**National phase out of PFOS**

**Ratification of the Stockholm Convention amendment on PFOS**

**Regulation Impact Statement for consultation, September 2017**

**Department of Environment and Science (on behalf of Queensland Government)**

**Answers to the RIS questions, comments and Queensland position**

**Queensland Position**

The Queensland Government supports ratification of the Stockholm Convention amendment on PFOS. Options 2, 3 and 4 canvassed in the Consultation RIS appear to be reasonable and achievable, but from a public health and environmental outcome perspective Option 4 is the most desirable. The Queensland Government has an operational policy banning the use of PFAS materials in any firefighting foams. Option 4 ensures there is minimal ongoing risk from large releases of PFOS containing products, such as those related to the use of fire-fighting foams. The allowed uses in photo-imaging and certain medical devices is low volume and would not be expected to pose a significant human health or environmental risk. In addition, this is the most cost effective policy intervention, given that policy intervention is required to control PFOS use (Queensland does not consider that option 1 is a viable option). Queensland is satisfied that the potential health impacts of PFOS have been adequately considered in the preparation of the RIS.

***Comments on Section 7 of the Consultation RIS (Page 97):***

* **The capacity of industry to achieve the proposed PFOS phase outs, process improvements and waste disposal requirements, including destruction.**
  + In Queensland we are aware that large sites are also able to transition from PFOS containing foams, even where stockpiles of foams exceed 1000 litres. The main challenges operators face are to do with waste disposal, both of FFF concentrates and of washwaters following cleaning of tanks and equipment. Additionally, depending on the particular fire risks there can be difficulties for operators finding a suitable replacement foam, and the information provided by foam manufacturers is often not reliable.
  + Thermal destruction: In Queensland there is currently one site approved to thermally destroy FFF (Plasma Arc with low throughput), and a second site is undergoing an approved trial for using fluorinated firefighting foams as an alternative fuel in the cement manufacturing process to thermally destroy FFF in the cement kiln. If the cement kiln process is demonstrated to be effective as destroying PFAS compounds and a licence amendment is approved this will greatly increase the capacity of thermal destruction of PFOS containing FFF in Queensland.
  + Landfill - wastes and soils contaminated with less than 50ug/L TCLP Total Organic Fluorine may be landfilled at a number of lined landfills in Queensland. There is currently a high capacity for low level contaminated soils or immobilized PFOS waste streams such as filter media (granulated/powdered activated carbon) to be disposed to landfill.
  + Storage – FFF containing PFOS can be stored at many licensed regulated waste storage facilities in Queensland. In our experience this has usually been done while the waste is ‘in transit’, awaiting disposal. To our knowledge there is a backlog of FFF wastes going to thermal destruction.
  + The cost of thermal destruction of FFF is an important factor in the capacity of industry to phase out PFOS, as disposal costs are very high. Other issues such as lack of understanding and information relating to PFAS constituents in FFF exist as Safety Data Sheet information for environmental management of FFF is very poor. A result of this is that some operators have accepted FFF and other PFAS contaminated materials for unsuitable disposal/treatment such as composting. This type of treatment/disposal is attractive however, as it has a significantly lower cost to the waste generator.
* **For firefighting, information on the current import, use, storage and stocks of PFOS-containing firefighting foams, including use in shipping**
  + Queensland has gathered information on the current stocks of firefighting foams as per the firefighting foam survey summary (see link below and also attached),

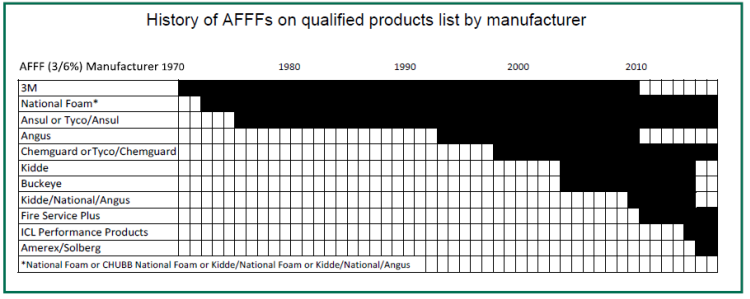
<https://www.ehp.qld.gov.au/assets/documents/pollution/management/incidents/firefighting-foam-survey-summary.pdf>

In general it was found that PFOS containing foams represented a small portion of the total quantity of firefighting foams, with the majority of foams being newer generation AFFF’s with fluorotelomer compositions.

***Specific Comments:***

**Option 3 on page 6,** including firefighting as an essential use of PFOS, is not tenable.  PFOS is not required for firefighting and has not been since at least 2000-2003 when (equally problematic) fluorotelomer foams of the same performance were well established e.g. and put into use by Defence for MilSpec.  Even the necessity of use of fluorotelomer foams that produce PFOA and its homologues is equally debatable now.

Firefighting also has the very high likelihood of uncontrolled releases in very large quantities and day-to-day practices leading to releases very likely.  For example the Coode Island fire in Melbourne in 1991 when 200 tonnes of 3M Lightwater foam concentrate was used with the equivalent of 5 to 10 tonnes of PFOS released.



Field, Higgins, Deeb & Conder 2017. Environmental Security Technology Certification Program.

Small-scale PFOS uses such as X-ray and photo-imaging products, and even electroplating where wastes can be easily controlled would be acceptable with appropriate controls.

**Option 4** wording is ambiguous. “In addition to implementing the PFOS controls outlined in Option 3” this could be interpreted as meaning firefighting is exempt.

Family tree conditioning or references reliant on the previous point which in turn relies on the one before are bound to be misinterpreted.

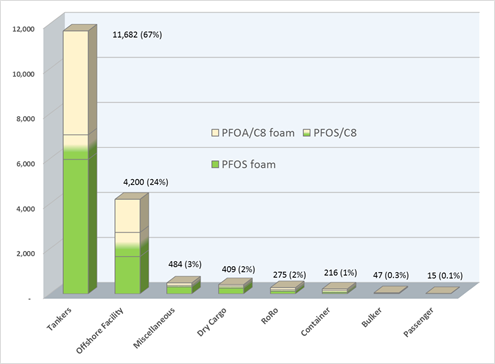
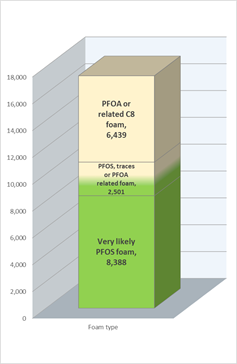
Each option should stand-alone as to what it covers or means in clear dot-point form.

**Page 7 - T**he statement “if PFOS is proven to adversely affect human health“ should be deleted with the statement repeated from page 35 “the possibility of health effects cannot be excluded based on the evidence available“ as there is ample evidence of probable health effects.  For example, 3M’s Chief Medical Officer’s submission to the Senate Inquiry stated that probable health effects were “*more likely than not*” even if it has not been absolutely proven by testing it directly on humans. Reference should be made to Field et al, 2017, who state “Based on the USEPA’s analysis of PFOA, current information indicates non-cancer effects occur at lower exposures than for cancer effects. Non-cancer human health reference toxicity values for PFOA and PFOS are available, 110, 111, 113, 114 and these values are being used in risk assessments to evaluate human health risks from PFOS and PFOA due to drinking water consumption and other exposures. Additionally, at sufficient levels, ecotoxicological effects of PFOA and PFOS on aquatic and terrestrial animals (including fish and invertebrates) as well as plants have been documented.”

**Page 8 –** In regard to the statement “The other options would involve a higher regulatory burden due to higher ongoing costs from the additional requirement for appropriate waste management by industries that continue to use PFOS, particularly for firefighting uses” note that PFOS foams should no longer be in use where there is a high probability of release, with the majority of PFOS foam stocks having reached the end of their shelf life with many already changed over to alternatives the cost to industry of disposal would be an expected normal cost.  The liability for industry, the government and the community would heavily favour reducing the potential for another Coode Island or Buncefield scale PFOS release.  By comparison the aim of “preventing more than 97 per cent (or 25.12 tonnes) of emissions“ from diffuse sources would be overshadowed by a single PFOS foam fire incident.

**Page 9** – It is appropriate that the gap analysis of PFOS foam stocks includes shipping, as on-deck use for fuel carriers is a potential direct release to port and Australian waters and management of captured wastes such as for engine room releases may also contribute to releases if wastes are not properly disposed of and are simply dumped overboard.

The report for the Norwegian Maritime Authority by Det Norske Veritas-GL on *FLUORINATED SURFACTANTS IN THE MARINE INDUSTRY - Use of PFOS and other surfactants in firefighting foams onboard vessels, Report No.: 2017-1129*  goes some way towards assessing the risk from PFOS foams on ships.



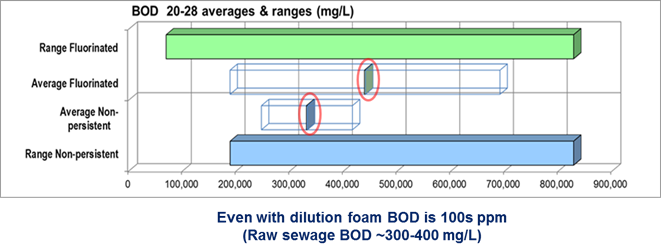
**Page 36 –** Regulatory controls, NT industry in seeking advice on foam management report that the NT have deferred to the Queensland policy provisions.  This could be mentioned after direct confirmation from NT as appropriate.

**Page 38 –** “PFOS-containing firefighting foams should only be used in essential applications (i.e. not be used for training purposes).“ PFOS foams should not be used at all given the high probability of release and the availability of alternatives since at least 2003.

**Page 38 SDS** – “Product labels and Safety Data Sheets should provide up-to-date information on safe use and handling of PFOS.“ SDS are required to have accurate information but the vast majority of SDS are woefully inadequate or contain misleading information or revert to the “*not available*” let-out clause even for the most basic parameters. Clarification of who is going to “enforce” SDS content is needed and this needs to be applied nationally.

**Page 38 –** “Existing stocks of PFOS-containing firefighting foams should be disposed of responsibly on expiry“  This leaves the “responsible” disposal open to the misinformation commonly cited in SDS and erroneously relied on by industry that disposal to sewer, release to the environment or composting is adequate, despite it being well known that any of these are effectively disposal to the environment via effluent irrigation, waterway release, biosolids to land and ultimately into the food chain of a bioaccumulative compound.  Disposal needs to be clearly stated in terms of “*destruction as a regulated waste by high-temperature incineration or permanent immobilisation*”. This is implied in Page 47.

**Page 43** – “for example, some foams may create biological oxygen demand for a short period),“  This should be changed to “all foams create high biochemical oxygen demand in the short-term through the decay of organic components”  EHP reviewed the BOD of 70+ legacy and current foams and found all were extremely high regardless of whether they were fluorinate or not.



**Page 49** Edit to include “PFOS consumed in Australia is released into the environment as emissions to water or soil (see Table 2). This adds to background levels of PFOS in the environment and poses a risk of bioaccumulation in plants, animals and humans and creates contaminated sites where the level of PFOS is elevated above guideline values.“  The mention of releases and site contamination is deficient if the concerns and consequences are not included.

**Table 6** – Should include the cost of plasma-arc furnace destruction as a current technology given the current lack of approvals for cement kiln destruction ($18/litre, @1.5% PFOS/PFHxS in 3M = $1,200/kg? check with ToxFree on $/L).

Regarding disposal of foam stocks, although it is implied there should be a provision to prohibit export, gifting or donation of PFOS foams as a “disposal” option.

**Page 69 –** Plasma arc description footnote “Plasma arc waste disposal involves heating waste to a high temperature, melting it such that the organic components are converted to gas and the inorganic components are deposited in a solid form, thus no longer having any POP characteristics. “This is not correct, melting and conversion to gas are not the process as cooling would simply condense the POP, also “deposit in solid form” is not correct for example the free fluorine in the gas is captured in a wet scrubber as hydrofluoric acid solution which is then treated further.  A better description would be “*Plasma-arc destruction is limited to liquids and involves heating the waste to a very high temperature such that the POP is destroyed by its chemical bonds being broken and the constituent atoms then incorporated in manageable inorganic compounds which are captured for stabilisation and disposal.”*