Environment Protection Authority

Draft amendment to ban the use of fire-fighting foams containing perfluorinated alkylated substances (PFAS)

Consultation report 2017

EPA South Australia

Draft amendment to ban the use of fire-fighting foams containing perfluorinated alkylated substances (PFAS) – Consultation report 2017

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Contents

Abbreviations

EP Act	Environment Protection Act 1993
EPA	South Australian Environment Protection Authority
F3	fluorine-free foams
PFAS	perfluorinated akylated substances
PFOS	perfluoroctane sulfonate
PFAS	perfluorooctanoic acid
NICNAS	National Industrial Chemicals Notification and Assessment Scheme

Summary

Perfluorinated alkylated substances (PFAS) are man-made chemicals that persist in the environment for long periods of time. They have historically been used in a number of manufacturing processes and as aqueous fire-fighting foam. The national phase-out of aqueous fire-fighting foams containing two specific types of PFAS, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), has been taking place since the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) recommended the phase-out in 2002.

On 10 February 2017, the Minister for Sustainability, Environment and Conservation announced his intention to develop legislation to ban the use of the environmentally harmful foams in South Australia. Development of a draft amendment followed this announcement with the consultation period commencing on 5 April 2017 for a period of eight weeks through to 5 June 2017.

A public consultation session was held on 3 May 2017, as well as a number of individual consultation meetings. The public session was attended by 39 people from a variety of backgrounds. Stakeholders included members of the petroleum industry, fire protection services, foam manufacturers, EPA licensees, members of the United Firefighters Union of Australia, Metropolitan and Country Fire Services and the general public.

The key issues discussed at the public meeting included whether or not the ban should see a move to fluorine-free foams, the need for an accessible, effective disposal option, collaboration between states and territories and the timing of the proposed ban.

The consultation resulted in 11 submissions from a range of interested parties. Key issues raised by respondents included:

- General support for the ban.
- Implementation to include a timed transition.
- Disposal options need to be clarified.
- Effectiveness of fluorine free foams is questioned when used in some industries (ie petroleum).
- Life safety must be considered alongside environmental safety.
- Mixed response to the proposed inclusion/exclusion of hand-held extinguishers.

The proposed amendments to the draft policy as a result of this consultation are included in section 5 of this report.

1 Introduction

On 10 February 2017, the Minister for Sustainability, Environment and Conservation announced his intention to ban the use of fire-fighting foams containing perfluorinated alkylated substances (PFAS), specifically perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and chemicals that degrade to PFOS or PFOA.

Following the process prescribed under section 28 of the *Environment Protection Act 1993* (EP Act), consultation for the proposed ban commenced on 5 April 2017 and ran for a period of eight weeks through to 5 June 2017. A notice was placed in *The Advertiser* newspaper and the *SA Government Gazette*, advising the time, date and location of the public information session. An explanatory document was made accessible to the public via the EPA website as well as being sent to all relevant stakeholders via email.

The public consultation session, held on 3 May 2017, was attended by 39 representatives from the petroleum industry, fire protection services, foam manufacturers, Metropolitan and Country Fire Services, United Firefighters Union of Australia, government bodies and the public. Consultation also included individual meetings with Australian Institute of Petroleum (AIP) and Air Services Australia (ASA).

The chemicals in question are of emerging concern both in Australia and internationally. They have demonstrated persistence in the environment, bio-accumulative potential and toxicity. To date, there is no consistent evidence to show that these chemicals cause any harm to human health, however they are known to impact some organisms. Due to the properties mentioned above, the precautionary principle is necessary in the management of PFOS, PFOA and chemicals that degrade to PFOS or PFOA.

Better regulation of these foams through legislative amendment will ensure that the exposure of these chemicals to the environment is minimised as much as possible. Furthermore, should any new research into these chemicals more conclusively demonstrate human health impacts, any risk to human health from additional releases to the environment would have been effectively mitigated.

2 Genesis of the draft amendment

In 2010, nine new chemicals, including PFOS, were added to the *Stockholm Convention on Persistent Organic Pollutants* (POPs) list. POPs demonstrate persistence in the environment, bio-accumulate, and are toxic.

Many countries have phased out, or are in the process of phasing out the use of PFOS and PFOA. The Australian Government Department of Health's National Industrial Chemicals Notification and Assessment Scheme (NICNAS) has monitored PFOS and PFOA use in Australia through four national surveys, which show that these chemicals are not manufactured in Australia. Since 2002 NICNAS has recommended that Australian industries should actively seek alternatives to longer-chain PFAS and PFAS-related substances. The alternative chemicals should be less toxic and not persist in the environment.

PFAS are added to some types of fire-fighting foam to improve the foam's ability to smother fires. There are believed to be stockpiles of fire-fighting foams containing PFAS still in use. Large quantities of these fire-fighting foams have been used at airports, major hazardous facilities (eg refineries, fuel terminals and chemical terminals), fire-fighting facilities and training facilities. They were used with little regard to minimising environmental release from the late 1960s to the early 2000s.

The historic use of PFAS containing fire-fighting foams has resulted in some areas within these sites becoming contaminated with PFAS. Over the past decades, these chemicals have worked their way through the soil to contaminate surface and ground water, and have also migrated into adjoining land areas.

The Australian Department of Defence (Defence) has been subjected to considerable community and media attention as a result of the identification of perfluorinated compounds (PFCs) at defence bases at Williamtown (NSW) and Oakey (QLD) and more recently Tindale (NT), where it is known to have migrated to groundwater and nearby water bodies. The contamination is a result of the use of fire-fighting foams containing PFOS and PFOA at the bases.

The EPA is conducting reviews of key SA facilities to confirm the current status and usage of fire-fighting foam stocks containing PFOS and PFOA as well as to gain a better understanding of historical usage of the foams. The majority of industry have already transitioned to use of non PFOS/PFOA fire-fighting foams.

3 Consultation on the draft amendment

Consultation on the draft amendment has followed the section 28 process as prescribed under the EP Act. Under this section, the Authority published a notice in the SA Government Gazette and The Advertiser, advising of the intent to draft the amendment and the time, date and location of the public information session.

The official consultation period commenced on 5 April for eight weeks until 5 June. An explanatory report was prepared and published on the EPA website, along with a draft of the amendment. The public consultation session was held on 3 May 2017. Three extensions were granted for submissions and a total of 11 submissions have been received.

The EPA will take into account each of the suggestions made during consultation to ensure that the policy and implementation are considered and measured, while still maintaining the objective of greater environmental protection.

4 Submissions received during consultation

Summary of key issues raised

General support for the ban

All of the submissions expressed a general acceptance and acknowledgement of the need for a ban on fire-fighting foams, although with a number of variations on how the ban should be constructed and implemented. Members of the upstream petroleum industry were the only submitters against an immediate transition to fluorine free as they questioned the effectiveness of alternative fluorine-free foams (F3) for applications within their industry.

Support for the ban was expressed through a number of submissions for reasons including increased health safety for fire-fighters through providing a safer work environment and reduced risk of environmental damage due to accidental releases.

Implementation should include a timed transition

All of the submitters expressed a desire to see a transitioned approach to implementation, as expressed in the Queensland policy. An appropriate transition period is being sought by submitters due of the following reasons:

- Industry needs time to perform budgetary planning to pay for the new foam system.
- Investigations into suitable alternative firefighting foams needs to be more concise.
- Industry needs to modify or replace existing system infrastructure and/or obtain new foam equipment and systems.
- Industry needs to clean out banned foams from existing system components and conduct analysis testing to confirm negative cross contamination before adding new ≤C6 or F3 concentrate.
- Industry need to dispose and/or destroy all existing stock of fluorinated foams.

There was mention of the need for a provision to allow for any facilities that cannot comply within a determined time frame to apply for an extension while providing a plan on how they will inevitably meet compliance requirements (a total transition to fluorine free).

Disposal options need to be clarified

A key issue raised was around disposal pathways. There is currently only one facility available to dispose of fluorinated foams permanently (and it is based in QLD). It is seen to be an unviable option for many facilities due to the cost of transporting the material interstate. An application for a medical waste incinerator trial has been submitted to the EPA by Veolia for the destruction of a range of PFAS contaminated material. However, this is still in the assessment phase and is unlikely to be ready by the time the ban is enforced.

There is no provision for the disposal and storage of any decommissioned fluorinated foams in the current draft policy and many of the submitters want this addressed.

Effectiveness of fluorine-free foams (F3) is questioned when used in some industries (eg petroleum)

Submitters from the upstream petroleum industry objected to an immediate ban on all fluorinated foams. This was mainly due to the concern that there is a loss of efficiency in F3 when used in a static system (for example). This is a significant concern for the petroleum industry as the repercussions could be considerable.

The petroleum industry also commented that changeover for their systems would be a considerable cost. It is suggested that changing to F3 should occur only once an appropriate foam was available rather than making step changes towards that outcome, which would increase costs.

Life safety must be considered alongside environmental safety

The United Firefighters Union of Australia expressed concern for members exposed to PFAS containing foams and as such, were very supportive of a total ban on fluorinated foams and a move to completely fluorine free. This is a valid concern and one that will be considered when finalising the scope of the policy.

The petroleum industry raised a separate concern around life safety and that was due to the risk of a fire-related hazard as opposed to the exposure risk stated earlier. The submissions noted a concern for life and property safety, should a fire be allowed to burn longer than usual due to the 'ineffectiveness' of the fluorine free foams in their particular situations.

Mixed response to the proposed inclusion/exclusion of hand-held extinguishers

There were mixed views on whether or not to include hand-held extinguishers. The SA CFS and SA MFS have both stated that they fully support including hand-held extinguishers in the ban but that they must either be changed over upon refill.

A table summarising the submissions received is attached as Appendix A to this document.

5 Recommended changes to the draft amendment

Recommended changes to the draft policy

Ban use of all fluorinated fire-fighting foams for all applications

It has been stated by the petroleum industry in their submissions (operating large Major Hazard Facilities or MHFs) that current fluorine free alternatives are insufficient in some situations unique to their operations. However, there were several comments made that new F3 were under development may be suitable and the industry would prefer a single changeover to fluorine free rather than an intermediary approach (to C6 foams for example). F3 are not a concern among non-MHFs as the large volumes of fuel are not present. MFS and CFS both support the complete removal of fluorinated foams from use. Those facilities that cannot comply within required timeframes will be brought into compliance through the exemption provisions of the EP Act.

Provide for a timeframe of two years for compliance for non-handheld applications

This is supported by the many industry based submissions that outlined the need for a measured and considered transition period. This was mainly due to the many changes industry would need to undertake to come into compliance and the associated costs involved with either retro-fitting systems to allow for the new foams or installing entire new systems. An implementation period of two years is recommended for non-handheld applications.

Provide for the ban to commence for handheld/portable upon re-charge/re-fill or within two years of commencement of the policy, whichever is earlier

A vast majority of the submissions expressed a desire to see hand-held extinguishers containing PFOS/PFOA foams included in the ban. The Metropolitan Fire Service (MFS) did, however, note the need for a considered approach to disposal of these hand-held extinguishers as there is a risk of them becoming a regulatory burden for the MFS if not properly considered in the policy. It is recommended that changeover of hand-held extinguishers to F3 is required upon recharge or within two years of commencement of the policy. This would reduce regulatory burden on individuals/facilities that have these extinguishers.

Include provision to address PFAS contamination in existing equipment

A number of submitters have mentioned that they find it is almost impossible to eradicate all traces of PFOS or PFOA from tanks and static systems through cleaning. The only alternative would be to incinerate all infrastructure containing the foams and completely replace it with new stock. This would be extremely costly for industry to do. It is recommended that the policy includes provision to address this through a cleaning obligation or contamination allowance.

Require certification of fluorine concentrations in foam by suppliers

There will need to be a maximum level of contamination not only during storage at the facilities but also at point of sale. There is uncertainty at present as to the fluorine content within proprietary products which makes compliance by industry with any ban more difficult. It is recommended that suppliers are required to certify, by batch, the fluorine content or fluorine free status of their foams with penalties for providing false information carrying a sufficient penalty.

Further recommendations for the administration of the proposed ban

Major Hazard Facilities that cannot comply within the required timeframe should be brought into compliance over time through the exemption provisions of the EP Act (section 37)

Exemptions under section 37 of the EP Act may be sought where compliance is unachievable within implementation timeframes. This will ensure an agreed way forward with the EPA through an environment improvement program. Conditions of exemptions may include best practice management, continued investigation into alternatives, maintenance, and reporting.

Greater guidance should be provided for appropriate disposal or storage of stockpiles

Even though the vast majority of facilities are no longer using, or are transitioning away from, PFOS and PFOA containing fire-fighting foams, guidance on appropriate disposal or storage options is necessary. This is due to the persistent nature, bioaccumulation potential and toxicity of PFOS and PFOA and the risk associated with incorrect storage or disposal of any foams containing the longer-chain flurosurfactants.

A guidance document outlining the EPAs requirements for bunding, stormwater management, cleanout of existing storage units and systems and treatment of wastewater prior to disposal is recommended to ensure risk to the environment through improper storage or disposal methods is managed.

6 Submitters to consultation on amendment to the Environment Protection (Water Quality) Policy 2015

1 South Australian Country Fire Service (CFS)

2 Nowa Australia

3 South Australian Metropolitan Fire Service (MFS)

4 Flinders Ports

5 United Firefighters Union of Australia

6 Santos Ltd

7 Chubb Fire and Security Pty Ltd

8 Willson Consulting

9 Fire Protection Association of Australia

10 Australian Institute of Petroleum

11 Orion Fire Engineering

Appendix A Summary of submissions received

Submitter name	Summary of key issues
Metropolitan Fire Service (SA)	1 MFS supports a ban of all fluorinated foams including C6 foams. 2 Acknowledge industries concerns regarding effectiveness of F3 foams, however MFS are aware that effectiveness is increasing as newer foams become available. 3 MFS confident that F3 will meet needs in the situations they are called upon. 4 MFS supports ban on PFAS containing portable extinguishers. – However, disposal of extinguishers needs to be properly managed and not included disposal to fire stations unless government funded or gifting to third parties. – Extinguisher companies could be funded to do changeover and dispose of at next due service or use. – Transition time recommendation is 3 years. – There needs to be a unique identifier on F3 extinguishers, differentiating them from PFAS containing foams. 5 MFS would like to include a clause that if emergency services attend an incident at a business where PFAS foams are still in use, clean-up of any foam used to protect life and/or property is put back onto the property owner and not MFS (including any emergency services equipment, appliances and personal protective clothing).
Chubb Fire & Security Pty Ltd	1 Firstly, would like to acknowledge and support the EPA's approach with the proposed amendment. Is clear and specific and should encourage action as opposed to potentially creating confusion and possible hesitancy in taking action due to future uncertainty. 2 Potential commercial drivers at play. Companies with no new compliant alternatives, less likely to be in favour of changes. 3 Chubb have both traditional fluorinated foams and best performing new generation fluorine-free foams. 4 Foams generally no longer used for training purposes nor discharged in regular fixed system commissioning and maintenance. 5 Accidental foam discharge have decreased and relatively rare. 6 Restriction of long-chain C8 foams is a goal we fully support.

Submitter name	Summary of key issues
	7 Submission generally endorses the proposed amendment with some small suggested changes. – Suggest EPA makes clear distinction between legacy C8 foams and short-chain C6 pure foams that meet US EPA PFOA Stewardship Program goals. 8 Certain applications; large volatile hydrocarbon fuel fires – need to be quickly controlled and where the use of C6 pure foams provides enhanced protection for fire fighters and asset protection and reduces potential for adverse environmental outcomes. 9 Recommend EPA provide clear distinction between C8 foams which we support should be banned and C6 foams that we suggest remain in use. 10 Aligns with the QLD policy which specifically allows the use of C6 pure foams, providing firewater and wastes are fully contained in impervious bunding.
Santos	1 Acknowledge and support the need for considered phase out of foams. 2 Request considered transition period to enable change-out of infrastructure without exorbitant cost to industry. 3 Transition period needs to allow time for a suitable alternative to be found. **Scope of the ban** 4 There must be a workable alternative. Foam deluge is a critical mitigation control at Santos' Major Hazard Facilities. A reduction in the efficacy of foams to suppress fires will change the risk profile at the sites and potentially affect the Safety Case regulated under the *Work Health and Safety Regulations 2012*. 5 The scope of the ban should be consistent Australia wide. Santos operates across several jurisdictions increases the regulatory burden, reduces interoperability between assets and has the potential to create confusion in the event of a fire. This is particularly relevant within the Cooper Basin, where Santos sites and firefighting assets are shared between South Australia (Moomba) and Queensland (Ballera, Jackson). 6 The scope of the ban should be based on a demonstrable environmental/health risk. It is unclear whether banning all fluorinated foams is justified rather than targeting C8+ foams. Santos requests that the EPA consider the net benefit of the proposed banned foams versus the workable alternative. For example,, foams capable of providing quick control and fire suppression will reduce volumes of foam and water resources deployed and reduce exposure risk to fire fighters. 7 The current wording: 'must not cause or permit the use of a fire-fighting foam that contains (a) PFOS or PFOA; or (b) a chemical that degrades into PFOS or PFOA' is absolute and provides no maximum concentrations or flexibility. Santos

Submitter name	Summary of key issues
	understands that there are a significant number of chemicals that may degrade into PFOS or PFOA under certain conditions. Guidance on exactly what chemicals (or group of chemicals) are captured in this definition is essential. If the intent is to ban C8+ foams (ie C6 compliance), then this should be explicit. If not, it is suggested that operational limits (ie allowable maximum concentrations) be set. 8 If operational limits are to be set, Santos recommends that these be established in consultation with relevant State and Commonwealth government departments as well as foams manufacturers based on demonstrated environmental/health risk and efficacy of the foams. **Hand-held/portable extinguishers** 1 Santos supports the exclusion of hand-held and portable extinguishers from the ban on the basis that any environmental risk is limited by the finite volume that can be released to localised area 2 It is suggested that a size limit be included for clarity and that the portable extinguishers up to 90 L capacity be excluded 3 If the ban is ultimately inclusive of hand-held and portable extinguishers Santos requests that these be excluded from any compliance date, and instead be phased out upon replacement/refill. This will be more cost effective and is considered reasonable, given the lower environmental risk posed by hand-held extinguishers. **Implementation** 1 A minimum 3 year implementation timeframe should be provided from the time that a workable alternative is identified. It is recognised that manufacturers will respond to a ban and work towards developing suitable alternatives, however as the scope of the ban is uncertain, it cannot be predicted how long it may take for suitable alternatives to be developed. 2 Santos supports an allowance in legislation that provides for an operator to set out a justifiable reason why it cannot comply within the implementation timeframe and set out a plan for how they will reach compliance and by when. This plan could be accepted at the discretion of the Minister's delegate or regulator. 3 Santos requires certainty in policy decisions and requests that the scope of any ban be appropriately considered to reduce the chance of it escalating/changing within a short period of time. This is primarily due to the costs associated with foam change-out and potential deluge re-design. **Disposal of stockpiles** 1 The scope of the ban should be limited to banning the use of the product. Santos does not support any wording that requires the disposal of the product within a set time frame.

Submitter name	Summary of key issues
	2 It is considered that safe stockpiling of foams that have been banned for use is appropriate until such time as suitable, cost effective disposal options are available, preferably higher up the waste hierarchy than disposal.
Nowa Australia	1 All NOWA products contain no PFOS. 2 All products have SA Water approval as well as certified organic approval. 3 It's a pity the government chooses to support international companies with Class B foams and not local companies.
SA Country Fire Service	1 SA CFS supports ban on PFOS/PFOA foams and chemicals that degrade to PFOS/PFOA. 2 SA CFS supports a full ban on fluorinated foams, including hand-held/portable extinguishers. 3 Ban should include C6 purity foams with a move to F3 (fluorine-free foams). 4 Understand that some sections of industry have performance concerns regarding F3 foams, however, SA CFS are aware of significant research and development in this area. 5 An intermediate step to C6 purity is seen as not the supporting best practice principals and uneconomical. 6 Recommend a transition period due to acknowledgement of cost to various industry sectors – suggest period similar to QLD policy (3 years). 7 Recommend transitioning hand-helds to F3 upon recharge or within a transitional time period – during which any discharge must managed and cleaned-up in accordance with EPA guidelines. 8 Extinguishers transitioned to F3 should be clearly marked. 9 SA CFS recommends that operator of premises must make every effort to prevent any discharge of non-approved foams – any costs associated with discharge including remediation must be borne by the operator.

Submitter name	Summary of key issues
Willson Consulting	1 EPA's proposal to restrict long-chain C8 foams is generally endorsed by this submission. 2 QLD's policy is promoting Fluorine free foams (F3) as the only credible answer. 3 This is fundamentally flawed. 4 UK Environment Agency concludes 'Fire Service foam buyers primary concern should be which foam is the most effective at putting out the fire. All firewater runoff and all foams present a pollution hazard'. 5 With this is mind, life safety is the primary objective. 6 We propose that an amendment be made to the proposed draft to clearly permit the use of short-chain C6 foams: a Proposed text: 'Short-chain ≤C6 firefighting foams which meet the US EPA PFOA Stewardship Program goals and contain not more than either of the following: (i) 25 ppb PFOA including its salts (ii) 1,000 ppb of one or a combination of PFOA related substances.' 7 Congratulate State Government for taking such an open and consultative approach to engage with interested stakeholders before finalising their decision. 8 Confident this approach will produce a better, more broadly accepted, robust, meaningful, useful and implementable outcome, which also has an increased chance of being understood, respected and valued by the wider community after its implementation. 9 Provided a vast amount of information and various studies showing the lower efficiency of F3 foams in comparison to AFFF (C6), especially in the petroleum industry. 10 Acknowledge that most foam users and stakeholders agree that all foam types can pollute whether fluorinated, fluorine free (F3) or just firewater runoff. 11 F3 brings a number of potential problems, particularly when large volumes of volatile flammable liquid fuels like gasoline are involved, such as at Major Hazard Facilities. 12 Fast extinction withC6 based fuel shedding foam agents seems to be the best way forward for SA. a It is strongly recommended that the draft legislation clearly permit the use of short-chain C6 fluorinated foams

Submitter name	Summary of key issues
	13 Addendum: a Benchmarks mentioned in main submission are problematic. b Simpler benchmarks suggested as an alternative. c Allows use of ≤C6 foams while still protecting life, minimising smoke and noxious breakdown products of combustion, reduce damage and business interruption. 14 Suggested wording: a 'Short-chain ≤C6 firefighting foams which meet US EPA PFOA Stewardship Program goals and contains no more than 50mg/kg of PFOA, its salts, or PFOA related substances, in acceptable firefighting foam'. or b 'Short-chain ≤C6 firefighting foams which meet the US EPA PFOA Stewardship Program goals and contain greater or equal to 99.99% ≤C6 fluorotelomer surfactant content, in acceptable firefighting foam': – With b) this includes C6 and any shorter-chain C5, C4, C3 and shorter chain fluorinated substances which are of similarly low concern. – Choosing a) would follow the existing PFOA level set by QLD for short-chain ≤C6 purity compliant foam concentrates which is one of the more sensible, reasonable and practical parts of their foam policy.
Flinders Ports	1 Flinders Ports requires clarification as to whether the policy will require a full transition away from fluorinated foams: – FP's intention is to fully transition to PFAS free foams. – Need clarification regarding intended outcomes with respect to storage of PFAS foams in fire-fighting installations and use during emergency events. – Will the policy be accompanied by any time-based requirements to reduce stocks of PFAS foams? 2 Adequacy of disposal chain: – Destruction of PFAS in does not appear to be facilitated within SA. Only one facility in Aus. – Concern is that as need for disposal increases due to ban, cost may also increase. – FP encourages EPA to engage in establishment of new destruction methods and facilities within SA.

Submitter name	Summary of key issues
	– Will need to consider timeframe for entities to meet disposal/storage requirements. 3 Lack of clear guidance for how PFAS containing substances (storage, transportation, decontamination of equipment etc). – Will need to provide guidance on how to manage systems containing PFAS foams to ensure best practice environmental management.
Fire Protection Association of Australia	1 FPA understands environmental concerns and major issues relating to PFOS and PFOA foams. 2 A holistic approach must be adopted when considering what types of foams are permitted for use. 3 Environmental impact should be considered but so should the foams performance: – Poor performance will result in fires being more difficult to extinguish and burning longer. – Will also adversely affect safety of firefighters and wider community. 4 Testing by US Navy showed short chain C6 foams had better performance, extinguishing time and degradation capability compared to fluorine-free foams. 5 Recommend all fire water effluent be contained and tested prior to determining appropriate method of disposal. **Recommendations** 1 The use of foams containing PFOS should be banned. 2 Existing stocks of foams containing PFOS should be removed from service, not used and sent for high temperature incineration or equivalent destruction at an approved facility. 3 Foam manufacturers should reduce and eliminate the production of foams containing PFOA in accordance with the US EPA PFOA Stewardship Program. 4 Foam users should transition from foams which contain PFOS or PFOA to shortchain ≤C6 foams developed in accordance with the US EPA PFOA Stewardship Program or fluorine free foams using a holistic risk based approach to select the foam most effective, reliable and appropriate for the intended application, particularly where lives (including firefighter's) are at risk. 5 Regardless of whether the foam under consideration is a fluorinated or fluorine free foam, evidence of suitability must be sought to demonstrate its ability to achieve the required firefighting performance for the fuel and application in question.

Submitter name	Summary of key issues
	6 Evidence must also be sought to confirm that the foam is compatible with the systems and equipment with which it is to be used.
United Firefighters Union of Australia	1 UFU supports ban on use of foams containing PFOS, PFOA and chemicals that degrade to PFOS or PFOA 2 UFU supports the ban including portable extinguishers.
AIP	1 Having an effective disposal option (preferably locally) is critical. 2 EPA is working with industry on merits of a proposal for local disposal. 3 Effectiveness of other foams not as good. Industry want to use foams that do their job properly. That said some of the companies present are testing fluorine-free foams. 4 Industry has implemented risk management measures that significantly reduces risk of further contamination. 5 Cost of change out for Caltex between $5-10 million Australia-wide. 6 Including requirements of foam producers to provide information on batch testing in the policy would be useful. 7 Long lead in time would be needed. 8 Use of 'exemptions' as a way of bringing difficult sites into eventual compliance was discussed.
Orion Fire Engineering	1 Agree with objective of proposed regulation. 2 QLD EHP has formed opinion that alternative foam technologies exist for Major Hazardous Facility (MHF) use, but they do not. – No solid engineering data to enable design of the foam systems for many applications found in MHFs. – This will take some years to conduct sufficient testing to allow new design standards to be developed. – Proposed regulation as it stands, would leave MHFs without effective fire protection for some years. 3 Biggest problem is that it precludes even the most minute contamination with PFOS or PFOA: – No way to test if something is completely PFAS-free but may be better testing next year. – Could mean that what is thought to be PFAS-free now might not be in a year. – Some minimum level of contamination should be allowed.

Submitter name	Summary of key issues
	4 TOPA testing currently proposed by QLD EHP is still so new, no lab here is able to do the test successfully yet. 5 Industry needs 3-5 years to develop + prove FF technologies for more common firefighting applications found in MHFs: – May take longer for some more demanding applications: o Interim solution may be setting max level PFAS allowed in foams. 6 QLD limits are problematic as foams come in different mixing ratios: – This is not taken into consideration. 7 Suggested wording: 'No fire fighting foam concentrate shall be used or permitted to be used where the sum of the FPOS & FPOA contamination in the product is greater than 4mg/L divided by the mixing rate; the PFOS & PFOA content shall be determined by using the TOPA method at the time when the foam concentrate is imported, manufactured, sold, or placed into service, or within 3 months of this regulation coming into force.' 8 4 mg/L is rough estimate for now: – Some margin of error is needed to be set at a level that eliminates 1st and 2nd generation products.