Australian Institute of Petroleum

Regulation Impact Statement for consultation

National phase out of PFOS

Ratification of the Stockholm Convention amendment on PFOS

AIP SUBMISSION

Department of the Environment and Energy

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1. KEY MESSAGES

- **AIP, and member companies, have a critical interest in the development and implementation of policies relating to firefighting foams.**

- **AIP member companies use fluorinated foams as they are currently the most effective option for responding to large hydrocarbon fires at their facilities.**

- **AIP member companies have removed, or are currently in the process of removing, PFOS foams from active service and placing them into safe storage until appropriate disposal routes become available.**

- **Although AIP member companies no longer employ any firefighting foams formulated to contain PFOS as the active component, they may contain trace amounts.**

- **AIP, and member companies, are actively engaged in identifying, testing and certifying effective alternative fluorine free firefighting foams, including through the LASTFIRE organisation. However, testing to date has not revealed a foam with either equal or better performance characteristics than the current short chain fluorinated foams.**

- **AIP, and member companies, support a national phase out of PFOS, as articulated in Option 4 in the Consultation RIS.**

- **AIP's support for Option 4 is conditional on the development and inclusion of a defined de-minimis provision that allows for trace elements of PFOS in existing fire systems where foam stocks have been changed out to newer generation foams. AIP is keen to engage with government on this regulatory provision.**

- **Given the current performance concerns with fluorine free foams in our industry applications, AIP's support for Option 4 is conditional on there being no intent to expand the process for the phase out of PFOS under the Ratification of the Stockholm Convention Amendment to phase-out all PFAS.**

- **AIP's support for Option 4 is also contingent on there being available adequate commercial scale disposal routes for the safe and secure destruction of PFOS foams at least 12 months prior to the agreed phase out date. There must also be appropriate nationally consistent regulations in place for the safe management and disposal of PFOS, including for transport, facilities and liabilities. Destruction facilities must also be EPA certified for handling PFOS wastes.**

- **Shipping and associated wharf and jetty infrastructure are essential components of the fuel supply chain. AIP is therefore keen to engage further with Government on the regulatory and liability arrangements for PFOS containing foams that may be used in shipping.**

2. BACKGROUND

About AIP

The Australian Institute of Petroleum (AIP) was established in 1976 as a non-profit making industry association. AIP's mission is to promote and assist in the development of a sustainable, internationally competitive petroleum products industry, operating efficiently, economically and safely, and in harmony with the environment and community standards. AIP provides a wide range of factual information and industry data to assist policy makers, analysts and the community in understanding the key market and industry factors influencing Australia's downstream petroleum sector. AIP is represented on key advisory bodies including the ATO Petroleum Corporate Consultation Forum (PCCF), the Fuel Standards Consultative Committee (FSCC), the National Oil Supplies Emergency Committee (NOSEC) and National Plan Strategic Industry Advisory Forum (NPSIAF) and AIP sponsors or manages important industry environmental and health programs. The Australian Marine Oil Spill Centre (AMOSC) is a wholly owned AIP subsidiary.

AIP presents this Submission to the Department on behalf of AIP's core member companies:

- BP Australia Pty Ltd
- Caltex Australia Limited
- Mobil Oil Australia Pty Ltd
- Viva Energy Australia Pty Ltd.

About AIP member companies

AIP member companies operate across all or some of the liquid fuels supply chain including crude and petroleum product imports, refinery operations, fuel storage, terminal and distribution networks, marketing and retail. Underpinning this supply chain is considerable industry investment in supply infrastructure, and a requirement for significant ongoing investment in maintaining existing capacity. Over the last decade, AIP Member Companies have invested over $10 billion to maintain the reliability and efficiency of fuel supply meeting Australian quality standards.

Moreover, AIP member companies deliver the majority of bulk fuel supply to the Australian market.

- In relation to conventional petroleum fuels, AIP member companies operate all major petroleum refineries in Australia and supply around 90 percent of the transport fuel market with bulk petroleum fuels.
- In relation to gaseous fuels, AIP member companies are the major suppliers of bulk LPG to the domestic market, representing around two thirds of the market.
- In relation to biofuels, AIP member companies are the largest suppliers of ethanol and biodiesel blend fuels to the Australian market.

The Australian petroleum industry is also a significant contributor to the domestic economy providing direct and indirect economic benefits from its own activities and underpins the competitiveness of key export industries like mining, agriculture and manufacturing. In addition, as a technologically advanced industry, the refining industry employs and trains many highly skilled technical staff and international expertise flows readily into the Australian workforce.

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3. INTRODUCTION

AIP and its member companies welcome the opportunity to respond to the *National phase out of PFOS – Ratification of the Stockholm Convention amendment on PFOS Consultation RIS.*

Structure of the submission

Sections 3, 4 and 5 of this submission talk generally to downstream petrol industry use of firefighting foams and to policy issues associated with fluorinated (PFAS-containing) firefighting foams (not just PFOS). Section 6 more specifically addresses AIP's response to the RIS.

Fluorinated Firefighting Foams

AIP member companies have a strong interest in the development of policies relating to PFAS firefighting foams both because of the crucial role PFAS firefighting foams currently have in petroleum storage facility spill and fire risk mitigation, and because of the potentially considerable costs associated with various policy approaches.

AIP and its member companies strongly support measures to protect human health and the environment and recognise the risks associated with the use of fluorinated foams. The recognition of PFOS as a persistent organic pollutant listed under the Stockholm Convention saw the industry cease the purchase of firefighting foams formulated with PFOS.

Information relating to the environmental impacts of PFOA is less clear. However, it has become apparent that PFOA is also persistent and toxic and release to the environment should be avoided. Short chain C6 high purity foams have become available only in the last two to three years and, as such most industry foam stocks are the older long chain telomer-type that replaced PFOS foams, and that may contain PFOA or PFOA precursors. Policy to address the management of firefighting foams should take into account that industry has relatively recently changed foam stocks from PFOS-based fluorinated foams. These foams generally have an operational life of well over a decade. There are currently no fluorine free foams of equal or better performance for responding to large scale bulk fuel fires. Furthermore, on current understanding, fluorine free foams will not provide a "drop-in" replacement solution and will require significant investment in modifying fixed foam systems.

AIP also actively supports measures to facilitate the management and remediation of PFAS as a foundation shareholder in the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE). CRC CARE has developed world best practice approaches to PFAS remediation and strongly emphasises prevention and risk-based approaches to the management of these compounds.

AIP and member companies support best practice policy development where policy propositions are based on sound science, thorough ongoing economic analysis, open stakeholder engagement and acceptability to community and industry.

AIP and member companies are committed to working with the Government to address community concern with PFAS within achievable timeframes but also recognises and accommodates the considerable challenges confronting the industry. AIP's objective is to ensure that compliance can be achieved at least cost and without compromise to the principle of protection of human life as a first priority and with due regard to protection of critical fuel supply chain assets and the environment.

4. DOWNSTREAM PETROLEUM INDUSTRY USE OF FIREFIGHTING FOAMS

Key Messages

AIP, and member companies, have a critical interest in the development and implementation of policies relating to firefighting foams.

AIP member companies use fluorinated foams as they are currently the most effective option for responding to large hydrocarbon fires at their facilities.

While rare, a fire at a petroleum refinery or terminal can have catastrophic consequences due to the nature of the products being stored and the large storage capacity. This risk is particularly heightened where there are multiple large atmospheric storage tanks within close proximity. Due to this risk, the petroleum industry has an intense focus and obligation to maintain fire mitigation and effective firefighting capabilities. Firefighting foam is a crucial element in this capability – both in blanketing hydrocarbon to manage vapour emissions and in extinguishing actual fires. This is a very demanding application and experience in the industry is that there exists significant variation in the effectiveness of various foams to manage spills and fires. Large hydrocarbon tank fires and deep-seated pool fires are particularly demanding and require outstanding burn back resistance. Foam that may have adequate performance in shallow pool fires, may be unacceptable in a large tank fire.

The downstream petroleum industry has typically utilised aqueous film forming foams (AFFF) and film-forming fluoroprotein (FFFP) foam containing per- and poly fluoro alkyl substances (PFAS) at their facilities to most effectively manage fighting capability from accidental petroleum product release and/or for active fire suppression. PFAS provide these foams with their unique properties to efficiently and effectively create a film over the hydrocarbon. Simply put, these foams have provided enhanced performance characteristics for responding to large bulk fuel fires.

4.1. Legacy PFOS Foams

Historically these foams were formulated using C8 and longer PFAS. 3M used a unique process to manufacture fluorochemical surfactants called electrochemical fluorination (ECF). Fluorochemicals produced by this process both contain and degrade into PFOS.

The petroleum industry in Australia largely ceased use of these PFOS foams by 2010. Given the long service life of these foamsThe industry has however uncovered some of these foam stocks during its inventory exercise and its removing these from active service.

Key Message

AIP member companies have removed, or are currently in the process of removing, PFOS foams from active service and placing them into safe storage until appropriate disposal routes become available.

Although AIP member companies no longer employ any firefighting foams formulated to contain PFOS as the active component, they may contain trace amounts.

4.2. Long-chain C8 and Short-Chain C6 foams

Foam manufacturers/suppliers have developed and supplied alternative foams using telomerisation as the manufacturing process. Advice from manufacturers has been that these foams contain no PFOS, but are likely to contain trace levels of PFOA or other impurities. These foams remain the primary foams used in the petroleum industry today.

Over the past few years, manufacturers have developed shorter chain foams, and in accordance with the US EPA PFOA Stewardship Program, the eight major manufacturers committed to work towards the elimination of PFOA, PFOA precursors, and related higher homologue (i.e. C8 or greater) poly and perfluorinated chemicals by December 31, 2015.

There continues to be debate as to whether the short chain C6 high purity foams have an acceptable human health and environmental profile. However, it is important to distinguish between C8 and C6 foams from an environmental and health perspective, and how they are treated in the development of policy to address community PFAS concerns. Although the science continues to evolve, it is clear that the short-chain foams pose less risk to human health and the environment than long-chain foams. This is especially relevant in the context of the limited need to use foams at refineries and terminals.

4.3. Further Environmental Risk Reductions

In addition to ceasing use of legacy foams containing PFOS as active ingredients, the petroleum industry in Australia no longer uses PFAS-containing firefighting foams for firefighting training and has generally taken other steps to minimise releases of PFAS-foam to the environment during non-emergency situations (e.g. minimising foam use for fire equipment testing and a contain/collect/dispose strategy).

4.4. Fluorine Free Foams

Foam manufacturers have developed fluorine free foams (F3) to respond to Class-B (hydrocarbon) fires. These are already used for flat spills of fuel such as at airports. However, their effectiveness is not demonstrated for some other applications such as tank fires. Although there have been reports that an effective F3 will soon be available, there remains considerable uncertainty when or if they can be delivered within a timeframe that is in keeping with the development of policies proposing restrictions on foams containing PFOS and PFOA and this could lead to a gap in the ability to effectively respond to tank fires.

As such, foam users, including the downstream petroleum industry, are now confronted with the dilemma of needing to respond to community concern in an operating environment where the current replacement foams have significant potential to be less effective or may contain PFOA and PFOA precursor impurities. Unsurprisingly, industry is reluctant to invest significant capital on foam replacements, including modifications to foam distribution infrastructure, if the effectiveness of the foams have not been adequately demonstrated and where the policy environment is likely to change within the effective life of the replacement foam.

4.5. Assessing Foam Performance

The global oil industry works collaboratively with firefighting organizations and foam manufacturers and invests significant resources into assessing the performance of foams. Most notable in this regard is the LASTFIRE (Large Atmospheric Storage Tank Fire) Project, initiated in the early 1990s.

The LASTFIRE project was initiated due to the oil and petrochemical industries' recognition that the fire hazards associated with large diameter, open top floating roof tanks were insufficiently

understood to be able to develop fully justified site-specific fire response and risk reduction policies. The LASTFIRE Project provided an independent and comprehensive assessment of fire related risk in large, open top floating roof storage tanks resulting in a methodology by which site specific Fire Hazard Management policies can be developed and implemented. Follow up work has included the development of the LASTFIRE Risk Workbook into a fully computerised analysis tool, the delivery of Storage Tank Firefighting Workshops worldwide, the development of a foam performance test exclusively aimed at the special requirements of a storage tank fire application and comprehensive research programmes on issues such as crude oil boilovers and cooling water efficiency. With the current emphasis on balancing firefighting performance with minimising environmental effects, work continues on assessing new foams, including C6 and fluorine free foams, to ensure they meet the performance claims of manufacturers and actually achieve industry performance requirements.

The LASTFIRE organization historically developed a small-scale testing protocol for foam concentrates that provides a batch acceptance test based on the procurement specification of a particular foam formulation tested and not a generic approval test for a foam brand.

Because there has been testing that has questioned the effectiveness of the newer formulated foam concentrates, Industry is actively working with the LASTFIRE organisation to validate these newer formulated foams – both C6 and Fluorine Free – utilising the past LASTFIRE small scale and additional larger scale testing protocols to assess the efficacy of these foam concentrates. Phases completed has identified various issues which will be taken forward to the next phase involving forceful application of the new foams to 10-20m diameter test tanks. This protocol will test additional parameters such as foam flow over a burning surface. Until these tests are completed, the efficacy of the newer formulated foam concentrate is incomplete.

Additional tests are also being carried out related to different application techniques, and the environmental behaviour and physical properties of new foams to see if they can be used in conventional equipment.

True “drop in” replacement does not just mean equivalent firefighting performance but also the capability of being used efficiently and effectively in current conventional foam systems and equipment. To date, it is LASTFIRE’s opinion that there is no proven “drop-in” alternative for the foam types previously used in large bulk fuel fires. This is certainty true for Fluorine Free foams and to some extent to many aspects of C6 based foams. It is recognised though that Fluorine Free technology is improving at a rapid rate, partly due to pressure on suppliers from LASTFIRE testing and LASTFIRE is being very proactive in ensuring that this development continues and is monitored.

Key Message

AIP, and member companies, are actively engaged in identifying, testing and certifying effective alternative fluorine free firefighting foams, including through the LASTFIRE organisation. However, testing to date has not revealed a foam with either equal or better performance characteristics than the current short chain fluorinated foams.

4.6. Firefighting Foam Selection

Given the considerable uncertainty, the downstream petroleum industry is mindful of environmental concerns relating to PFAS, however, this must be balanced against selecting the most effective foam for the firefighting task.

The particular arrangements for storage, delivery system and use of foams may differ for each facility. Any required change to foams that have different performance characteristics are likely to require substantial investment in revised firefighting infrastructure. In this regard, F3 foams in particular may have very different viscosity and application rates from PFAS-foams and may require revised proportioning/mixing systems and other infrastructure. Further, the required application rates may be considerably higher which will require increased foam storage.

As such, the potential environmental impact of the foam cannot be the sole factor for determining foam selection and for use at petroleum facilities due to the need to manage a broad array of potential risks. Any government policy must therefore accommodate and reflect this operational imperative and the primary priority to protect human life.

The Fire Protection Association of Australia[1] support this approach, noting:

- that a holistic approach to foam selection is critical
- that AFFF foams are the most effective for fighting Class B fires
- the firefighting performance shortcomings of fluorine free foams.

There therefore currently exists a number of challenges and barriers to the complete removal of PFAS-foams on purely environmental grounds.

Given the active work underway to develop effective F3 foams and the large costs and complexity associated with changing foams, the petroleum industry is reluctant to change foam types now as new-technology foams are likely to be available within the effective life of the replacement foam.

[1] FPAA, Information Bulletin – Selection of Fire Fighting Foams, http://www.fpaa.com.au/media/139872/fpa_australia_-_ib_06_v1.1_selection_and_use_of_firefighting_foams.pdf

5. OPERATIONAL CHALLENGES AND BARRIERS

AIP and member companies have recognised community concerns relating to PFOS and PFOA and are working to respond. AIP member companies are investigating opportunities to further reduce the environmental impacts of any industry firefighting activities. These investigations aim to enable well informed objective decision making that give due consideration to a well-reasoned position that effectively calibrates life safety, environmental and asset related risks.

However, the experience with the revised Queensland Operational Policy on the Environmental Management of Firefighting Foams released in mid-2016 has revealed a number of key challenges and barriers to achieving compliance with that particular policy. These learnings, discussed below, need to be recognised and factored into any firefighting foams policy development and implementation.

5.1. Compliance of existing stocks

AIP member companies are undertaking a comprehensive stocktake of their foam inventories across Australia. To date, the particular focus has been in Queensland and South Australian given the policy developments in those states. This inventory exercise has revealed that in many circumstances, it is not clear whether existing stocks would be compliant with the Queensland Operational Policy or a PFOS ban for a number of reasons, including but not limited to:

- Identifying which specific foams have been historically used in equipment at facilities, and therefore what foam residues may still be present in foam storage tanks
- certification of current stocks, and sampling methodology to verify compliance
- the processes used during historical foam changeouts, such as whether systems and storage vessels have been appropriately cleaned and flushed to remove PFAS compounds or precursors
- uncertainty relating to foam composition claims by manufacturers as manufacturers claim that foam composition is proprietary technology/IP and at times can have incomplete technical data sheets.

These uncertainties have therefore required industry to undertake its own sampling, laboratory testings and assessment of a large number of foam storage containers. The requirement for industry to adopt a 'non-compliant unless proven compliant' approach is principally due to the absence of relevant PFAS component information for historical foam batches stored in original storage containers as well as the unknown history of fixed storages where foam concentrates have been removed from original storage containers.

This is a significant undertaking, both in terms of time and cost, and is continuing.

5.2. Availability of effective alternative compliant foams and compliance/performance claims by foam manufacturers

It is critical that alternative foam products considered for change-out meet minimum performance standards in order to protect human life including first response personnel and surrounding community. Foams must be effective in protecting human life as the primary priority, have sufficient knock down and suppression capability, minimize the risk of any fire spreading to surrounding infrastructure and property, limit the risk to human health and provide a demonstrable net environmental benefit. In short, foams must meet specific performance requirements for Class B bulk liquid fuel fires.

In seeking to identify alternative compliant foams, AIP member companies have found that there is considerable uncertainty arising from:

- the veracity and at times unavailability of data to support the performance claims by manufacturers of alternative foams
- the unwillingness of manufacturers and third-party providers to supply sufficient data to support claims of performance and contents of formulations, and
- the process and findings of third party purity tests.

Investigations continue into identifying suitable alternative foams and testing the veracity of claims by manufacturers. Preliminary advice from manufacturers/fire system contractors suggests that alternative foams that meet industry and government objectives may be available for scenarios other than large atmospheric storage tank extinguishment. However:

- confidence on the testing and protocols are yet to be confirmed
- existing stocks of these recommended foams (supplied before this year) may in fact contain PFOA precursors and therefore would also need to be tested and possibly replaced.

In assessing whether to move to an alternative foam that has been identified as compliant, companies must assure themselves that the purity claims of manufacturers are deemed by Government to be compliant with the policy or whether further independent analysis would be required. If further independent analysis is required, it is not clear whether this would need to be undertaken for each formulation, batch, or stock line and whether it is needed to be done on a "continuous" basis.

Ultimately, the downstream petroleum industry's capacity to be compliant with any policy to ban PFOS (and PFOA) will be determined by the capacity of foam manufacturers to produce and provide assurance that their foam products meet the required government specifications while simultaneously meeting the required industry performance standards.

5.3. Disposal options

A critical element of any policy to remove PFOS foams is the ability of industry users to dispose of those foams once alternative effecitve foams have been identified. Simply put, offsite disposal of foams cannot proceed until the industry has satisfied itself that there is an adequate and effective replacement foam available. Once available, then disposal of non-compliant waste foam solutions can proceed.

Current disposal options are both costly and limited. AIP understand that there are currently only two potential technologies available for disposal that would result in the complete destruction of the PFAS compounds, namely plasma arc destruction and high temperature incineration in a cement kiln. These technologies are either high cost or under development at commercial scale.

It is also not clear whether there is the appropriate environmental legislation in place to support these technologies (particularly for cement kilns), or that allow for the safe and secure transport of non-compliant foams, potentially across State/Territory borders.

6. AIP RESPONSE TO THE PROPOSAL TO PHASE OUT PFOS

Key Message

AIP, and member companies, support a national phase out of PFOS, as articulated in Option 4 in the Consultation RIS.

AIP is not opposed to the proposal to phase out PFOS, including from firefighting foams.

AIP believes that Options 1 and 2 in the RIS should be dismissed as they represent either costly or ineffective policy responses, leaving only Options 3 and Option 4 as viable options. On balance, AIP believes that Option 4 should be the preferred option. It appears to be the lowest cost option, provides for necessary national regulatory consistency (in line with international action), along with an appropriate market signal to drive removal of PFOS foams from active firefighting service and ultimately disposal.

As previously noted, AIP members recognise concerns with PFOS foams and have removed or are in the process of removing PFOS foams from active service. In their place, the industry is progressively moving towards the use of shorter chain C6 foams which exhibit similar firefighting performance characteristics as the longer chain C8 foams, but with less health and environmental impacts. C6 foams can also typically be used with the same distribution systems and therefore may not require potentially expensive infrastructure upgrades or augmentation. In short, C6 foams appear to be an appropriate balance between managing performance requirements for most effectively protecting life and property with the need to also limit detrimental environmental impacts.

AIP is not in a position to provide a detailed assessment on the transition costs from PFOS foams outlined in the RIS as they may apply across the economy. Cost variables for the petroleum industry relate primarily to:

- Foam stock testing/analysis to determine PFAS content
- Alternate foam replacement costs (foam procurement)
- Any required engineering solutions to facilitate the effective use of replacement foams and the associated capital costs
- Cleaning/flushing of fire systems
- Onsite safe storage of foams awaiting destruction
- Foam disposal.

A key aspect impacting cost will be how firefighting foams in existing systems containing de-minimis trace amounts of PFOS are treated under the phase out proposal. This is discussed further in a following section. Any requirement to change out foam containing trace quantities of PFOS may very substantially increase the scope and escalate the costs.

AIP notes that costs will vary significantly between facilities and businesses depending on historical and existing foam stocks. Industry costs would be most significant if there are engineering solutions required to utilise new foams (such as to address different foam viscosities, proportioning, pumps, discharge devices and storage tanks) and could only be assessed once a final replacement foam is selected. AIP does not anticipate large scale changes to infrastructure if the phase out only applies to PFOS foams under Option 4.

The greatest cost uncertainty currently facing AIP members relates to the costs associated with foam disposal as these are largely unknown due to the unavailability of adequate commercial scale EPA

approved facilities. While current quotes, where available, have been both high and variable, we anticipate disposal costs will reduce as new disposal operators enter the market, and where technology and technology options improve, supported by a regulatory phase out.

AIP also acknowledges that each business will have their own unique capacity and constraints for removing PFOS from service. While foams tend to have an operating life of well longer than 10 years, AIP believes that the proposed five-year phase-out is appropriate. AIP assumes that the five-year transition period would commence from the date enabling legislation receives royal ascent.

To AIP's knowledge, there does not appear to be PFOS in aviation lubricants used in Australia. However, AIP is working with member companies to confirm this to be the case.

AIP also anticipates that there is likely to be significantly greater PFOS foam stocks than estimated in the RIS. Furthermore, AIP believes that there is likely to be significant amounts of PFOS that are unrecognised or unaccounted for in the RIS, such as in sunscreen and cosmetics[2]. This will have implications for both the cost-benefit analysis and the regulatory response.

Regulatory and liability treatment of firefighting foams in shipping (including at wharves and jetties) is an area of concern to AIP members and is discussed in a later section below.

Key Message

AIP's support for Option 4 is conditional on the development and inclusion of a defined de-minimis provision that allows for trace elements of PFOS in existing fire systems where foam stocks have been changed out to newer generation foams. AIP is keen to work with the government on this regulatory provision.

AIP members accept that flushing/cleaning of foam systems will be required during the change out of foams in some systems and storage vessels where PFOS has been historically used. Achieving complete removal of all PFOS compounds from existing foam systems remains challenging.

AIP also understands that many replacement non-PFOS fluorinated foams currently in use, which although not formulated based on PFOS, may nonetheless contain some amount of PFOS/PFOA and precursor contaminants.

AIP therefore believes that a de-minimus provision that allows for some trace levels of PFOS in existing systems is essential.

It is unlikely that these trace elements would pose any significant environmental or health threat, but rather such an approach would represent a pragmatic approach to dealing with the practicalities associated with a change to newer generation foams.

AIP notes that foam manufacturers have provided conflicting advice around PFOS and PFOA content of newer generation fluorinated foams. Foam users have no way to verify the claims of manufacturers, short of the impracticality of requiring individual batch testing, as manufacturers state that foam content is essentially proprietary technology. The Government will therefore need

[2] For example, PFAS in sunscreens and cosmetics is reference by the Victorian EPA: http://www.epa.vic.gov.au/~/media/Publications/1611%203.pdf

to define an acceptable foam "purity". AIP also encourages government to require certification of foam content by manufacturers to provide necessary assurance for foam users.

AIP is keen to work closely with the Government on each of these issues.

Key Message

Given the current performance concerns with fluorine free foams in our industry applications, AIP's support for Option 4 is conditional on there being no intent to expand the process for the phase out of PFOS under the Ratification of the Stockholm Convention Amendment to phase-out all PFAS.

Although AIP believes Option 4 is likely to be the best solution for addressing environmental and health issues with PFOS use, AIP would be concerned if the process led to additional actions to ban all PFAS/fluorinated firefighting foams ahead of suitable alternatives being proven to be effective. While AIP recognises that this process relates only to PFOS, there may be some risk that some may wish to push for a full PFAS ban.

The RIS notes:

> *"State and territory governments are working closely with industry to foster a transition to foams that are suitable for use in the Australian environment. Sites likely to impact on sensitive or high conservation value environments, such as surface and groundwater catchments, wetlands, and coastal and marine areas, are a high priority for transition efforts. The owners and managers of these sites are being encouraged to restrict the day-to-day use of PFOS-containing foam and to transition to alternatives, preferably fluorine-free foams, wherever possible". (p146)*

It is AIP's view that the RIS as drafted (particularly in relation to Option 4) would not be appropriate if the proposal extended to a phase out of firefighting foams containing PFOA or a full PFAS ban. In that context, it does not adequately recognise genuine foam performance concerns (or underplays the genuine industry concerns) with fluorine-free foams for application in large bulk fuel fires. For example:

> *"Major constraints on further voluntary action include the sometimes-higher cost of alternatives and perceptions regarding poorer or inadequate performance". (p36)*

In reality, the downstream petroleum industry invests a significant amount of time, money and resources into the research and performance testing of foams, such as through LASTFIRE. In implementing the phase out of PFOS, the Government must be conscious that a blanket ban involving the removal of not just foams formulated with PFOS, but all foams containing trace amounts of PFOS or even any PFAS, may have serious implications for the downstream petroleum industry's ability to most effectively and efficiently respond to spills or extinguish large bulk fuel fires at their facilities in order to protect life and property and minimise atmospheric pollution.

AIP accepts that for most other applications, there is likely to be a fluorine free (PFAS-free) alternative. As previously noted, AIP members are actively engaged in performance testing of new alternative foams for use in refineries and terminals. New generation foam technology is changing rapidly and while there are encouraging signs that a fluorine free foam meeting necessary performance requirements are on the horizon, AIP believes this is still some years off.

AIP is therefore pleased that the RIS does recognise the primacy of life protection and safety:

> *"Despite the recent increase in regulation of PFOS emissions from firefighting, the priority in an emergency is always the protection of life and safety. For fire and emergency services, this takes precedence over avoiding PFOS waste generation and emissions." (p43)*

If Government policy is ultimately to require fluorine free foams, then industry should not be required to make an investment in interim C6 foams. Rather Government policy should allow for transitional arrangements to utilise existing foams until the fluorine free foams are proven. Any policy implemented by the Government must provide this clear policy stability and certainty and recognise all the costs and benefits of changing to alternative foams under these various scenarios.

Key Message

AIP's support for Option 4 is also contingent on there being available adequate commercial scale disposal routes for the safe and secure destruction of PFOS foams at least 12 months prior to the agreed phase out date. There must also be appropriate nationally consistent regulations in place for the safe management and disposal of PFOS, including for transport, facilities and liabilities. Destruction facilities must also be EPA certified for handling PFOS wastes.

Industry experience has found that disposal options for the safe and secure destruction of firefighting foams is currently limited. This same finding is supported in the RIS, noting that:

> *"In principle, the best choice of destruction technology depends on the material being destroyed. However, affordable options for PFOS waste disposal are not universally available, particularly for high volumes of waste. These capacity limitations mean that it could take a long time to destroy all existing stocks of PFOS-containing products and wastes, particularly firefighting foams.*
>
> *State and territory governments and the waste industry may identify opportunities to work together to increase PFOS waste disposal capacity. For example, it could be possible to alter the licensing requirements for existing facilities, such as cement kilns, to allow for the safe destruction of PFOS waste". (p97)*

Given the risks associated with PFOS, industry requires regulatory certainty for the destruction of PFOS material including for transport, destruction, facility license and liability. Regulation for disposal should also ideally be nationally consistent in so far as is feasible, given there may be a requirement to transport waste across State/Territory boundaries. Furthermore, industry also requires sufficient time to ensure the necessary planning is in place prior to embarking on any disposal plan.

Therefore, it is essential that commercial scale, affordable disposal routes along with the necessary regulations are in place at least 12 months prior to the final phase out date.

Key Message

Shipping and associated wharf and jetty infrastructure are essential components of the fuel supply chain. AIP is therefore keen to engage further with Government on the regulatory and liability arrangements for PFOS containing foams that may be used in shipping.

Shipping and associated wharf and jetty infrastructure are essential components of the fuel supply chain. Ships are used to move large volumes of crude oil and petroleum products into and out of Australia spending significant time not only in Australian waters but at refinery and terminal wharves.

As noted in the RIS,

> *"The use of PFOS-containing firefighting foam by shipping in Australian waters is an important consideration for environmental protection. Activities on ships, including firefighting and training, are governed by the laws of the country in which the ship is registered and the safety and environmental standards set by the International Maritime Organisation". (p42)*

To AIP's knowledge, this issue has not been considered in any meaningful way by the International Maritime Organisation (IMO).

Although it may be the case that Australian downstream petroleum companies may have removed PFOS foams at their facilities (including wharves), the risk remains that PFOS foams could be used in the event of a fire at the wharf due to foam stocks held on ships. It is highly unlikely that foams used in these events could be fully contained, regardless of the facility owner's best endeavours. As such, questions remain as to whether the ship owner or the facility owner would be liable for any associated remediation costs following such an event.

AIP is therefore keen to further engage with the Government on how this can and will be regulated.