



PFAS chemicals and the regulation of drinking water

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What is this fact sheet about?

This fact sheet explains what PFAS chemicals are, how they are regulated, and how they affect public health. It identifies proposed changes to the Australian Drinking Water Guidelines and will help the community to make an informed submission when Government guidelines and Inquiries are open to public consultation.

Outline

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What are PFAS (Per- and poly-fluoroalkyl substances)

Per- and poly-fluoroalkyl substances (PFAS), and the related are a group of over 4000 synthetic chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Some of these chemicals have been used in consumer products and industrial processes since the 1940s.

PFAS are designed for their oil, heat, and water-resistant properties, and are commonly used as a fire-retardant, in building materials, manufacturing factories, paints, carpets, food packaging, non-stick cookware such as Teflon, and many other consumer products. They have contaminated the natural environment primarily through industrial pollution,

leakage into soil from landfills, and firefighting products used in emergencies, during bushfires and military training.¹

The durability of PFAS also means they do not break down in the natural environment, which has earned them the nickname “forever chemicals.” They have been detected in soil, household dust, groundwater, wastewater, and even rainfall. Therefore, contamination from release of PFAS into the environment has the potential for impacts beyond the site and may remain in the environment over an unknown time period.

In December 2023, the Australian Government listed PFAS in a category of chemicals ‘that are likely to cause serious or irreversible harm to the environment’ and heavily restricts the import, export and manufacture of the chemicals.²

Health impacts of PFAS

People may be exposed to PFAS through food consumption and drinking water, and through some occupations like firefighting or industrial manufacturing. Using products such as non-stick cookware or some cosmetics, and breathing fibres from stain-resistant carpets and stain-resistant or waterproof clothing can increase PFAS levels, but this is a relatively small factor in terms of overall exposure.³

PFAS are now present at low levels in most people’s bodies, and they accumulate in a person's body over a lifetime.⁴ There is a growing body of research linking higher levels of PFAS with long-term health problems including:⁵

- Increased risk of certain cancers (notably kidney and testicular cancer)
- Reduced kidney function
- Increase in cholesterol levels
- Altered hormone and immune responses
- Lower birth weight and developmental delays in children

PFAS exposure comes from many sources of exposure, and accumulate over long periods of time, which makes it very difficult to prove that one particular source has caused a particular health problem.

¹ PFA use in firefighting is currently restricted through Part 5 of Chapter 9 of the [Protection of the Environment Operations \(General\) Regulation 2022](#).

² [Industrial Chemicals Environmental Management \(Register\) Amendment \(2023 Measures No. 1\) Instrument 2023](#), Schedule 6—Relevant industrial chemicals that are likely to cause serious or irreversible harm to the environment with essential uses.

³ McDonough, J. et al. (2019). ‘Per- and Polyfluoroalkyl Substances.’ *Emerging Contaminants Handbook* (1st ed., Vol. 1, pp. 85–262) CRC Press, 139.

⁴ McDonough, J. et al. (2019). ‘Per- and Polyfluoroalkyl Substances.’ *Emerging Contaminants Handbook* (1st ed., Vol. 1, pp. 85–262) CRC Press, 167.

⁵ PFAS Expert Health Panel for Per- and poly-fluoroalkyl substances, *Summary Report to the Minister for Health*, March 2018, 3.

The total impact on health due to exposure to PFAS remains unknown. The illnesses associated with PFAS exposure tend to develop over long periods of time, and can be caused by a range of genetic, environmental, and lifestyle factors, so it is difficult to determine how much PFAS has harmed a particular person's health.

In 2018 a federal investigation found 'inadequate evidence' of serious health issues,⁶ but in December 2023 the International Agency for Research on Cancer classifies PFOA as 'carcinogenic to humans'; and PFOS as 'possibly carcinogenic to humans.'⁷

Visit: The United States Environmental Protection Agency is considered a world leader in PFAS policy, and has provided a summary of recent research here:

<https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>

Regulation of PFAS levels in drinking water in NSW

Drinking water suppliers

Several government agencies manage the delivery of water in NSW. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) makes the state's water-related laws and policies. These are implemented by WaterNSW, a state-owned corporation that manages large-scale infrastructure such as dams and catchment areas, as well as monitoring water quality alongside an independent regulator.

WaterNSW then transports this 'bulk water' through canals, pipes, and rivers to water suppliers that distribute it to your tap – the supplier will be your local Council in regional areas, or SydneyWater, or HunterWater accordingly.

Visit: A chart of drinking water managers in NSW can be found [here](#).

Regulation of PFAS in drinking water

Suppliers of drinking water are regulated primarily by the [Public Health Act 2010 \(NSW\)](#) (**Public Health Act**) and the [Public Health Regulation 2022 \(NSW\)](#) (**Public Health Regulation**). The Public Health Act requires suppliers to implement and comply with a

⁶ PFAS Expert Health Panel for Per- and poly-fluoroalkyl substances *Report to the Minister for Health* (March 2018), 210-212.

⁷ Zahm et al (2024) 'Carcinogenicity of perfluorooctanoic acid and perfluorooctanesulfonic acid' *The Lancet Oncology Volume 25*, Issue 1, p.16-17.

[https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(23\)00622-8/abstract](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(23)00622-8/abstract)

quality assurance program that includes carrying out tests and keeping appropriate records.⁸ The Public Health Act also requires that drinking water is ‘fit for human consumption’ although there is no definition of this term in the Act.⁹

The NSW Health Minister may give a direction to restrict or prevent the use of unsafe water and to bring unsafe water to a condition that it is no longer unsafe.¹⁰

What does “Fit for human consumption” mean?

Under the Public Health Act, *unsafe water* means drinking water that the Health Minister suspects to be unfit for human consumption, or a risk to public health.¹¹ However there is no objective definition of what is “safe” or “fit for human consumption.” This is especially problematic when regulating water that may be safe in a single serving but becomes toxic as it accumulates in a person’s body.

The European Union ‘General Food Law’ deems food and water unsafe if it causes harm – including long term harm and *the probable cumulative toxic effects*.¹² It also applies the precautionary principle, so that when there is scientific uncertainty about possible harm to the community, provisional measures can be taken until the risk is better understood.¹³

For further information review our factsheet on [Ecological Sustainable Development](#).

Supporting the Public Health Act is the Public Health Regulation which similarly requires that suppliers of drinking water must have a quality assurance program that includes:¹⁴

- a. The identification of potential health risks associated with the supply of drinking water
- b. A process for controlling the potential health risks in accordance with the Framework for Management of Drinking Water Quality, as set out in the [Australian Drinking Water Guidelines \(Guidelines\)](#) published by the National Health and Medical Research Council (**NHMRC**).

⁸ *Public Health Act 2010* s 25(1)-(2).

⁹ *Public Health Act 2010* s 15.

¹⁰ *Public Health Act 2010* s 16(1).

¹¹ *Public Health Act 2010* s 16(3).

¹² European Union, ‘General Food Law.’ Regulation (EC) No 178/2002 of the European Parliament, Section 4, Article 14(4)(a)-(b). <https://eur-lex.europa.eu/eli/reg/2002/178/oj>

European Union, ‘General Food Law.’ Regulation (EC) No 178/2002 of the European Parliament, Section 1, Article 7(1). <https://eur-lex.europa.eu/eli/reg/2002/178/oj>

¹⁴ *Public Health Regulation 2022* (NSW) s 45.

The Australian Drinking Water Guidelines

The Guidelines set out a framework for the management of drinking water supplies. The guidelines are developed based on acceptable daily intake (ADI; taken from published studies) for an average adult. This includes limits for certain types of PFAS and other chemical and bio- contaminants, and processes to maintain good quality, safe drinking water. However, it is important to note that the Guidelines are not an enforceable statutory instrument, so a breach of the Guidelines is not always a breach of the law. The exception to this is in circumstances where the water is not fit for human consumption.¹⁵

The current Guidelines were last substantially reviewed in 2018, and state that there is 'inadequate evidence' to support claims that PFAS are a significant risk to public health.¹⁶ In response to new research, and to tighter regulations being adopted by the United States, the Guidelines are currently under review and will be updated by the end of 2025.

The National Health and Medical Research Centre released a draft of proposed changes to the PFAS provisions on October 21st, 2024. Key changes include new limits to the allowable levels of PFAS in drinking water.

Type	Main Health concern	Current level	Proposed level	US Level
PFOA	Cancer/s	560 ng/L	200 ng/L	4 ng/L
PFOS	Bone marrow	70 ng/L	4 ng/L	4 ng/L
PFHxS	Thyroid	no limit	30 ng/L	10 ng/L
PFBS	Thyroid	no limit	1000 ng/L	Hazard 1*
GenX (HFPO-DA)**	Insufficient data	no limit	no limit	1000 ng/L

1 ng/L = 1 ppt (nanogram per litres, or part per trillion).

*No limit set, but monitor with caution.

** GenX chemicals are prevalent in the US but restricted in Australia.

¹⁵ *Public Health Act 2010* s 15.

¹⁶ PFAS Expert Health Panel for Per- and poly-fluoroalkyl substances *Report to the Minister for Health* (March 2018). 210-212.

Visit: The National Health and Medical Research Centre has released a draft of the changes to the PFAS provisions that you can access [here](#).

You can find feedback on the proposed changes via this [link](#).

The final guidance is expected to be released in April 2025; however, this may be subject to change.

In April 2024, the United States took the significant regulatory step of announcing they would be legally enforcing their maximum levels of contamination. This will require public water suppliers to publicise if their water is currently over recommended levels, and to remediate water quality to meet the new standards within 5 years.¹⁷

Have your say

The draft changes are open for public comment until **22 November 2024** and submissions can be made here:

<https://consultations.nhmrc.gov.au/environmental-health/australian-drinking-water-guidelines-2024-pfas/consultation/subpage.2024-08-30.4275806408/>

NSW Parliamentary Inquiry – PFAS Contamination of Waterways and Drinking Water

The Legislative Council Select Committee on PFAS Contamination in Waterways and Drinking Water was established on 25 September 2024 to inquire into and report on PFAS contamination in waterways and drinking water supplies throughout NSW.

Have your say

You can make a submission to the Inquiry until **27 November 2024**.

Further information, including the terms of reference, can be found here:

[Terms of Reference](#)

Submissions can be lodged here: [Lodge a Submission](#)

¹⁷ United States Environmental Protection Agency, (2024). PFAS National Primary Drinking Water Regulation (General Fact Sheet), 2.

Liability in negligence for PFAS contamination

In some circumstances, a person or company may be held legally responsible (liable) if their actions have caused harm to a person or property. It is up to the person harmed to prove that the harm was due to the negligence of the other party – which in this case may be the water provider, or the parties responsible for the contamination.

PFAS exposure comes from many sources of exposure, and accumulate over long periods of time, which makes it very difficult to prove that one particular source has caused a particular health problem.

In addition, there are provisions in the *Public Health Act* and the *Civil Liability Act 2002* which protect the Government and its staff from civil proceedings for negligence, or breach of duty, provided the public servants have acted “in good faith.”¹⁸

Class Action against 3M Pty Ltd

In June 2023, the chemical manufacturing giant 3M agreed to a US\$10.3 billion dollar settlement with public water suppliers as part of a class action for polluting public water supplies. The settlement came as the United States Environmental Protection Agency began to institute regulations requiring public water suppliers to meet strict new PFAS levels for safe drinking water.

While 3M did not accept any liability in the settlement, the company’s historical and ongoing production of PFAS chemicals has made them a target for communities affected by poor drinking water, and suppliers who face huge costs as they remediate water to meet the new safety standards.¹⁹

Evaluate this resource

EDO welcomes feedback on this factsheet. Your feedback will help us ensure we are providing useful information.

If you have any concerns or suggestions regarding this factsheet, please fill out the Legal Resources evaluation form by clicking [here](#) or scanning the QR code below:

¹⁸ *Public Health Act 2010* s 24 and s 132; *Civil Liability Act 2002* s 43 and 43A.

¹⁹ Liu, H., Jones, A. (2023). ‘3M offers \$10.3B settlement over PFAS contamination in water systems – now, how do you destroy a ‘forever chemical’?’ *The Conversation*, June 23rd, 2023.

<https://theconversation.com/3m-offers-10-3b-settlement-over-pfas-contamination-in-water-systems-now-how-do-you-destroy-a-forever-chemical-208362#:~:text=Facing%20lawsuits%20over%20PFAS%20contamination,settlement%2C%20which%20requires%20court%20approval.>


