Submission No 27

INQUIRY INTO INQUIRY INTO PFAS CONTAMINATION IN WATERWAYS AND DRINKING WATER SUPPLIES THROUGHOUT NEW SOUTH WALES

Organisation: Water Services Association of Australia

Date Received: 27 November 2024

WATER SERVICES
ASSOCIATION OF AUSTRALIA

WSAA submission to the NSW Parliament Select Committee on PFAS contamination in waterways and drinking water supplies throughout NSW

WSAA submission to the NSW Parliament Select Committee on PFAS contamination in waterways and drinking water supplies throughout NSW

The Water Services Association of Australia (WSAA) is pleased to make this submission to the Select Committee. WSAA is the national peak body representing the water sector in Australia and New Zealand. Our members provide water and wastewater services to over 24 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

WSAA published resources on PFAS and drinking water in response to the draft PFAS levels in the Australian Drinking Water Guidelines, on 21 October 2024, including a Media Release, Fact Sheet, FAQ and Further Reading list.

The vast majority of Australians have access to water that meets the Australian Drinking Water Guidelines – most water supplies are below the current, and draft guideline values for PFAS. But water utilities will remain vigilant, and continue to monitor water, and share information with regulators and communities.

In isolated instances where water is outside the values, the National Health and Medical Research Council (NHMRC) indicated that short-term exposure to higher levels is unlikely to pose a health risk. Nonetheless, in such cases drinking water suppliers will continue to take swift action in consultation with health regulators ie NSW Health and local public health units.

This submission provides information about the Australian water sector in general.

The framework in which drinking water operates

Water is an essential service for all Australians. Protecting water quality and public health is the highest priority for water providers, working closely with federal and state health regulators. We operate within tightly governed regulatory frameworks for public health, pricing and environmental impact.

The Australian Drinking Water Guidelines (ADWG) are not mandatory in themselves. However, individual state and territory legislation typically requires water utilities to meet the health-related guideline values of the ADWG. The NHMRC has been reviewing the guidelines for PFAS since 2022. The independent review has considered recent guidance and local and international reviews to determine what is suitable for Australia.

The current guideline levels on PFAS remain in force until the NHMRC releases its final levels, expected in April 2025. After this, a timeline for transition to the new guidelines will be determined by each jurisdiction.

The draft Australian values are very conservative, include a wide margin for safety and include a range of uncertainty factors which err on the side of caution. While comparisons are often made with the United States (US), our situation is somewhat different to the US, where high volumes of PFAS were manufactured by US companies. There was also large scale contamination, with nearly 60,000 presumptive contaminated sites[1].

[1] Salvatore et al., 2022. Presumptive contamination: A new approach to PFAS contamination based on likely sources. *Environmental Science & Technology Letters* 9(11):983-990.

Our dams are also further away from our cities – and thus less impacted by industry – than is often the case in the US. A range of other countries have also taken a different approach to the US (see Table 1 at end).

Water utilities must comply with detailed requirements set by state and territory health authorities. This includes management plans for water monitoring and testing, and reporting obligations so that water quality activities and outcomes are transparent to the community. Water quality results are typically reported to regulators, and shared with communities via websites on a regular basis, to provide confidence in the safety of drinking water.

Monitoring

Water utilities routinely conduct a range of tests to ensure drinking water quality complies with the guidelines. As with other risks to water safety, the risks of PFAS will vary across different areas, so PFAS testing will vary across water utilities and locations.

The frequency and location of sampling is determined by a water utility and agreed by the health regulator (in this case NSW Health for NSW) following risk assessment of sources of PFAS in specific catchments, using NSW EPA information and other relevant information. Water utilities test more often in identified higher risk areas, which can include areas where firefighting foams have been used, at airports, defence force bases, and at industrial facilities, or landfill areas where PFAS may have leached out.

Utilities test for PFAS in different parts of their water supply, including the raw untreated water (such as in rivers, dams and aquifers), and the drinking water that has been through the water treatment process. Importantly, raw/untreated water does not need to comply with drinking water guidelines as it will be treated, or multiple sources may be blended, before supply to customers. Nonetheless, water utilities may still test their raw water sources as part of sound processes to manage risks – it is important to understand the quality of raw water as part of managing water quality in the entire system. A detection of PFAS in the raw water supply does not necessarily mean PFAS will be detected in the treated water supply.

When testing, water authorities must follow stringent criteria to ensure there is no contamination of water samples during the collection, storage and analysis; because the levels that must be accurately reported are so low, and the amount of PFAS in everyday products can easily cause inaccurately high results. For example, sample collectors should not wash their hair or wear makeup, perfume, insect repellent or sunscreen for a defined period. Specific types of containers and non-waterproof clothing must also be worn. Testing is carried out at specialised, accredited laboratories using extremely sophisticated methods, by combining liquid chromatography with mass spectrometry.

Economic impacts of PFAS

Given the proposed draft guideline values, water utilities are considering their testing regimes and liaising with their regulators to confirm suitability. In our submission to the NHMRC we note that we expect all water utilities will face additional costs associated with the increased testing and monitoring required in response to the draft guidelines. The impact of cost increases due to testing and monitoring are likely to be modest for large water utilities, but may be relatively higher for smaller utilities and in regional and remote Australia. These costs will need to be recovered through water bills, and/or funding and other support may be sought from all levels of government.

In isolated cases where testing identifies drinking water outside the guideline values, water utilities take action, including notifying their health authorities and resampling. The NHMRC noted that exceeding a chronic guideline should not be seen as a pass/fail measure, rather a trigger to investigate. Investigations of the source of contamination will occur.

If needed, options could include taking the water supply offline, replacing or blending with alternative uncontaminated sources, or including further treatment processes at water treatment plants. There are known water treatment technologies that can remove PFAS. For example, reverse osmosis, granular activated carbon, ion exchange. However, these can be high cost and energy intensive, and produce concentrated contaminated waste that needs to be managed. At present, technologies for managing the waste streams are also high cost and in the early stages of development.

Situations requiring the installation of additional treatment processes are likely to have much more substantial cost impacts than situations which require increased monitoring. For example, we estimate a new 30 million litre per day water treatment plant would cost $100-200 million, and a new 30 million litre per day desalination plant would cost $300-400 million depending on size, location, and a range of other factors. Where PFAS is removed with treatment, there would also be further costs associated with disposing of filters and waste.

Water utilities continue to participate in research and explore treatment options for managing PFAS in Australia and with other utilities around the world.

Sources of exposure to PFAS

The NHMRC refers to Australian data indicating that drinking water only represents 2 or 3% of people's daily intake of PFOS and PFOA (in communities not impacted by a direct pollution source).[2]

The Australian Drinking Water Guidelines assume a default value of 10% attributed to drinking water, a lower contribution than is used in the US.[3] The NHMRC clarifies that its method of guideline calculation attributes 90% of PFAS exposure to sources other than drinking water[4].

These other sources include firefighting foams, and a wide range of everyday consumer and industrial products: textiles, leather products, food packaging, sunscreen, insect repellent, fertilisers, non-stick cookware, pesticides, furniture polishes, carpets, shampoos, cosmetics and air and dust, to name only a few. Dewapriya et al published a recent paper about the concentrations of PFAS in consumer products from which some figures can be drawn (Figure 1, overleaf). We note that Figure 1 represents relative concentrations of PFAS, and does not attempt to convey exposure to PFAS, or how much of the PFAS could be ingested or absorbed.

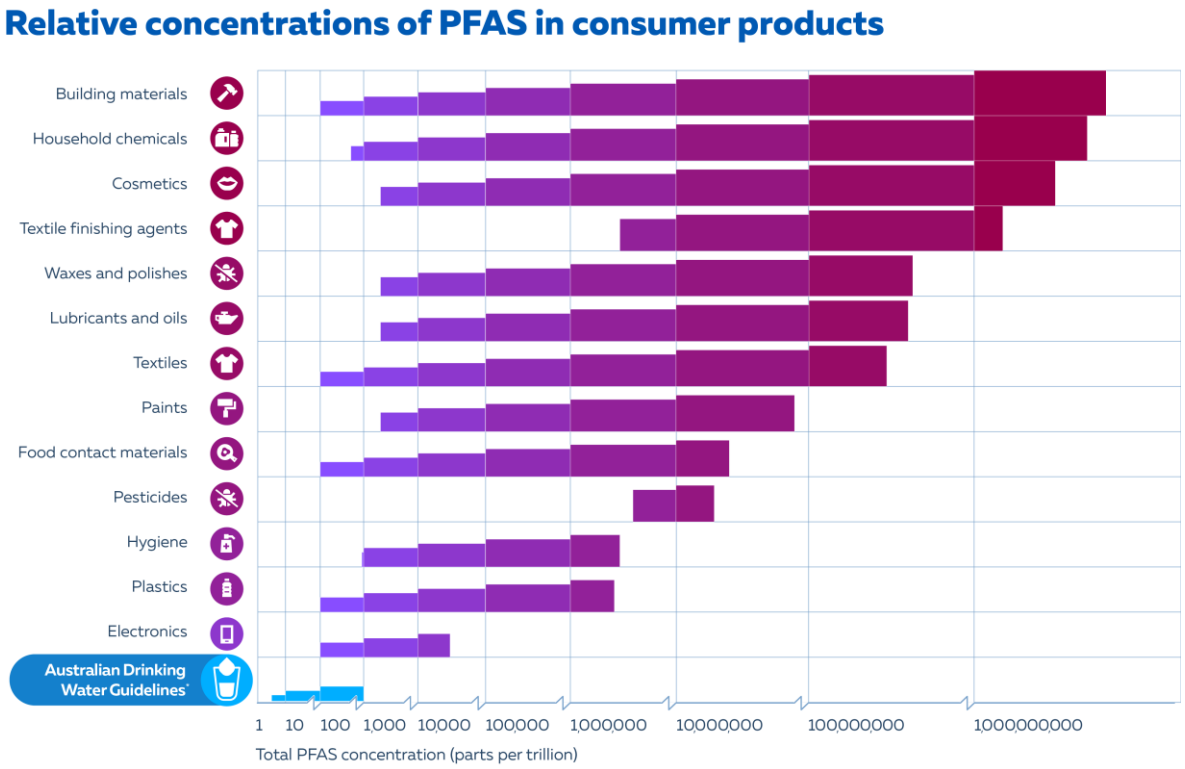
---

[2] NHMRC, 241021, Questions and Answers – NHMRC Review of per- and polyfluoroalkyl substances (PFAS) in Australian Drinking Water – public consultation – Question in 'About PFAS' section: Where does PFAS come from and how much of it comes from drinking water?

[3] ibid

[4] NHMRC, 241021, Questions and Answers – NHMRC Review of per- and polyfluoroalkyl substances (PFAS) in Australian Drinking Water – public consultation – Question in 'Human Health Effects of PFAS' section: How can I reduce my exposure to PFAS?

Figure 1: Relative concentrations of PFAS in consumer products



*National Health and Medical Research Council (NHRMC). (2024), **Per- and poly-fluoroalkyl substances (PFAS) Chemical Fact Sheet** (Draft)

Chart developed based on Dewapriya, P., Chadwick, L., Gorji, S.G., Schulze B, Valsecchi, S., Samanipour, S., Thomas, K.V., and Kaserzon, S. L. (2023). Per- and polyfluoroalkyl substances (PFAS) in consumer products: current knowledge and research gaps. Journal of Hazardous Materials Letters 4 100086 1-7

Note Total PFAS concentrations in various consumer and industrial product categories globally in comparison with the proposed ADWG, presented in ng/L or ng/Kg equivalent to ppt. Concentrations presented provide the range of total PFAS concentrations items contained in the reference studies and do not attempt to convey how much PFAS could be ingested or dermally absorbed by people. Data include several types of PFAS commonly found in the market including but not limited to PFCAs (i.e PFOA), PFSAs (i.e. PFBS, PFHxS, PFOS), fluorotelomers, sulfonamides, PAPs and other novel PFAS.

Drinking water limits on PFAS restrict concentrations to a few parts per trillion. By comparison, there are consumer products containing PFAS in the parts per billion, as recently pointed out by the Waste Management and Resource Recovery Association (see box on next page).

The water sector will continue to prioritise public health and supplying high quality water to our customers. Given that most customers across Australia receive water that complies with the current and draft ADWG PFAS values, and at least 90% of PFAS exposure is from other sources, consumers may legitimately want to know how governments are addressing exposure from other sources. Consumers may also want to understand the controls being placed on PFAS in products that are not food or beverage related, but still add to the load of PFAS in the environment – for example construction items, paint and electronics.

Areas of reform, tighter regulation: source control

Source control, or limiting the types and amount of PFAS that are used in Australia in the first place, is an effective way of limiting the risks from PFAS to water supplies. The water sector did not create PFAS; rather we inherited the PFAS risk from other products and activities. The more PFAS we can eliminate from use in products and processes, the less PFAS will be present for the water sector to manage. Once PFAS are in the environment, they are hard to remove and destroy. Prevention or minimisation of PFAS entering the environment and water cycle in the first place is of the highest importance.

The Federal Government has banned the production or importation of some PFAS by July 2025, including everyday products that contain those compounds. Stricter regulation of importation and manufacturing of products containing PFAS will reduce the amount of PFAS that infiltrates into the environment. Governments and industry need to continue to work together to develop ways to identify and control PFAS at their source. We encourage and support such a holistic, coordinated approach and offer the water sector's support and cooperation to such efforts.

> The Waste Management & Resource Recovery Association's media release, *Federal Government needs to turn the PFAS tap off now (18.9.24),* states that 'PFAS is everywhere…. Simply head to the supermarket and you can buy materials off the shelf that contain PFAS at far higher levels than being found in water at present."
>
> The article refers to a University of Queensland study which found that dental floss contains 15 parts per billion of PFAS, microwave popcorn bags have 18,200 parts per billion and cosmetics up to 10,500 parts per billion.
>
> "Australia is yet to sign the Stockholm Convention on persistent organic pollutants or so-called 'forever chemicals', which Europe did over a decade ago…. The waste and resource recovery industry has been calling on the Federal Government for years for much tighter restrictions on what can be placed on market containing PFAS and how it is managed, including labelling and registration schemes… In 2025 the Federal Government is proposing to ban less than five of the more than 4,000 types of PFAS in existence…. There needs to be urgent action on this…. This material needs to be prevented from circulating in the environment in the first place," said Gayle Sloan, CEO.

We also believe that a Regulatory Impact Assessment is warranted before changes are made to any regulatory frameworks. A Regulatory Impact Statement would evaluate the costs and benefits of broader source water monitoring, data sharing to enable informed decision-making, frameworks for collaborative investigation and management of PFAS detections, and prioritisation frameworks for allocating resources to the areas of greatest community and environmental impact.

Agency coordination

One emerging issue where reform is needed is requiring greater collaboration across NSW Government agencies and with different levels of government. This is relevant to preventing or minimising PFAS contamination, and in responding when contamination occurs.

On the prevention side, local water utilities do not always manage water supply catchments and water sources. They are one of many users including irrigators, stock and domestic customers and other agencies. Yet they become responsible for managing PFAS contamination in water sources that are affected by PFAS. It is important to ensure that controls and incentives around PFAS, apply to those organisations that are best placed to help minimise PFAS contamination across the life cycle of the chemicals.

It would also be helpful to require better coordination of monitoring, data collection and sharing across drinking water sources. This would help all agencies involved, and regulators, to measure the effectiveness of current water management programs and instigate improvements where needed; particularly as the guideline levels are becoming tighter.

On the management side, when PFAS is detected, identifying the source is likely to require assistance from a number of agencies. Managing the PFAS contamination is complex and requires significant resources. Cooperation and proactive, transparent multi-agency action is essential to be able to quickly identify the source and the best solution.

Measures to require cross-government collaboration, and support inter-government collaboration, to provide information or support to water utilities on PFAS, will help the water sector address the isolated instances of PFAS detections as quickly and effectively as possible. It will also be beneficial for the future, so that any new water sources that may need to be developed, remain free of PFAS contamination.

For example, for a council-owned local water utility in NSW that detects PFAS, collaboration may be needed between the local council, multiple state government agencies including the health and environment regulator, and if the source of contamination is a defence site, the Australian Department of Defence.

Water security

The Terms of Reference ask about the impacts on water security, from taking contaminated water sources offline.

Interruptions to any water source for any reason, creates vulnerability. Australia's water supplies are vulnerable, particularly after extreme climate events including drought, floods and bushfires that have occurred more often than expected in recent decades.

The water sector in Australia is already increasing the resilience of its water supplies to manage supply interruptions. This involves considering all options for new water supplies, including large-scale rainfall-independent options like purified recycled water for drinking and desalination. In addition, options like recycled water for non-drinking, stormwater reuse and groundwater which can typically make smaller contributions are considered. Rather than relying on only rivers, dams and groundwater, there is a push to diversify water sources by incorporating some of the options above.

The options with the largest yield tend to be purified recycled water for drinking and seawater desalination. A further advantage of these options is that they include advanced treatment processes, such as reverse osmosis – which will remove PFAS from drinking water.

The increasing focus on PFAS supports the value of incorporating diverse options into water supplies where feasible, to help provide resilience not only to climate extremes, drought and population growth, but also for PFAS. Diversification to incorporate any additional options boosts overall resilience.

WSAA supports the Committee's inquiry and would be happy to assist further. Please direct any requests to:

Adam Lovell, Executive Director, WSAA

Danielle Francis, Manager Customer and Policy

<Inclusions overleaf>

Table 1: Current PFAS regulations in various countries

Chemical	Australia		US	Japan	United Kingdom	Germany	Canada
	Existing ADWG level	ADWG Draft updated level					
PFOS	**70 ng/L** (sum of PFOS and PFHxS)	**4 ng/L** Bone marrow impacts (reduced blood cell production)* IARC Likely carcinogen (Awaiting full details still to be released)	**4 ng/L** Enforceable level (goal of zero) by 2029 following US EPA guideline rules for classified carcinogen compounds.	50ng/L	100 ng/L A wholesomeness' guideline value for any of the 47 individual PFAS listed in the DWI's Information Letter 05/2021	100 ng/L For the 20 specific PFAS compounds which will come into force on 12 January 2026.	30ng/L For the sum of total 25 specific PFAS including PFOS, PFHxS, PFOA, PFBs, Gen-X (HFPO-DA) and PFNA.
PFHxS		**30 ng/L** Thyroid impacts for hormone productions*	**10 ng/L** Enforceable level and goal by 2029	No set limits		20 ng/L Applies to four specific PFAS compounds (PFHxS, PFOS, PFOA, PFNA), which comes into force on 12 January 2028.	
PFOA	**560 ng/L**	**200 ng/L** Carcinogenic impacts on pancreas* IARC Declared carcinogen (Awaiting full details still to be released)	4 ng/L Enforceable level (goal of zero) by 2029 following US EPA guideline rules for classified carcinogen compounds.	50ng/L			
PFBS	No set limits	**1000 ng/L** Thyroid regulation*	2000 ng/L Used in Hazard Index calculation along with other PFAS compounds like GenX and PFHxS)	No set limits			
GenX	No set limits	A guideline value could not be set at this time Little relevance and no known associated impact within Australia – more data required.	10 ng/L Enforceable level and goal by 2029	No set limits			

Table 2: Raw data from Deprawiya study used in the page 5 graphic.

Product Type	Total PFAS Concentration (parts per trillion) Minimum	Maximum
ADWG[1]	4 (PFOS)	1000 (PFBS)
Electronic Products	100	30,000
Plastics	100	2,610,000
Hygiene Products	900	2,900,000
Pesticides	3,920,000	19,200,000
Food Contact Materials	100	25,200,000
Paints	2,000	75,670,000
Textile	100	295,200,000
Lubricants and Oils	2,000	396,000,000
Waxes and Polishes	2,000	423,400,000
Textile finishing agents	2,920,000	1,370,000,000
Cosmetics	2,000	2,425,080,000
Household Chemicals	500	3,490,600,000
Building Materials	100	4,300,280,000

Reference:

[1] National Health and Medical Research Council (NHRMC). (2024). Per- and poly-fluoroalkyl substances (PFAS) Chemical Fact Sheet - Draft

[2] Dewapriya, P., Chadwick, L., Gorji, S. G., Schulze, B., Valsecchi, S., Samanipour, S., Kaserzon, S. (2023). Per- and polyfluoroalkyl substances (PFAS) in consumer products: Current knowledge and research gaps. Journal of Hazardous Materials Letters.