Submission
No 150

INQUIRY INTO PROPOSED ENERGY FROM WASTE FACILITIES

Organisation: Buckwheat Enterprises Pty Ltd

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Submission to the Parliamentary Inquiry into Energy from Waste Incinerators

This submission is written by the directors of Buckwheat Enterprises Pty Ltd, Geoff and Julie Brown, for the Terms of Reference:

(e) Impacts on Agriculture
(h) Methodology of Emission Monitoring, and
(j) Any other related matters.

Buckwheat Enterprises moved to Parkes NSW in 1993 to be on rail for exporting and we're located in the southeast corner of the newly formed Parkes Special Activation Precinct (SAP) adjacent to the Newell Hwy bypass.

Buckwheat Enterprises Pty Ltd supplies flour to bakeries and food manufacturers Australia wide, and are exporters of grain to Europe, Japan and South Korea. We process Australian grown gluten free buckwheat and the ancient wheats spelt, Kamut and emmer, our growers are located mainly in the central tablelands and the central west of NSW.

(e) Impacts on Agriculture

In the 1980's we were farming at Blayney NSW. A popular new fertilizer was being used in the area, sewage from Sydney, Biosolids. Unknown at the time, the sewage contained PFAS. We won't accept grain from farmers who've used Biosolids due to PFAS contamination. **We annually test our grain for chemical residues and for the first time this year we've tested our flour for PFAS.** Japan has a "Positive List" testing regime on food for chemical residues.

PFAS contamination on agricultural land is now a recognized environmental problem worldwide due to Biosolid application.

https://www.nytimes.com/2024/08/31/climate/pfas-fertilizer-sludge-farm.html (1)

In the USA *"The E.P.A. is currently studying the risks posed by PFAS in sludge fertilizer (which the industry calls biosolids) to determine if new rules are necessary. The agency continues to promote its use on cropland, though elsewhere it has started to take action. In April, it ordered utilities to slash PFAS levels in drinking water to near zero and designated two types of the chemical as hazardous substances that must be cleaned up by polluters.* ***The agency now says there is no safe level of PFAS for humans."***

It's now a recognized problem in Australia: https://www.abc.net.au/news/2024-12-17/pfas-forever-chemicals-found-biosolids-used-food-production-nsw/104724502 (2)

"a Sydney Water document titled Human Health and Ecological Risk Assessment for PFAS in Wastewater and Biosolids — Update (HHERA) from April 2023, obtained through freedom of information by Friends of the Earth and seen by the ABC, shows some of these biosolids contain elevated levels of per- and polyfluoroalkyl substances (PFAS)."

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"For PFAS, consumption of food needs to be evaluated. Livestock can be exposed to these chemicals by direct consumption of water ... direct consumption of soil ... or consumption of fodder/feed that has been grown in affected soil or irrigated with affected water the HHERA stated."

The Belubula River south of Blayney NSW has known PFOS contamination. Local landholders notified the EPA in 2024 of unusual river foam present in the Belubula River running through their properties.

https://www.abc.net.au/news/2025-08-18/contaminated-foam-containing-pfos-returns-to-belubula-river/105613982?utm_source=abc_news_web&utm_medium=content_shared&utm_campaign=abc_news_web (3)

This article mentions new licence conditions on the monitoring of 3 operations in the Belubula catchment, named as sources of the contamination, all of whom have been operating for 20 years or more.
"Part of the regulatory response also imposed new licence conditions relating to PFAS monitoring upon nearby gold mine Cadia Valley Operations, landscape supplier Australian Native Landscapes and Blayney council landfill whose operations are part of the Belubula catchment."

The article says *"There are no guidelines for livestock or irrigation, however PFOS levels in the Belubula exceed the EPA's ecological threshold **by 86 times**."*

In a more recent news article:

https://www.abc.net.au/news/2025-10-02/belubula-river-community-unhappy-with-epa-response-on-pfos-pfas/105694456 (4)

A NSW parliamentary inquiry into waterway contamination has made two findings relating to the Belubula River in central west NSW. The NSW government has pledged a whole-of-government response to managing PFAS contamination in NSW waterways. The enquiry found "*the EPA failed to follow standard precautionary measures"*. And the EPA "*had taken too long to test fish taken from the Belubula River, despite the community's own accredited testing showing carp contained high levels of PFOS and copper in 2024".*

Despite the extremely high levels of PFOS found: *"The flesh of fish caught in the Belubula by the EPA was found to have up to **40 times the PFOS level that triggers a food safety warning**"* the EPA failed to alert local landholders and the general public: " ***found the regulator sat on fish contamination results for eight months before advising anglers not to eat their catch".***

And despite levels of 40 times the PFOS level that triggers a food safety warning "t*he inquiry also rebuked the EPA for insisting the river was still suitable for swimming despite knowing foam banks in the water were laden with PFOS, petrol and heavy metals".*

Has PFAS/PFOS entered the Artesan Basin/ground water? In which direction does ground water flow? Does ground water hit a rock layer and flow south, while the river above is flowing west?

Has the Belubula River PFOS entered the ground water and flowed 20km south to bore water irrigators between Cowra and Forbes, watering pasture for dairy farms who supply milk to our national supermarkets.

Is the EPA testing other inland river systems in NSW or Australia for PFAS/PFOS contamination?

We need to reduce the risk of PFAS/PFOS contamination to agricultural land, river irrigation water and Artesan Basin/ground water used for irrigation & town supply, not increasing the risk by burning 600,000mt of waste annually in the centre of NSW.

Can we rely on accurate, timely information from the EPA in relation to PFAS/PFOS? No, we can't.

Is the EPA going to insist a EfW Incinerator is safe, despite knowing otherwise, like it did with the Belubula River PFOS contamination?

Are the residents of Parkes going to have to prove to the EPA that waste incineration is not safe with proof of forever chemical contamination in their soil and water tests. Results that weren't showing on baseline testing taken pre waste incineration.

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Can we rely on accurate information from the EPA on an EfW Incinerator burning a minimum of 600,000mt waste per year for 40 years, when it's been proven that they couldn't accurately provide information on PFOS contamination, despite being alerted by local landholders in the Belubula River catchment.

By the time the EPA is aware of contamination, and is prepared to go public, it's too late. The contamination has occurred.

What's plan B?

What's plan B for the Belubula River? The contamination is still occurring. When did the contamination begin? 10 years ago? 20 years ago? Does anybody know? Does the EPA know?

Is the mince you buy from your supermarket from a 10-year-old cow who's been drinking from the Belubula her entire life?

The Belubula River is a tributary to the Lachlan River, a major food producing region of NSW. Do the vegetables in your supermarket, grown on land irrigated multiple times per year from river or bore water along the Belubula or the downstream Lachlan, contain PFAS/PFOS?

Is the EPA testing irrigated land downstream? Is it testing ground water downstream? Testing meat, milk, wine, grain, fruit & vegetables produced in the Lachlan Valley?

Currently, there's no mandatory testing of food in Australia for forever chemicals and the EPA cannot provide us with accurate data, that's been proven.

At what point does the NSW and Federal Government acknowledge PFAS/PFOS contamination is already a national health and food safety problem, and when will they begin to act on measures to eliminate the potential for further contamination of our food chain.

Is the NSW State Government, the Federal Government or the EPA conducting testing on agricultural land that's been fertilized with Bio-Solids?

Is the EPA testing the food in our supermarkets? Is anyone testing the imported food in our supermarkets for PFAS/PFOS?

We all eat. We all go to a supermarket to buy food.

Greater Sydney can solve its waste problem by railing PFAS/PFOS containing waste inland for EfW incineration, but we'll truck the PFAS/PFOS back into their supermarkets in the form of bread, meat, milk, wine, fruit and veg.

Does the EPA know the full extent of existing contamination of our food chain with forever chemicals, while planning to burn a minimum 600,00mt/year of waste for 40 years (at Parkes alone), emitting further contamination into our food chain?

No, it doesn't.

https://www.abc.net.au/news/2025-10-09/narrabri-water-crisis-triggered-by-pfas-contamination/105869576 (5)

Narrabri Council closed 2 of its 3 town bores due to PFAS contamination on the 9th Oct '25, the town is on Level 4 water restrictions and may require bottled water during the upcoming summer. Narrabri is in the Namoi Valley, another major food producing region of NSW.

https://www.news.com.au/technology/environment/nsw-mayors-plea-after-towns-water-wrecked-by-pfas-contamination/news-story/75e4cb0b6ab6766d587c63a754c05945 (6)

Narrabri Mayor Darrell Tiemens said, "*the contaminated bores first tested positive for PFAS chemicals 10 months prior*" and "*the NSW EPA is investigating the cause of the contamination.*"

The EPA hasn't been able to find the cause of the Narrabri bore PFAS contamination in 10 months, or is it sitting on its findings?

Are we relying on the EPA to give EfW incinerators a tick of approval when they've entirely dropped the ball on the Belubula River catchment and can't find the contamination in the Narrabri ground water bores?

As Sam Statham, organic wine producer at Canowindra on the Belubula River said in the ABC article: https://www.abc.net.au/news/2025-10-02/belubula-river-community-unhappy-with-epa-response-on-pfos-pfas/105694456 (4) *"We've known about these chemicals for 25 years ... the EPA has been asleep at the wheel over this."*

Does the EPA have the ability to determine the safety of EfW incinerations in relation to PFAS/PFOS, an emerging science with a hidden toxin and many unknown parameters? We don't think so.

The risk to our national health and food safety with PFAS/PFOS contamination from EfW Incineration is unacceptable and we can't rely on the EPA to keep us safe, that's been proven.

PFAS is/was used as a fire extinguishing agent as it's not destroyed by heat less than 1,000C. Operating a waste incinerator at 1,000C is not economical and PFAS is difficult to remove by filtration in an incinerator.

Dioxin will also be emitted from a waste incinerator; both are forever chemicals.

Constant, low level exposure to Dioxin is STILL producing birth deformities in Vietnam, 50 years after the use of Agent Orange (a chemical herbicide called 245T which contained very small amounts of highly toxic dioxin).

Will PFAS/PFOS and dioxin be emitted by the waste incinerator into the air we breathe, onto our backyards, roofs, drinking water catchments, Artesan Basin ground water and agricultural land, every hour, every day, of the year for 40 years or more?

Will these forever chemicals drift further afield to our neighbours, out of our shire to Forbes or Dubbo, or east to Orange's orchards, vineyards and their population for the next 40 years?

Why has the NSW State Government mandated that waste incineration is only allowed in 4 locations within NSW: West Lithgow Precinct, Parkes Special Activation Precinct, Richmond Valley Precinct and Southern Goulburn Mulwaree Precinct?

Because it isn't safe.

If the NSW Government deems residents of rural regions with proposed EfW incinerators are insignificant in the big picture, their health and safety not a governmental priority, maybe the government needs to consider the health and safety of their city voters who'll be eating the contaminated food produced from those rural agricultural regions.

(h) Methodology of Emission Monitoring

(h) 1 PFAS in household waste may be going airborne 28th March 2022

https://www.ehn.org/pfas-air-pollution (7) (Environmental Health News)

Excerpts from the above link:

Europe finds 'alarming' levels of PFAS downwind of incinerators ***"our hypothesis is that PFAS cannot be destroyed completely at temperatures used in Waste-to-Energy [municipal waste] incinerators***."

"This biomonitoring work was the first such study done in Europe, but Xenia Trier, a chemicals, environment and human health expert with the Air Pollution, Environment and Health branch of the European Environment Agency, wrote EHN that ***"emissions of PFAS from waste facilities are on the radar in Europe, and there will likely be more research studies on this through national and EU funding."***

"Testing incinerator emissions is complicated by the daunting number of PFAS compounds, upwards of 9,000."

"The North Carolina facility Mead studied is a Chemours (formerly DuPont) plant that produces a newer PFAS compound known as GenX, the chemical HFPO-DA, marketed as a safer replacement (despite old and recent research confirming that it poses similar health and environmental threats). EPA modeling there showed that 97.4% of the GenX emitted from the site travelled more than 93 miles.

'Legacy' forms of PFAS (manufactured prior to 2015) have been ***found at both poles due to atmospheric transport****, and the GenX replacement–which EPA describes as "more mobile" and equally persistent–is now moving around the globe, even turning up in Arctic waters.*

Atmospheric deposition is unquestionably one of the routes of PFAS contamination, *Mead said, and it's gaining attention. "From a scientific perspective, it's fascinating. From an environmental health and human health perspective, it's pretty scary."*

(h) 2 Rapid evidence assessment of PFAS incineration and alternative remediation methods, UK Environment Agency, Chief Scientist Group report September 2025

https://assets.publishing.service.gov.uk/media/68dd29d9dadf7616351e4ccc/Rapid_evidence_assessment_of_PFAS_incineration_and_alternative_remediation_methods_-_report.pdf (8)

Excerpts from the above link:

Page 19. *High temperature incineration (HTI) is currently the most implemented method to destroy PFAS contaminated media or waste, specifically stockpiled firefighting foams, and has been widely implemented in the USA and Europe (Kovacs et al., 2025), offering a route to minimise long term contamination (Block et al., 2015). HTI typically requires no separation or pretreatment of PFAS and is conducted at hazardous waste incinerators (HWIs) in England, which operate above ~980°C with excess oxygen and mineralise (complete defluorination) PFAS into carbon dioxide (CO_2), water (H_2O) hydrogen fluoride (HF) and or sulphur oxides (SOx) (Altarawneh et al., 2022; Brunn et al., 2023; Shields et al., 2023).*

However, PFAS, particularly the –CF2– moieties are extremely thermally stable, making their destruction energy intensive. **If temperature, residence time, oxygen or turbulence in the incinerator is inadequate, incomplete combustion may occur. *This can lead to the formation of ultra-short-chain (C1–C3) products of incomplete combustion (PICs), such as CF_4, CHF3, C_2F_6, C_2F4 and C3F6, many of which are greenhouse gases (Davies et al., 2024; ECHA, 2023; Stoiber et al., 2020).*** *Parent PFAS substances and longer-chain fluorinated compounds may also survive the process among other short chain PFAS, which can be released in small amounts into the atmosphere or retained in ash which may be landfilled or repurposed. Additionally, there is uncertainty regarding the fate of PFAS in liquid waste streams from incineration as the high temperatures required may result in loss of PFAS through steam discharge from the stack (Ross, 2020). While much of this evidence comes from international research,* ***similar uncertainties apply to PFAS incineration practices in England****.*

In England, meeting the operational conditions needed to effectively destroy PFAS often requires running incinerators at the upper limits of what they are typically designed to handle. ***Adjustments for PFAS specific waste such as elevated temperatures and extended residence times are uncommon. This is partly because PFAS can often enter facilities unknowingly through mixed waste streams, making it difficult to track and optimise destruction efficiency. As a result, current monitoring of flue gas, ash, and residue may not always capture the full range of PFAS and PICs. The literature also reports conflicting and limited findings on the efficiency of PFAS thermal treatment, highlighting the complexity of incineration chemistry, variations in operating conditions, and the incomplete understanding and identification of PICs.***

Page 20. *The European Chemicals Agency (ECHA), in its proposed Annex 15 report, similarly noted that emissions from waste incineration are poorly studied and that* ***PFAS destruction efficiency depends heavily on operational conditions*** *(ECHA, 2023).* ***ECHA also considered that PFAS destruction efficiency from waste incineration may not always be 100% and assumes an emission factor of < 1% with residual PFAS released to air or retained in bottom/fly ash.***

Page 23. *Thermal destruction of most organic compounds occurs between 590°C and 650°C (US EPA, 2022). However, certain* ***PFAS require higher temperatures of >1000°C*** *due to the 24 strength of the carbon–fluorine (C-F) bond*

Page 24. ***PFAS thermal treatment is a highly variable and complex process, involving thermodynamics, kinetics, and numerous physical and chemical reactions, all of which are strongly influenced by operational conditions.***

Many PFAS contain C-C and, in some cases, C-H bonds, along with various functional groups. It's unknown where these bonds will always break during incineration. The concern is that C–C bonds can break at lower temperatures, leaving behind C–F fragments. If the local energies and free radical concentrations are low this may result in the formation of volatile, ultra-short or short-chain PFAS and fluorinated greenhouse gases, collectively referred to as products of incomplete combustion (PICs).

In sub-optimal conditions, these include persistent perfluorinated radicals and secondary fluorinated compounds that may remain in emissions or residues in low quantities. Instead of achieving full mineralisation, these intermediates may recombine into stable, persistent by-products, such as perfluoroalkyl carboxylic acids (PFCAs) in the atmosphere, thereby increasing the risk of environmental contamination by wet and dry deposition.

Many PICs are likely to be highly mobile due to their low molecular weight (Brendel et al., 2018; US EPA., 2025) and are likely to partition into the atmosphere.

Page 25. ***The formation of some PICs, such as CF_4 and C_2F_6, is particularly undesirable due to their high global warming potentials (~5,700 and ~11,900 CO_2 equivalents, respectively), long atmospheric lifetimes**, and strong infrared adsorption.*

*When PFAS containing-firefighting foams and fluoropolymer products like polytetrafluoroethylene (PTFE) undergo thermolysis, PFCAs including **trifluoroacetic acid (TFA) and other fluorinated compounds may also persist, complicating the incineration process and increasing the risk of secondary pollution** (Ellis et al., 2001; Mattila, 2024). **TFA is possibly the most abundant PFAS in the environment and is frequently detected in water, soil, and plant tissues, raising questions about its long-term environmental accumulation and potential ecological and human health impacts.***

Page 28. *Even when effective, PFAS incineration has environmental trade-offs: advanced exhaust treatment, transport and handling requirements. Limited HWI capacity often means long distance transport and increasing cost. Incomplete combustion of PFAS containing AFFF may release large amounts of PIC greenhouse gas emissions (Kovacs et al., 2025). While some facilities may recover heat for energy, PFAS destruction remains highly energy intensive making thermal treatment a resource demanding process (Klein and Holmes, 2022).*

Page 30. *Small amounts of PFAS that are not fully destroyed may remain in residual ash, be captured by flue gas treatment systems, or be released into the air. The effectiveness of these systems in capturing airborne PFAS is not well documented. **Monitoring and analysis of emissions to confirm complete PFAS destruction is challenging**. <u>**Inadequate analysis protocols risk failing to detect multiple PFAS compounds, leading to false negatives and overestimation of destruction efficiency.**</u>*

Page 43. *Most studies focus on specific waste streams, such as PFAS containing FFF and contaminated soils, but thorough characterisation of air emissions and potential byproducts during incineration is lacking. This knowledge gap is largely due to the absence of reliable methodologies for assessing destruction efficiency and tracking the formation of PICs. **Existing studies primarily examine targeted PFAS compounds rather than the full range of degradation by-products, making it difficult to determine the overall effectiveness of incineration in real world conditions.***

Page 52. *Hazardous waste incinerators and cement kilns can reach temperatures above 1,100 °C, making them suitable for PFAS mineralisation. **In contrast, municipal waste incinerators and sewage sludge incinerators typically operate at lower temperatures (~850 °C), which may achieve 99.9% destruction efficiencies of certain PFAS, <u>but are unlikely to ensure complete mineralisation and prevent PICs across the full spectrum of PFAS.</u>***

Page 53. *Advanced exhaust gas treatment systems are necessary for capturing and neutralising harmful emissions, **yet their effectiveness in trapping PFAS and degradation by-products remains uncertain**. Also, residual ash may contain inorganic fluoride and PFAS bound to calcium, while HF, a highly toxic and corrosive gas, also requires careful management.*

Even with advancements, uncertainties remain regarding incineration efficiency due to several key factors:

1. *Variability in operating conditions*
2. *Incomplete Measurement Methodologies*
3. *Diverse Waste Matrices*
4. *Uncertain Thermal Decomposition Pathways*
5. *Laboratory vs. Real World Conditions*
6. *Inconsistent Air Pollution Control Technologies*

*While 100% thermal destruction of PFAS during waste incineration is difficult, evidence shows that HTI can achieve near complete mineralisation under optimal conditions and remains one of the few practical options for managing large volumes of PFAS-containing waste. **However, its long-term role may be limited by high energy demands, technical constraints, environmental uncertainties and its carbon footprint**. Ensuring safe and effective PFAS management will require further full-scale testing, improved measurement methods, and a deeper understanding of PIC formation, alongside the **development of sustainable, scalable, and cost-effective alternatives**.*

Page 55. *PFAS remediation approaches fall into four main categories:*

1. Separation and Concentration Techniques: PFAS are extracted and concentrated into a smaller waste volume (e.g. foam fractionation).

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2. Destructive Technologies: Break down PFAS chemically, with HTI being a common method.
3. Adsorption Approaches: Bind PFAS within a medium to prevent release (e.g. GAC).
4. Integrated or Combined Technologies: Hybrid approaches that combine separation, immobilisation, and destruction for improved efficiency

This report continues for another 50 pages on remediation approaches to PFAS, plus a large appendix.

(h) 3 Parkes EfW Incinerator and PFAS

On the Parkes Energy Recovery webpage https://parkesenergy.com.au/ (9) there's no mention of the intended operating temperature of their incinerator.

Is the Parkes EfW incinerator going to operate at >1,000C, the required temperature for PFAS destruction?

Is the Parkes EfW incinerator going to meet all the complex operational conditions of temperature, residence time, oxygen and turbulence required to destroy PFAS?

In the "Rapid evidence assessment of PFAS incineration and alternative remediation methods Report" (my Article 3 listed above) written by the UK **Environment Agency, Chief Scientist Group in September 2025** they state:

"PFAS thermal treatment is a highly variable and complex process, involving thermodynamics, kinetics, and numerous physical and chemical reactions, all of which are strongly influenced by operational conditions".

During their 97pg report they site **numerous operational variabilities affecting the complete destruction of PFAS** with incineration and state:

*"In contrast, municipal **waste incinerators** and sewage sludge incinerators **typically operate at lower temperatures (~850 °C)**, which may achieve 99.9% destruction efficiencies of certain PFAS, but **are unlikely to ensure complete mineralisation and prevent PICs across the full spectrum of PFAS."***

It seems a given that the Parkes EfW Incinerator will be emitting a level of PFAS and PICs and the residents of Parkes, Tarago or any other location in Australia with a EfW incinerator will be subject to low level long exposure of persistent PFAS and "***even if you have low levels of exposure, you can still build up amounts in your body"*** (10).

(j) Any other related matters

(j) 1 PFAS/PFOS health ramifications

PFAS/PFOS production and use in Australia (and worldwide) needs to be reduced to a minimum or eliminated. This silent, invisible, toxic and unbreakable compound needs to be treated as a national health emergency for our population, environment and future generations.

Please don't bring it to Parkes for incineration and further dispersal.

https://www.abc.net.au/news/2025-08-18/pfas-experts-answer-questions-on-forever-chemicals-live/105611156?utm_source=abc_news_web&utm_medium=content_shared&utm_campaign=abc_news_web (10)

To better understand how "forever chemicals" work, what the risks are, and what's being done to address the problems, we sat down with three leading PFAS experts:

- *Dr **Denis O'Carroll**, managing director of the Water Research Laboratory at the University of NSW's School of Civil and Environmental Engineering.*
- *Dr **Brad Clarke**, associate professor in environmental science and analytical chemistry at the University of Melbourne; and*
- *Dr **Jamie DeWitt**, professor of environmental and molecular toxicology at Oregon State University.*

"Certain long-chain PFAS, such as those used in firefighting foams, have been phased out around the world and Australia introduced a ban on PFOA, PFHxS and PFOS in July.
But Dr DeWitt warns that PFAS with shorter carbon chains may still be harmful.
"A short-chain PFAS is as equally persistent in the environment as a longer-chain PFAS. So, whether a PFAS has eight carbons or four carbons, it doesn't break down," she says.

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"The difference is that the shorter-chain PFAS tend to get excreted more rapidly from the bodies of living organisms ... that does mean that they have a lesser opportunity to interact with molecules in our bodies to produce toxicity, but they can still produce toxicity."
Dr Clarke says there's still a lot we don't know about newer PFAS, including their effects on our bodies or the environment."
"Dr DeWitt says most people are exposed to PFAS through ingestion — the water they drink or the food they eat."
"When PFAS are [ingested in food or drink] the bulk of what you take into the body can get absorbed across your intestines and get into your blood," she says."
*Researchers say **one of the biggest concerns with PFAS is their persistence** — that is, how long they hang around in our bodies.*
"Many PFAS get excreted in the urine, so they travel from the blood to the kidneys, where they can get pushed out of the body whenever somebody urinates," Dr DeWitt says.
But this can take a long time.
For some PFAS, the half-life — that is, the time it takes for half of the amount ingested to be excreted — is a matter of hours or days, but for most, it's years.
*"The problem is, **even if you have low levels of exposure, you can still build up amounts in your body** if what you take in is greater than what you put out," Dr DeWitt says.*
"Not all of these 14,000 chemicals have been closely studied. Most research has focused on the effects of well-known PFAS, often in populations who have been exposed to high doses."
"PFAS exposure has been associated with increased levels of cholesterol and uric acid in the blood, reduced kidney function, altered immune function and levels of thyroid hormones, delayed menstruation, earlier menopause and lower birth weight."
"Right now, PFOA has the strongest evidence of links to cancer, followed by PFOS. For the others, there haven't been enough studies to understand if they are linked to cancer," Dr DeWitt says."
"Dr Clarke says there's still a lot we don't know about newer PFAS, including their effects on our bodies or the environment."

(j) 2 Woolworths Ltd PFAS free declarations, Biopak PFAS free packaging, Banning PFAS

We supply flour to bakeries and manufacturers Australia wide. In April this year we were asked to provide PFAS free declarations for our packaging and the flour we supply to a manufacturer who supplies Woolworths. **Woolworths is seeking products that are PFAS free, in PFAS free packaging**. Our Australian made paper flour bags and flour both tested PFAS free. None of our central tablelands' farmers had used Biosolids in the 1980's or since.

Biopak is a multi-award winning **compostable and PFAS free packaging** manufacturer in Australia https://www.biopak.com/au/resources/what-is-PFAS with **customers including Hungry Jacks, KFC, McDonalds and Subway**, reducing plastic waste going to landfill.

Industry is already innovating away from non-biodegradable unsafe PFAS packaging.

Instead of burning PFAS contaminated waste **lets legislate banning incineration and the use of PFAS.** We didn't have PFAS 60 years ago, we can live without it again.

New York Times "Relax, America, There Is Life After Nonstick Pans" Oct. 8, 2025

https://www.nytimes.com/2025/10/08/opinion/nonstick-pans-cooking-chemicals-teflon.html?unlocked_article_code=1.r08.N_hj.LyjgrFrinIk8&smid=url-share (11)

*"It began in the 1960s and 1970s, when Teflon pans flooded into American kitchens" "**chemical companies knew of the toxic risks long before the public did**" "When PFAS are made, to coat a pan, a raincoat or a mascara wand, they can contaminate the surrounding groundwater" "about 30 states, including my home state, Minnesota, have adopted restrictions on these chemicals, with at least 14 outright or partial bans on sales of consumer goods with PFAS" "eliminating PFAS in cookware would reduce the spread of contamination" **"Farmers can't sell beef from cattle that grazed on PFAS-tainted pastures. Families can't trust their tap water. Workers are exposed on the job. It's a moral equation, not just a regulatory one."***

https://www.abc.net.au/news/2025-10-23/calls-to-ban-entire-pfas-class-in-australia/105787430 (12)

*"**Most people are exposed to PFAS through ingesting contaminated food, water and dust.***

The Australian ban on three PFAS groups — PFOS, PFOA and PFHxS — came into effect in July. Certain PFAS, such as those used in firefighting foams, have or are being phased out around the world.

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Australia's PFAS bans are included in standards about managing industrial chemicals *— called the Industrial Chemicals Environmental Management Standard (IChEMS) — because of risks to the environment,* ***rather than in response to health concerns.***

Bhavna Middha, an environmental sociology researcher at RMIT, said the ***Australian government's risk-based approach to regulating PFAS meant it needed evidence of harm before chemicals were banned. Dr Middha said European authorities used a different approach.*** *"Their approach is, as we call it, a precautionary approach which says that we are not going to wait till each and every one of those chemicals have been proven to be harmful," she said.*

"We know that the ***PFAS kind of chemicals are forever chemicals****, they* ***bioaccumulate****, they are* ***persistent*** *in the environment, and many of them have been known to be* ***toxic****.* ***"So we might think of them as a class of chemicals rather than one chemical compound."***

A national senate inquiry into the extent, regulation and management of PFAS across Australia will deliver a final report in November. The inquiry has received 160 written submissions, including from International Pollutants Elimination Network senior policy advisor Mariann Lloyd-Smith.

Dr Lloyd-Smith recommended the government "address PFAS as a class, aiming to restrict and eliminate all PFAS import, use and emissions".

There was also a submission from Phillipe Grandjean, an internationally recognised scientist who has extensively studied PFAS chemicals. "Due to the extremely slow degradability, the major PFASs accumulate over time, and increasing burdens of PFAS in the body result in elevated health risks associated with these chemicals," Dr Grandjean wrote in his submission. "The pollution will therefore persist, also globally. ***"The fetus and young children are particularly at risk of developing adverse effects that may trigger disease development at later ages."***

NSW State Government please don't incinerate waste containing PFAS anywhere in NSW.

Using incineration as a means of "disposal" for PFAS is totally unacceptable and irresponsible and will lead to further irreversible spreading of contamination and a multi-intergenerational impact on our national health.

NSW State Government and the Australian Federal Government, please enact legislation to incentivise alternatives to PFAS, move to completely ban the use of PFAS in ALL household goods, personal goods and packaging, to limit the industrial use, and to **find safer alternatives to disposal other than incineration**.

(j) 3 Moving Waste for Incineration – cost & logistics

600,000mts of waste moved to Parkes annually is 9pprox.. 1,700mt/day, every day, which we expect is 9pprox.. 1 train per day, every day of the year.

Our business, Buckwheat Enterprises, exports grain to Europe, Japan and South Korea from Parkes.

We use rail to and from Sydney & Bathurst, with road to and from Bathurst to Parkes. We bring empty shipping containers up from Sydney (using the Bathurst road/rail combination) load at Parkes and return the full containers to Port Botany, this costs $2,800 per container (20mt net).

Inland freight using rail is more cost effective than road, and there'll be cost savings with the huge volumes of waste intended for Parkes, but the cost of bringing waste to Parkes will be significant.

Money that could be better spent on transitioning away from and repurposing Greater Sydney waste.

Wear and tear on rail infrastructure and possible congestion issues with existing requirements for the rail network also need to be considered.

We expect the cost and logistics of freighting waste to Parkes NSW for incineration to produce energy are not economical compared to producing solar, concentrated solar thermal or wind power energy adjacent to the SAP.

This isn't about producing energy for the SAP; it's about solving Sydney's waste problem.

In Summary

A NSW parliamentary inquiry into waterway contamination found the EPA took too long to test fish taken from the Belubula River, failed to follow standard precautionary measures and **sat on fish contamination results for eight months before advising anglers not to eat their catch, results 40 times the PFOS level that triggers a food safety warning**.

The EPA wasn't capable of timely and opaque PFAS testing from fish it caught from in a river.

Has the EPA **tested water, soil and produce downstream** from the Belubula to determine if the PFOS contamination has spread into the **Lachlan Valley**? **Have those test results been made public, or is the EPA sitting on those too?**

Is the EPA going to deem EfW incineration safe when there's **no mention of the operating temperature on the Parkes Energy Recovery webpage** or any guarantee that residence time, oxygen or turbulence within the incinerator will be sufficient to destroy PFAS and not create PIC's.

The complete destruction of PFAS during EfW incineration will not occur unless temperature is >1000C and if residence time, oxygen or turbulence in the incinerator are inadequate, incomplete combustion may occur. This can lead to the formation products of incomplete combustion (PICs), many of which are greenhouse gases (~5,700 and ~11,900 CO_2 equivalents).

Adjustments for PFAS specific waste such as elevated temperatures and extended residence times are uncommon. As a result, current **monitoring of flue gas, ash, and residue may not always capture the full range of PFAS and PICs**, **leading to false negatives and overestimation of destruction efficiency.** Testing incinerator emissions is complicated by the daunting number of PFAS compounds, upwards of 9,000.

To effectively destroy PFAS often requires running incinerators at the upper limits of what they are typically designed to handle and **PFAS can often enter facilities unknowingly through mixed waste streams, making it difficult to track and optimise destruction efficiency**. 'Legacy' forms of PFAS (manufactured prior to 2015) have been found at both **poles** due to **atmospheric transport**.

No-one can guarantee PFAS will not be emitted from EfW incinerators proposed for the 4 agricultural regions in NSW, impacting local communities and food produced for Greater Sydney.

For the health of our citizens and the environment, we must start **reducing, recycling, repurposing and transitioning away from landfill waste.**

Industry and business are already transitioning to biodegradable and PFAS free packaging but need we **government to address PFAS as a class, aiming to restrict and eliminate all PFAS import, use and emissions.**

NSW State Government, please don't incinerate Greater Sydney waste anywhere in NSW, especially in our food producing regions.

Thank you for the opportunity to express our concerns on EfW incineration, especially regarding PFAS and other forever chemical emissions contaminating our agricultural regions.

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