AUSTRALIAN SUSTAINABLE BUSINESS GROUP'S

Submission on

PFAS National Environment Management Plan
Consultation Draft

September 2017

Sydney, Brisbane

Table of Contents

EXECUTIVE SUMMARY

The Australian Sustainable Business Group (ASBG) welcomes the opportunity to comment Heads of EPA's *PFAS National Environment Management Plan Consultation Draft* (PFAS NEMP).

ASBG is concerned the standards proposed in the draft PFAS NEMP are ultra conservative. These standards appear disproportionate to the environmental problems they pose. Such ultra conservative standards will result in very high and probably unnecessary compliance cost. Given the vast volumes of PFAS wastes and contamination that will be generated the costs for management down to these standards will be enormous resulting in many sites being abandoned as simply too costly to remediate. Abandoned sites and sterilised surrounding lands are likely or their use severely restricted. Overly cautious approaches can also result in substantial poorer health and environmental outcomes due the extreme costs and likely unaddressed PFAS contamination due to unaffordability. ASBG recommends that a thorough cost-benefit analysis be undertaken to optimise the environmental and health outcomes on a risk-based approach.

The PFAS NEMP is to undertake a stocktake of PFASs, but the next steps of assessing the need for treatment and disposal infrastructure and the expected costs associated in meeting this requirement should be undertaken. This will form the basis of the full cost-benefit analysis recommended.

While the PFAS NEMP uses the risk-based approach under the ACS NEPM, this approach is lacking under the health and environmental criteria where contaminated land is not involved, but a similar approach should be taken.

Many remediation projects have been affected by the changing tightening PFAS standards. ASBG recommends once a project commences it should be grandfathered to provide certainly of the viability of the project.

There is a disconnection between the fresh water standards and landfill acceptance criteria which needs clarification and rectification. Otherwise landfills will be very reluctant to accept PFAS wastes despite meeting criteria as it could impact on their leachate quality.

The PFAS NEMP should support the development of the required waste management infrastructure and recommend actions to prevent planning approval issues, especially for thermal works. New technologies are being developed and should not be placed under inappropriate performance standards relating to old technologies, just because an appropriate standard has not been developed.

The PFAS NEMP should provide for further guidance on:

- Off-site beneficial soil reuse
- Transitional withdrawl of PFOS, PFOA and PFHxS
- Emergency use of PFOS, PFOA and PFHxS where safety is threatened
- Storage and use of PFAS other than PFOS, PFOA and PFHxS and management of their use

RECOMMENDATIONS

R1: ASBG recommends that:

- A full cost-benefit economic and social impact including industry impact study be undertaken on the NEMP.
- Until the economic assessment has been completed the NEMP should remain as an interim plan.
- The NEMP to include advice that standards will change, including that concentrations can increase as the science improves.

R2: ASBG recommends the NEMP either provide guidance on risk assessment processes or use the ASC NEPM criteria as the preferred method to determine a desired risk based health and environmental outcomes for all applications.

R3: ASBG recommends the PFAS NEMP standards, once accepted and updated from time to time be grandfathered for facilities installed to treat to those standards, linked to that edition in time.

R4: ASBG recommends the PFAS NEMP include:

- The linked consequences between ecological freshwater standards and landfill acceptance criteria especially on leachate quality.
- Encourage jurisdictions to adopt practical risk-based considerations when applying PFAS standards to the remediation and waste management sector.

R5: ASBG recommends the PFAS NEMP:

- Identify the scale of treatment, disposal and destruction facilities required to meet the estimated quantities of PFAS contaminated soils, concentrates and waters across Australia.
- Estimate the likely cost associated in managing the identified quantities above.
- Encourage special planning processes to aid in the establishment of both on-site and off-site facilities and remove roadblocks.
- Encourage innovation in new technologies and not subject them to performance criteria based on existing technologies.

R6: ASBG recommends the PFAS NEMP include guidance criteria for the beneficial reuse of soils using a risk based approach where fPFAS could be present.

R7: ASBG recommends that only off-site beneficial reuse of fPFAS soils be considered for guidelines recognising that the on-site management of such soils will be undertaken using the ACS NEPM.

R8: ASBG recommends the PFAS NEMP provide guidance on:

- The transitional with drawl of fPFAS in use providing a reasonable timetable
- Emergency use and containment of fPFAS.

R9: ASBG recommends the PFAS NEMP provide guidance on the storage and use of PFAS – other than PFOS, PFOA and PFHxS, to provide clarity on interim measures and warnings of likely new PFAS inclusions.

1 INTRODUCTION

The Australian Sustainable Business Group (ASBG) is pleased to comment on the Heads of EPA's PFAS National Environment Management Plan (PFAS NEMP).

The Australian Sustainable Business Group (ASBG) is a leading environment and energy business representative body that specializes in providing the latest information, including changes to environmental legislation, regulations and policy that may impact industry, business and other organisations. We operate in NSW and Queensland and have over 120 members comprising of Australia's largest manufacturing companies. Members were involved in the development of this submission and ASBG thanks them for their contribution.

ASBG supports a risk-based, reasonable, flexible and cost effective approach to environmental risk management of PFAS across Australia. ASBG's submission focuses on ensuring that the NEMP provides a scientifically and evidence based approach that optimises environmental and health outcomes. The main purpose of the PFAS NEMP is to provide certainty in the approaches and criteria in the management of PFAS in the environment or in use. If this can be achieved it will be welcomed as there have been an every changing environment in this area which makes it very difficult for business and industry to manage. ASBG also considers the PFAS NEMP should provide overarching guidance to environmental agencies to prevent a excessively cautious approaches to PFAS management.

This submission it refers to the PFASs in focus namely PFOS, PFOA and PFHxS as **fPFAS**. Where PFAS refers to the entire group it is referred to as simply PFAS.

Issues discussed by ASBG on the NEMP include:

- Concern that a cost-benefit assessment for maximising the outcomes of PFAS management was not undertaken. Costs of remediation to some of the proposed limits will be so considerable, that land abandonment will be a common outcome, resulting in poor environmental and health outcomes.
- Additional approaches to assessing and managing PFAS contamination.
- Plans for the supply and solutions involving disposal / treatment of PFAS materials.
- Guidance on the use of recycled products containing low concentrations.
- Management of PFAS materials in stock and Guidance on the use of other PFAS materials where no standard exists, in use where there is no replacement.

2 COST-BENEFIT ASSESSMENT

Notably absent from the NEMP is any consideration of costs and the benefits of cleaning up to the listed standards. Consequently, ASBG is concerned there has been no cost-benefit analysis for consideration of optimising environmental and health outcomes.

Center of concern are the ultra conservative standards set. For example, in Appendix B, PFOS has similar water standards to that for dioxin[1], i.e. at 0.23ng/l for aquatic species protection. This is despite PFOS being around 125,000 times less toxic. PFOA is about 250,000 times less toxic. The NSW Department of Health advice on PFOS and PFOA states:

> *In humans, there is no conclusive evidence that PFASs cause any specific illnesses, including cancer.*

PFOA is classed by the IARC as a Cat 2B suspected carcinogen, which is similar to many substances found in common food such a caffeic acid found in coffee. In contrast dioxin is a known Cat 1 carcinogen. Note PFOS has no current carcinogenic listing under the IARC. As a consequence, ASBG considers the levels under the NEMP appear ultra conservative and similar to that of dioxin and are disproportionate to the health and environmental problems they pose.

The NEMP's very low standard of 0.23ng/l associated with 99 percent protection of aquatic species. Such protection levels are not that often applied, the interpretation of this standard will become the main one required by the public and media. Contaminated site professionals also have expressed concern that the standards in the NEMP are in many cases at or close to background levels. Measurement at such low levels is possible, but subject to considerable errors. False readings can be common at low concentrations.

If ultra conservative standards apply, then the cost to meet them will be very high, consequently fewer contaminated sites and other PFAS contamination issues will be affordable to rectify. Consequently, ASBG fears the abandonment of large tracks of land due too expensive remediate costs. This should be avoided. Even where funds are provided ultra-conservative risk assessments of environmental chemicals drain public and private resources without proportional benefit. Even worse, they channel attention away from more pressing needs.

PFAS NEMP refers twice to the use of the precautionary principle in it Guiding Principles, but does not mention, Australian's Intergovernmental Agreement on the Environment (IGAE) clauses:

> s3.4 (3) *ensuring that measures adopted should be cost-effective and not be disproportionate to the significance of the environmental problems being addressed.*
>
> *S3.5.4 environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.*

ASBG also considers the full definition of the Precautionary Principle as under Australian's IGAE should used along with the other guiding principles of the IEAE. The truncated Precautionary Principle version does not consider the clause s*(2) an assessment of the risk-weighted consequences of various options.* ASBG considers the entire set of section 3 *Principles of Environmental Policy* must be considered for the development of the

[1] National Action Plan for addressing Doixins in Australia 2005 see also ANZECC Freash and Marine Water Quality Guidelines 2000 Vol 2 Ch8 page 8.3 207

PFAS NEMP. Government's proper application of the Precautionary Principle should include the wider application to the best set of risk-based options to maximise environmental and health outcomes overall.

Under the National Environment Protection Council Act 1994 s17 preparation of any National Environment Protection Measure requires the preparation of an impact statement which includes:

> *(iv) an identification and assessment of the economic and social impact on the community (including industry) of making the proposed measure;*

While the NEMP is not a NEPM per se, it is an important adjunct to the current NEPMs so far established, especially the Assessment of Site Contamination, lesser on air and hazardous wastes. However, it could be argued as there is no ambient marine, estuarine and fresh water quality NEPM, under this context the NEMP cannot be called up as a reference document for this area. Considering the application of impact assessment on NEPMs it is a fair call to also include the cost – benefits as a requirement before publishing national standards for adoption by the jurisdictions under the NEPC.

As a consequence of the above an economic assessment to consider the limits/risks imposed under the NEMP should be conducted.

R1 ASBG recommends that:

- ***A full cost-benefit economic and social impact including industry impact study be undertaken on the NEMP.***
- ***Until the economic assessment has been completed the NEMP should remain as an interim plan.***
- ***The NEMP to include advice that standards will change, including that concentrations can increase as the science improves.***

ASBG is concerned the social health impact of removing residents from their land, based on ultra conservative standards will result in far higher negative health consequences. Health impacts of movement, unemployment and other subsequent impacts should be part of the contents of this assessment. Costs of achieving the desired cleanup standards should include based on the current estimated costs of remediation. If done well this assessment should provide an optimum risk-based clean up levels for residential land for certain other uses. An example of such a study is provided below:

> ***A Finnish Case Study of Comparative Risk***
>
> *An enlightening example of comparative risk assessment comes from Finland, where, according to Dr. J. T. Tuomisto of the Finnish National Public Health Institute, as much as 80 percent of dioxin exposure comes from fish consumption. While reducing fish consumption would reduce dioxin exposure in the population, it would also yield an unintended consequence: an increase in the death rate due to cardiovascular disease.*
>
> *In Finland, fish is the main source of omega-3 fatty acids, nutritional components that have been shown to decrease cardiovascular deaths. Tuomisto estimated the net loss of life in Finland if farmed salmon consumption were limited to once a month or less, based on the recommendation put forth by the U.S. EPA (2000). He estimated that, with limited farmed salmon consumption, the estimated cancer risk is reduced by approximately 50 deaths. But, fish consumption is thought to prevent 30,000 cardiac deaths annually. Limited fish consumption would result in losing some, but not all, of this benefit. Tuomisto predicted 7,500 extra deaths per year due from cardiovascular causes if limited fish consumption were practiced in Finland.*

Comparing 50 extra estimated (cancer) deaths per year to 7,500 extra (cardiovascular) deaths per year should leave no doubt in anyone's mind that fish consumption in Finland should not be limited.

2.1 Clean up Costs vs Abandonment

Considering the vast quantities already identified of soils and groundwater and the very tight apparent clean up criteria listed, the costs are already considerable. For example, the cost of the Botany Groundwater Cleanup Project exceeded $120m and has considerable ongoing operational costs and monitoring costs. Consequently, a similar pump and treat approach to a PFAS fire-fighting foam training area program could easily be of similar magnitude. Fortunately, Orica has enough financial capacity to wear this cost, but this is an exception.

There are many examples where the land has been abandoned due to the high costs of remediation. Over 60,000 mine sites have been abandoned and a small number pose considerable local pollution issues. In addition, once a site has been tagged as contaminated it will be affected by title blight[2]. In other words, no one will purchase such a site until it is cleaned up. Clean up will then only be considered if its commercial value is greater than the remediation costs. Otherwise the owner/s will attempt to walk-away.

Forcing clean-up on such sites can result in complex legal argument, especially if the site was contaminated by a local authority such as a fire brigade or a neighbour plume leaching across multiple sites. Again ultra conservative standards could see disproportional allocation of funds away from other health and environmental or social projects resulting in poorer overall health and environmental outcomes.

Another issue is the health impacts of declaring land unhealthy based on ultra conservative limits. If a PFAS plume is identified and residents have imposed restrictions or asked to abandon their land, considerable stress and health impacts can result. For example, the 20 km evacuation zone imposed around the Fukushima Daiichi Nuclear Power Plant caused most of the premature deaths than exposure to radiation.[3]

Considering the ultra conservative standards placed in the PFAS NEMP, there is concern that clean up to these levels will in many cases be unaffordable and lead to unnecessary premature deaths and negative health impacts on affected residential land. The health impacts of abandonment of land and stresses caused from restricted land use due to ultra conservative standards should be assessed.

[2] CRC CARE Remediation Australia. Issue 18 2017 p 18 – Title Blight: Is our public Policy for contaminated sites creating barriers to remediation? Kerry Scott.

[3] Emergency Responses and Health Consequences after the Fukushima Accident; Evacuation and Relocation A.Hasegawa∗T.Ohira†M.Maeda‡S.Yasumura§K.Tanigawa¶ 2016

3 APPROACHES TO RISK ASSESSMENT OF PFAS CONTAMINATION

ASBG acknowledges that while it considers the standards on PFOS, PFOA and PFHxS (fPFAS) are ultra conservative there is slim ability to raise such limits give the considerable public scrutiny they are under. Additionally raising limits may result in legal complications if a site has cleanup to a higher standard than warranted in the future compensation could be argued. Nevertheless, the approach used by the *Assessment of Contaminated Sites NEMP* (ASC NEPM) is one of investigation levels and application of a risk based approach. ASBG notes s3.12 PFAS NEMP Investigation levels in soils followed by s4.1 refer to use of a site specific risk assessment. While this is consistent with the ASC NEPM, provision of the type of risk levels to be used would be appropriate in the NEMP. Other NEPMs do not use an investigation level approach such as the Ambient Air Quality NEPM. As there is no water NEPM there is no risk application methodology to base it on.

Health and ecological values also have no methodology to consider a risk-based approach and appear as absolute limits. While there is a subsequent cross over between soil, water and air where there are differences in the application of the standards, only the ASC NEPM has a built in risk based approach.

> ***R2: ASBG recommends the PFAS NEMP either provide guidance on risk assessment processes or use the ASC NEPM criteria as the preferred method to determine a desired risk based health and environmental outcomes for all applications.***

In addition, the NEMP has not considered the background concentrations of PFASs around the country, though this is mentioned as part of the Stocktake. PFAS are ubiquitous in most areas were reported by contaminated land professionals. However, the standards under the NEMP can be very close or even lower than these background levels. In this context PFAS levels should be treated in a similar manner as radioactive substances. Dealing with low level radioactive substances has similar issues to PFASs, in they have similar public outrage levels and are found in very low background concentrations.

One example is the use of the ALRA Principle is one approach which can be applied in such circumstances. ALARA is in part consistent with the ACS NEPM approaches for heavy metals where contamination is on ore bodies of for example arsenic. Nevertheless, the risk assessment process should not be limited to ALARA but to a methodology which is appropriate to the site and surrounding areas.

4 TREATMENT AND DISPOSAL FACILITIES

There are two main types of fPFAS wastes that will be generated in removing these substances:

1. Remediation of contaminated land, waters and groundwater
2. Treatment, destruction or disposal of existing stocks of fPFAS and PFASs as recommended

The PFAS NEMP covers the remediation of soils in reasonable depth, but acknowledges it is based on limited information, especially quantities and locations. ASBG remediation sector members have had considerable issues with the changing goal post of clean up levels and environmental standards. These have paced a downward trajectory resulting in the extraordinary levels listed in Appendices of the PFAS NEMP. Designing treatment systems with tightening targets is very challenging. Also the costs of treatment to achieve tighter concentration limits tend to follow and exponential cost curve. Though this can be off-set by technological and innovative advancements, which should be encouraged. Nevertheless, the PFAS NEMP is an attempt to cement fPFAS standards so they do not move further.

R3: ASBG recommends the PFAS NEMP standards, once accepted and updated from time to time be grandfathered for facilities installed to treat to those standards, linked to that edition in time.

4.1 Disposal Issues

With the PFAS NEMP Appendix B setting ultra conservative standards, such as residential soil limits for PFAS of 9 µg/kg and PFOA of 0.1 mg/kg there will vast quantities of contaminated soil generated. For example, the Williamstown plume exceeds 15 kms and a few kms wide at least 2 m deep; this translates to 6 million tonnes. ASBG considers that containment on-site, regardless of treatment will be the major practical answer for large plumes. There simply is not enough off-site landfill space to accommodate even a fraction of the total quantities of PFAS contaminated soils, especially given the ultra conservative standards provided. Consequently, under s5.18 PFAS NEMP consolidation and isolation of plumes and soils will be the main management option, based on costs and limited capacity of landfill available

Currently, there are not enough disposal or destruction facilities available in Australia for dealing with estimated quantities of contaminated soils, groundwater and especially products. There are special issues for landfills. While leachate criteria have been established for immobilised PFAS wastes the actions of the environmental regulators have caused many landfills in NSW at least to avoid PFAS contaminated wastes despite them meeting the acceptance criteria. Some ASBG members operating landfills have had their leachate tested for fPFAS, and where found, were required treat the leachate to very low limits, in some cases to below detectable levels. Such ultra conservative environmental protection actions result in knock-on impacts where landfills will simply refuse to accept such wastes. This type of action serves only to increase costs, transport distances and reduce options that prevents or at least delay clean up.

For example, regulation of the disposal of asbestos wastes in landfills is creating roadblocks. Around the greater Sydney area only two landfills accept commercial quantities of asbestos. All others, especially those run by Councils, only accept domestic quantities or refuse it entirely. Why? The regulatory oversight, multiple minor infringements and risks involved in having little control has taken its toll. For example landfills bear the responsibility of where dust can be generated during tipping asbestos waste, but they have no control on the loading, packaging, wrapping and tipping. ASBG considers that a similar outcome is already occurring with many landfills due to the ultra conservative approach, administration conditions and especially the focus on PFAS in leachate.

While setting landfill acceptance criteria has merit, it should be a minimum standard. Nevertheless, a risk adverse as opposed to risk-balanced approach to PFAS wastes, will simply limit disposal options.

There is consequently a tension between the TCLP criteria listed in Appendix D and the ecological freshwater 99% species protection in Appendix B which will likely be used to set leachate limits.

R4: ASBG recommends the PFAS NEMP include:

- ***The linked consequences between ecological freshwater standards and landfill acceptance criteria especially on leachate quality.***
- ***Encourage jurisdictions to adopt practical risk-based considerations when applying PFAS standards to the remediation and waste management sector.***

4.2 Destruction Issues

Thermal treatment processes face considerable planning approval issues in most jurisdictions. Encouragingly, there are a number of new thermal facilities given planning approval in Victoria and a geological repository Western Australia also close to approval which should be able to process PFAS. Nevertheless, other such facilities face difficult planning approval processes in other states. NSW for example is especially problematic as the trigger for a designated development—those requiring full Environmental Impact Assessment[4] processes—have low, 200 tpa to zero for PFAS with Dangerous Goods classification threshold triggers. New thermal and other waste management facilities for PFAS wastes, like similar hazardous waste facilities will also face considerable community opposition. The ongoing management of HCBs at Botany NSW is an example where public opposition is so great any management approach is disputed and paralysis results and poorer environmental outcomes result.

Acceptance costs for PFAS soils has been reported by ASBG members to be in the range of $450/t to $500+/t, which is considered low for thermal processes. However, thermal process will not destroy the soil, just the contaminants. Consequently, the soils generated will need to be either taken back by the source or be beneficially reused. This is discussed in section 5.

As discussed in s4.1 the quantities involved can be vast. While the higher concentration soils and even product will be the components that will use off-site thermal processes, the volumes will be again vast, provided there is enough finance to support such clean-ups. Again the PFAS NEMP should undertake economic assessment of volumes, costs and ability of polluters to pay for remediation and management of PFAS products. Quite simply there is only one facility that accepts PFAS wastes. About 4 new thermal facilities are to come on line, but all in Victoria which together can process at a maximum 60 to 80 tonnes per day. The question is: is this enough capacity? Can they treat higher concentration levels of PFASs generated from products as well as from concentration treatment systems. While s2.3 and 2.4 of the PFAS NEMP points to a PFAS Stocktake, which is welcomed, this data needs to take the next step; an economic evaluation based on the estimated need management infrastructure to deal with this new waste stream, both on-site and off-site. Outcomes of this assessment can then be fed into the cost-benefit assessment as discussed in chapter 2 of this submission.

[4] Environment Planning and Assessment Regulation2000 Schedule 3 s34 Waste Facilities

4.3 Treatment Issues

Concentration of PFASs, generally from the water phase, has taken considerable strides with many new absorbents and separation technologies available. Such development and use of these technologies need to be encouraged again especially at the planning stage. ASBG members have identified the costs associated with pump and treat systems in table 1:

Table 1 Cost of PFAS Water Treatment based on scale	
Treatment Type	**Cost**
High Volume (e.g. 1 ML / day)	$0.012 / L (not including disposal of concentrate)
Low Volume (e.g. 17 kL / day)	$0.10 / L (not including disposal of concentrate)
Third Party Treatment (e.g. off-site)	$1.50 - $4.00 / L + Transport

Table 1 clearly shows on-site treatment is of lower cost. However, the requirement to manage the absorbed and concentrated PFASs remains, but at a far reduced quantity. Generation of these concentrated streams will also require disposal/destruction infrastructure. The current and planning approved facilities likely will not have the capacity to manage such volumes. This leaves very costly overseas disposal facilities the only short term option. Ending up with a similar position to the HCB problem should be avoided.

Such treatment technologies are rapidly expanding and new approaches should not be limited by the PFAS NEMP criteria or performance requirements. ASBG has seen application of performance criteria for the NSW Energy from Waste Policy (EfWP) applied to innovative technologies that simply make EPA acceptance uneconomic. Design of the EfWP is based on incineration, but has been applied to new innovative chemical mechanical process that operates at under 250^{o}C, forcing them to locate in other states. ASBG considers the PFAS NEMP should clearly ring fence any process standard with the technology it represents otherwise it can be used to stymie new innovative approaches.

R5: ASBG recommends the PFAS NEMP:

- ***Identify the scale of treatment, disposal and destruction facilities required to meet the estimated quantities of PFAS contaminated soils, concentrates and waters across Australia.***
- ***Estimate the likely cost associated in managing the identified quantities above***
- ***Encourage special planning processes to aid in the establishment of both on-site and off-site facilities and remove roadblocks.***
- ***Encourage innovation in new technologies and not subject them to performance criteria based on existing technologies.***

5 RECYCLED SOILS AND PFAS

Remediation of large tracks of land will generated considerable quantities of treated soils as discussed above. These will be treated either on or off site. One of the issues with having ultra conservative standards is the vast increase in the amount of soils identified as contaminated. The issue then becomes can these soils be treated to an acceptable level where they can be reused.

The PFAS NEMP should also consider listing an appropriate risk model where such soils once treated can be beneficially reused. Background levels of PFASs could be a basis for setting such criteria. This would be of particular importance to the soil treatment facilities in Victoria where reuse of the soil will be a critical part in reduce costs as if the soils cannot be beneficially reused they will require to be landfilled.

Many jurisdictions have beneficial reuse criteria for construction and demolition, excavated natural materials and other types of soils. There will be calls for guidance on the acceptable concentration in such soils for placement in their criteria. Measurement for fPFAS also should be undertaken where there is a risk that they may be present.

R6: ASBG recommends the PFAS NEMP include guidance criteria for the beneficial reuse of soils using a risk based approach where fPFAS could be present.

ASBG is concerned again that if an ultra conservative limit is imposed on beneficial reuse of soils, which contain fPFAS, this will lead to very high costs and potential to consume limited landfill space—assuming they accept it— with relative low risk waste. There should be differentiation between guideline standards for on-site and off-site beneficial reuse. On-site remediation in many cases will find it cost effective to use immobilisation and reuse on site. Under the ACS NEPM and many contaminated land legislation, such reuse will be subject to the risks and design of the cells on the site. This will be overseen by a Contaminated Site Auditor and signed off by them. This is a completely different system where the treated immobilised soils are used off-site under beneficial reuse rules. On-site management of treated soils can also benefit from the use of containment cells or other measures to control the risks. Such additional controls and knowledge of the local geology and groundwater are not available for off-site general reuse of such soils. Subsequently, the off-site criteria is always far more conservative than for on-site management of soils.

R7: ASBG recommends that only off-site beneficial reuse of fPFAS soils be considered for guidelines recognising that the on-site management of such soils will be undertaken using the ACS NEPM.

6 PFASs IN STOCK

6.1 fPFAS in Stock

A number of ASBG member hold stocks of PFAS as product. Most of the fPFAS[5] materials have been disposed of, but some remain. For high concentration PFAS there are limited disposal and destruction options, such as one cement kiln which is both permitted and willing to accept such wastes. Given the current limited capacity of destruction there is concern this will cause price spikes and very limited opportunities for disposal. Reasonable time should be allowed for the gradual removal and disposal of fPFAS stock in a transitional arrangement.

Some facilities still keep fPFAS stock for emergency use as no replacement has been made. Hence, if for example, a fire occurs what should these facilities do? The PFAS NEMP should provide guidance for such events until all stocks are replaced or removed. Such advice could be in the form of permitted use in emergencies only and reasonable measures be employed to retain and capture the materials after use to prevent land and water contamination.

R8: ASBG recommends the PFAS NEMP provide guidance on:

- ***The transitional with drawl of fPFAS in use providing a reasonable timetable***
- ***Emergency use and containment of fPFAS***

6.2 Replacement PFAS

fPFAS have standards to be set under the PFAS NEMP other PFASs do not. The PFAS NEMP states:

> *It is expected that the PFAS NEMP will initially focus on a smaller list of PFAS compounds for quantitative assessment: PFOS, PFOA and PFHxS,* [fPFAS] *but that comprehensive consideration of other PFAS compounds will inform uncertainty and risk management decisions.*

This is poor guidance for PFASs other than the fPFAS. For some fire-fighting foam products the only replacement substances are also PFAS containing, non-fluorinated based foams simply do not work on certain fires. Additionally, there are hundreds of PFAS products which have no effective replacement. Many maintenance requirements for equipment specify a PFAS, for a variety of purposes such as hydraulic, lubrication surface preparations and coatings etc. Replacement with alternative products will generally void any warranty claims. Put simply there are many PFAS products that have no replacement and will cause other issues if substitutions are made.

Dealing with these non-replaceable PFAS is a major concern for businesses as they are caught between conflicting legal requirements. The PFAS NEMP needs to recognise this issue and provide guidance on the ongoing use of PFASs. This may include gradual replacement where achievable and ensure that leakages, spills and waste management is undertaken to minimise environmental harm and soil and ground contamination.

[5] fPFAS = PFOS, PFOA and PFHxS as the focused PFASs in the draft

In addition, a number of PFASs can also breakdown to form fPFASs, but there is no consideration of these in the PFAS NEMP. Obviously, new PFASs will be added onto the PFAS NEMP at set reviews, but some guidance on the identification and management of such precursors would assist.

ASBG also considers Australia should keep up with international developments on PFASs, especially actions by the Stockholm Convention. However, Australia should not act unilaterally on PFAS and waiting and using for appropriate international guidance first.

R9 ASBG recommends the PFAS NEMP provide guidance on the storage and use of PFAS – other than PFOS, PFOA and PFHxS, to provide clarity on interim measures and warnings of likely new PFAS inclusions.

Should further details and explanation of the above points be required please contact ASBG.

Australian Sustainable Business Group (ASBG)
T. +612 9453 3348
A. (PO Box 326, Willoughby NSW 2068)
asbg@asbg.net.au