

Select Committee on PFAS (per and polyfluoroalkyl substances) November 2024

Preliminary Summary of Concerns

The dangers of PFAS chemicals are wide and varied affecting human health; both current and future generations, the environment, wildlife, oceans and fish stocks, as well as the world's climate. The endocrine impacts of the 1000s of PFAS in circulation may influence not only our ability to fight disease but ours and wildlife's ability to reproduce. PFAS is a multifaceted problem and requires urgent multidisciplinary responses.

1. Persistence of PFAS:

Per- and poly-fluoroalkyl substances (PFAS), often referred to as "forever chemicals" due to their stable carbon-fluorine bonds, do not degrade in the environment. Australia like others has ignored this fundamental chemical property which has led to approximately 14,000 PFAS being in commercial use today, resulting in widespread environmental and human contamination with chemicals that do not breakdown.

2. Global Contamination:

PFAS travel globally through air and water, contaminating oceans and ecosystems, even in remote areas. As global transboundary pollutants, PFAS bioaccumulate in living organisms; humans, aquatic and terrestrial wildlife. Once released into the environment, PFAS inevitably build-up and regardless of regulatory statutes and limits, are unmanageable. Some PFAS have been included in the Stockholm Convention on Persistent Organic Pollutants (POPs) due to these harmful and uncontrollable characteristics.

3. Trifluoroacetic acid (TFA) levels of are increasing "exponentially" across the globe, (e.g., 6-17 fold in a decade). Fluorinated gases introduced in the 1990s as a replacement for chlorofluorocarbons in air-conditioning and refrigeration have seen emissions of TFA soar. Releases from wastewater plants, firefighting foam and pesticides also contribute to the accumulation of TFA in drinking water, household dust, plant-based drinks, rain and oceans and in human blood. Levels are already high and predicted to continue to rise. In plant uptake experiments, there was no indication of a steady state concentration being reached. Amid the dismal lack of data on TFA impacts on human health and the environment, a 2021 industry study reported adverse effects on embryo foetal developmental in rabbits. TFA plays a role in climate change as well. At high temperatures TFA can be converted to a potent greenhouse gas fluoroform; of relevance as destruction options for the stockpiles of PFAS fire fighting foam are considered.

4. Health Impacts:

Research has found that PFAS can damage the endocrine, reproductive, and immune systems of both humans and wildlife. U.S. National Toxicology Program concluded both PFOA and PFOS are an immune hazard to humans. Perfluorooctanoic acid (PFOA) is classified as a human carcinogen by the International Agency for Research on Cancer (IARC). ANU community health study found that cancer outcomes in three Australian PFAS affected communities were higher than the

general population. Exposed communities also had higher levels in their blood of both PFOS and PFHxs.

PFAS are endocrine disrupting chemicals and exposure has been linked to increased cholesterol levels, immune suppression, hormonal interference and developmental issues in children. Certain PFAS have shown potential for intergenerational harm.

Yet, the Australian government continues to assert that there is *“limited to no evidence of human disease or other clinically significant harm resulting from PFAS exposure at this time.”*

5. Children's Exposure:

“Children are not little adults: they have special vulnerabilities to the toxic effects of chemicals. Children's exposure to chemicals at critical stages in their physical and cognitive development may have severe long-term consequences for health.”

- WHO, ILO, UNEP

Current discussions regarding acceptable levels of PFAS lifetime exposure are misguided and cannot protect Australian children. They are born pre-exposed to PFAS in utero and already at heightened risk of epigenetic harm due to maternal exposure. Babies and children also experience “windows of susceptibility” in their development. If exposure occurs during critical times, it may contribute to health problems much later in life; e.g, dioxin in utero can produce disabilities in neurological function and learning ability. The incidence of childhood cancer in Australia continues to rise with the most common childhood cancer groups being leukaemia, cancer of the central nervous system (including the brain) and lymphoma. Cancer Australia has stated that cancers in children can be caused by DNA (epigenetic) changes in cells that occur very early in life, sometimes even before birth.

The regulatory reliance on risk assessment and tolerable daily intakes based on an adult's lifetime exposure are outdated and cannot protect Australian children from exposure to PFAS.

5. Widespread Use:

PFAS are found in a variety of building, consumer and children products, including plastics, paints, stain and water repellent materials, carpets, textiles (including school uniforms), non-stick cookware, cosmetics (like mascara), dental floss, and food packaging (including moulded fibre, paper bags, and teabags). Exposure occurs via direct skin absorption (up to 38% of PFOA dose), oral routes (e.g., through lipstick and children's behaviours), and through household dust and indoor air. There is minimal monitoring, assessment or control of PFAS in imported products.

6. Contamination of Waste Streams:

The presence of PFAS in products leads to contamination of the waste stream, including recycled plastic goods. Sewage treatment plants are unable to completely remove PFAS, releasing their waste water into waterways and through the reuse of biosolids—a byproduct of wastewater treatment. In Australia, nearly 400,000 dry tonnes of biosolids are produced annually, much of which is applied to agricultural lands. In a Victorian study the vast majority of biosolids exceeded Victorian EPA

Guideline levels and required “*dilution*” to achieve compliance. This is unsustainable management option for chemicals that do not break down.

7. Historical Use in Firefighting Foams:

PFAS were used in aqueous film-forming foams (AFFF) long after their extreme persistency was recognized, leading to contamination of Australian soil, surface water and groundwater. Testing of drinking water in 2011 revealed extensive PFAS contamination, yet there was no effective management or policy response.

8. Pesticide Regulations:

Under changes to the definition in 2021, certain pesticides containing PFAS are used in Australian agriculture. Studies by the U.S. Environmental Protection Agency (USEPA) have shown that plastic pesticide containers can also leach PFAS into products. There has been no regulatory action in response to this issue in Australia. Three pesticides cited recently as major contributors to TFA emissions are registered and used in Australia - flufenacet, diflufenican, fluazinam.

9. Destruction of PFAS:

Currently, there are no facilities in Australia that have successfully conducted trials to destroy PFAS through incineration.

10. Lack of Support for Affected Residents:

Residents impacted by PFAS contamination have received minimal government support, often forcing them to pursue costly legal action against the Department of Defence for contaminating their properties. In many cases, this legal recourse has not provide sufficient financial means for residents to relocate from their contaminated homes.

11. Inadequate Policy Responses:

Despite warnings from the USEPA in 2001 regarding the dangers of PFOS, Australia's policy responses have been insufficient, characterized by:

- A narrow focus on a limited number of PFAS chemicals.
- Guidelines for drinking water and tolerable daily intakes that do not acknowledge the possibility of “no safe level of exposure.”
 - Failure to monitor national PFAS levels in blood and breast milk.
- Inadequate environmental monitoring and lack of response to PFAS in drinking water.
- Regulatory allowances for PFAS-contaminated biosolids used in agriculture and the use of PFAS in pesticides.
- Reliance on voluntary industry agreements rather than mandatory removal of PFAS from food contact packaging.
- Insufficient attention to imported consumer products as multiple sources of PFAS exposure, particularly in cosmetics and children's clothing.
- A failure to ensure community access to information as required by Australia's ratification of the Stockholm Convention on POPs.
- Lack of a financial model (e.g., Superfund) for PFAS site remediation and pursuing redress from 3M, a major PFAS producer.

Recommendations for Action:

The Australian government must:

1. Address PFAS as a class, aiming to restrict and eliminate all PFAS use and emissions.
2. Update Australian drinking water guidelines to reflect USEPA finding that there is *“no safe level of PFAS exposure.”*
3. Significantly improve water treatment at the point of distribution, ensuring all water providers employ best available technology (BAT) to limit PFAS contamination as close to zero as possible.
4. Cease the release and distribution of PFAS-contaminated biosolids, a byproduct of wastewater treatment plants, much of which is applied to agricultural lands.
5. Prioritize the mandatory removal of PFAS from food contact packaging.
6. Proactively address PFAS in imported consumer products, with a focus on personal care items and children's products.
7. Eliminate PFAS from pesticides and pesticide containers.
8. Enhance environmental monitoring and community information regarding PFAS contamination.
9. Ratify the three Stockholm Convention PFAS and support the proposed global ban on perfluorocarboxylic acids (PFCAs) as recommended by the Persistent Organic Pollutants Review Committee (POPRC).
10. Assist in global efforts to rapidly replace refrigerants with non fluorinated options.
11. Initiate a claim against 3M to help finance PFAS elimination, remediation, and compensation efforts.

To uphold the basic human right to a pollution-free and healthy environment, public policy regarding hazardous chemicals needs to be grounded in internationally recognized principles of chemical assessment and management.

- Intergenerational Equity: consider long-term impacts and ensure sustainability for future generations.
- Precaution: respond to serious or irreversible harm when complete information is unavailable.
- Substitution: replace harmful chemicals with safer alternatives.
- Polluter Pays: hold industries accountable for the true costs of their products and activities.
- No Data, No Market: prohibit market access for chemicals lacking sufficient data.
- Right to Know: ensure public access to information on chemical-related harms to health and environment.
- Liability: establish responsibility and compensation for injury or harm.
- Good Governance: promote transparency and accountability.

Since the 2001 notification by the US EPA regarding the dangers of PFOS, successive Australian governments have failed to implement these essential principles in managing PFAS. Consequently, Australia, despite having no history of PFAS production or manufacture, has emerged as a global PFAS hotspot, akin to regions in China, Europe, and North America.

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