship between PFAS exposure and human health and/or environmental impacts (beyond bioaccumulation)
- identifying a forward-looking approach for managing the identification/assessment of emerging COPCs in a manner that doesn't create confusion/frustration in the community and industry. – i.e. preparing the path for the next emerging contaminant (e.g. phthalates);

AIP considers a two-year review period to be appropriate, unless there is a need to rapidly respond to compelling new evidence arising out of international activities or local research activities.

PFAS National Environmental Management Plan sections

If you have specific comments or suggested text changes, please include the relevant paragraph number for Sections 1–9.

Preface

Executive summary

Introduction

PFAS Summit

Purpose and scope

Guiding principles

Other relevant plans and guidelines

1 Human health

2 PFAS occurrence

3 Environmental and health criteria

4 Contaminated sites assessment

5 Contaminated site management, including containment, remediation, treatment and disposal

6 Storage and transport

7 Environmental monitoring and analysis

8 Stakeholder engagement, communication and data sharing

9 Research, review and evaluation

Appendix A: PFAS sub-classes

Appendix B: Australian interim/draft criteria and standards for PFAS

Appendix C: Treatment technologies available in Australia

Appendix D: Interim/draft landfill disposal criteria