Discussion Paper - Executive Summary

PFAS in Packaging

Per- and polyfluoroalkyl substances (PFAS) are synthetic chemicals used for their water and grease resistance properties, making them useful for a range of applications, particularly in food packaging. PFAS are, however, very resistant to degradation in the environment, which makes them potential environmental pollutants.

Increasingly, global institutions and governments are highlighting the need for stricter regulation of PFAS, and various measures have been brought in around the world to address the concerns of PFAS in packaging. In 2022 APCO set out a voluntary, industry-led approach to phase out PFAS in fibre-based food contact packaging in Australia. This PFAS Discussion Paper:

- Explores opportunities to expand the phase-out of PFAS from fibre-based food contact packaging to all packaging.
- Sets out proposals for consultation with members on definitions, evidence requirements and timelines.
- Commits to releasing practical tools and guidance to support implementation once finalised.
- Invites member feedback to help shape updates to the APCO PFAS Action Plan.
- Reviews current testing methodologies in light of evolving regulatory requirements.

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The purpose of this discussion paper

We're ensuring industry stays informed ahead of any regulatory impacts that may be introduced targeting PFAS in packaging.

In July 2025, Australia prohibited three types of PFAS (*PFOA, PFOS, PFHxS*) from import, manufacture and export through IChEMS. These restrictions apply to those specific chemicals only, not the broader PFAS class.

From August 2026, the European Union Packaging and Packaging Waste Regulation (PPWR) will restrict PFAS in food contact packaging, including:

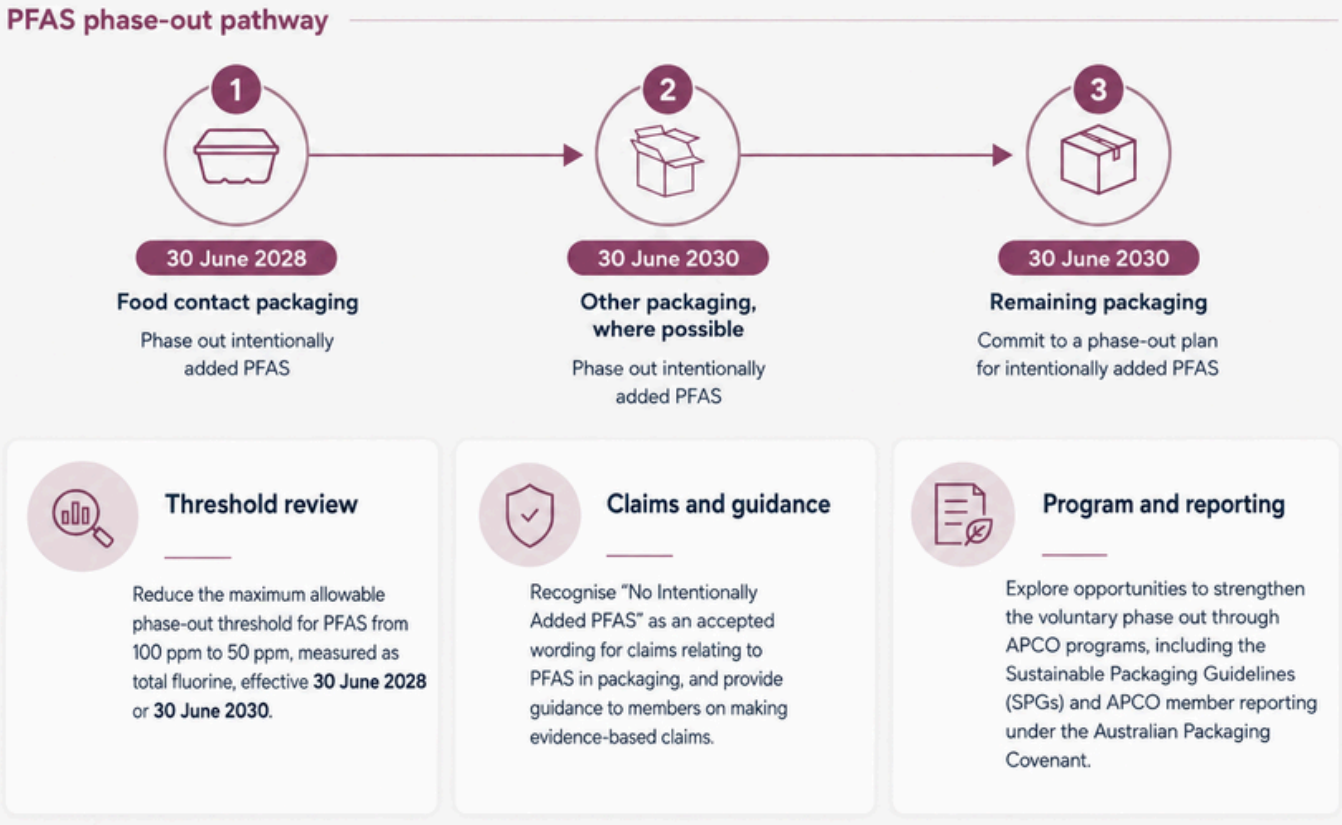
- 25 ppb for individual PFAS,
- 250 ppb for total targeted PFAS, and
- 50 ppm total fluorine (with verification required above this level).

Globally, regulation is shifting towards class-based restrictions on PFAS, rather than targeting individual chemicals,

What does this mean for Australia? DCCEEW has indicated PFAS may be targeted under the Reform of Packaging Regulation. A recent Senate Inquiry has also recommended fast tracking phasing out PFAS in all food contact packaging.

Paper proposals - *discussion only*

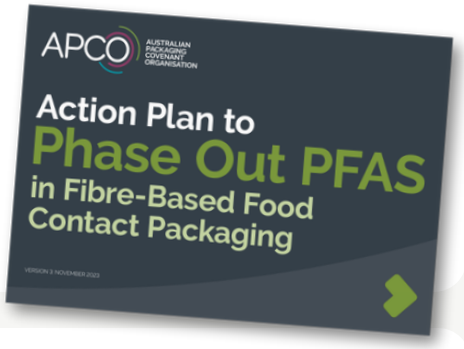
No decisions or commitments have been made. Following member and stakeholder input, APCO will undertake any further analysis and consultation needed before reaching conclusions.



What should brand owners do?

1 Continue phasing out PFAS in fibre-based food contact packaging.

- Build on progress made under APCO's 2022 Action Plan to Phase Out PFAS in Fibre-Based Food Contact Packaging.
- Use the Action Plan for guidance on testing for total organic fluorine (TOF), reporting, and selecting alternatives.
- Report your progress through APCO Annual Reporting.



2 Investigate PFAS across all packaging formats.

- Identify potential PFAS in your broader packaging portfolio, especially food contact packaging.
- Work with suppliers to obtain *"No intentionally added PFAS"* declarations, and testing results demonstrating compliance through fluorine levels sitting below the 100ppm threshold.

3 Use clear, evidence-based claims.

- Take caution when making PFAS claims.
- Recognise that trace PFAS may be present due to recycled content, processing or supply chain contamination (an area of work APCO is investigating).

DO

- Use the preferred language of *"No Intentionally Added PFAS"*.
- Back claims with supplier declarations and verified testing results.

DON'T

- Claim packaging is *"PFAS Free"*.
- Make claims without evidence demonstrating levels below relevant thresholds.

4 Testing and supplier assurance.

- Request declarations and testing evidence from suppliers wherever possible.
- Where this is not available, undertake your own testing in line with APCO guidance.

Share your feedback!

Your insights and feedback on the proposals outlined in the Discussion Paper will help shape the next phase of the ***APCO Action Plan***. Your input will inform future guidance, support tools, and implementation approaches.

Click here to take the survey

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2026

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Discussion Paper

AUSTRALIAN PACKAGING COVENANT ORGANISATION

Contents

Status of this document

This is a Discussion Paper for consultation. APCO will finalise definitions, evidence requirements, timelines, and updates to the Action Plan to Phase Out PFAS in Fibre-Based Food Contact Packaging following feedback. Once finalised, practical tools and guidance will be released to support members alongside an updated Action plan.

Disclaimer

Introduction

Per- and polyfluoroalkyl substances (PFAS) are a group of several thousand fluorinated compounds, characterised by strong chemical bonds that make PFAS chemicals useful for a range of applications, including within packaging. PFAS are, however, very resistant to degradation in the environment, which makes them potential environmental pollutants. Recent data from the Australian Bureau of Statistics (ABS) has shown that three types of PFAS were detected in the blood of over 85 per cent of the Australian population.

Increasingly, global institutions and governments are highlighting the need for stricter regulation of PFAS, and various measures have been brought in around the world to address the concerns of PFAS in packaging. In 2022, the Australian Packaging Covenant Organisation (APCO) set out a voluntary, industry-led approach to phase out PFAS in fibre-based food contact packaging in Australia. The Action Plan acknowledged that phasing out PFAS in plastic packaging would be an area of future focus. This Discussion Paper explores this area further, investigating the opportunities to expand the phase-out of PFAS from fibre-based food contact to all packaging, whilst reviewing the methodologies for testing for PFAS in light of regulatory developments.

This paper also sets out the policy and regulatory context that businesses placing packaging on the Australian market should be aware of when it comes to the use of PFAS in packaging.

Background

The Australian, state and territory governments have established an Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination. Appendix D to the Intergovernmental Agreement, the National per- and polyfluoroalkyl substances (PFAS) Position Statement provides guidance for industry on how to address PFAS. It establishes that transitioning away from PFAS should be the ultimate goal in Australia, and states that:

> "Importers, sellers and users of chemicals should inform themselves about the presence of PFAS in products and articles, due to their potential negative environmental, health and socioeconomic impacts.
>
> *"Entities that currently sell or use long- or shortchain PFAS are encouraged to develop a strategy that outlines their current uses, and how and when they will transition away from these chemicals."*

The Position Statement also recognised that:

> "Until effective and economically feasible non-PFAS alternatives are developed, the ongoing sale and use of products and articles containing short-chain PFAS may be necessary for uses for which no suitable and less hazardous alternatives are available."

Consistent with the Position Statement, APCO has been working with its members to identify the presence of PFAS in packaging and to phase it out.

APCO's 2021 PFAS in Fibre-Based Packaging Report

In 2021, in partnership with Planet Ark and with funding provided by the Department of Agriculture, Water and the Environment, APCO undertook a study to identify the presence of PFAS in fibre-based food contact packaging. This packaging was selected because literature showed that PFAS was used in this type of packaging for its water and grease resistant properties.

During the study, it became apparent that there was confusion among APCO's members about PFAS, including the different types of PFAS and varying regulations. In addition, misunderstanding among suppliers about PFAS was leading uncertainty about the presence of PFAS in supplied packaging.

Approach to PFAS testing

Nine APCO members participated in the study, including representatives from the packaging manufacturing, retail, quick service restaurant and food and grocery sectors. These members provided packaging samples, which were separated into eight categories based on their characteristics (e.g. baked goods packaging, paperboard food boxes, fast food wrappers, bagasse).

In Phase 1, 74 packaging samples were tested using Particle-Induced Gamma-Ray Emission (PIGE) analysis. This method measures the Total Fluorine (TF) content of each sample. Phase 1 results indicated that:

- A total of 45.9% of samples had total fluorine concentrations above 100 parts per million (ppm).
- 25.7% had detectable, fluorine levels below 100 ppm.
- 28.4% had no detectable fluorine.

Most samples with high total fluorine were found in the products containing bagasse. Other packaging types had variable levels of PFAS.

In Phase 2, a subset of 35 samples was then tested to see whether they contained any of the 28 specific PFAS identifiable through Envirolab's Total Oxidisable Precursor Assay (TOPA) analysis. Included in the testing were the samples with high fluorine concentrations.

In Phase 2, the 28 known PFAS were not present. The TOPA analysis confirmed the presence of unknown PFAS 'precursors' and other 'polymeric' PFAS. While the identity of these unknown PFAS could not be determined, the precautionary approach set out in the Position Statement establishes that unidentified PFAS should be treated in the same way as known PFAS and steps taken to transition them out of packaging.

Limitations of the study

This study did not consider the migration of PFAS into food, instead focusing on understanding the relevance of PFAS in packaging in the context of a circular economy. Food Standards Australia New Zealand (FSANZ) has undertaken several surveys of PFAS in the Australian food supply including packaged foods. The most recent of these, the 27th Australian Total Diet Study (2021) looked at PFAS levels in a broad range of Australian foods and beverages. The study found that PFAS levels in the general Australian food supply are low and there are no food safety concerns. An overview of FSANZ's work on PFAS can be found on the FSANZ website. A recent Senate Inquiry into the extent, regulation and management of PFAS has since recommended FSANZ reviews the Tolerable Daily Intakes for PFAS against the latest international research and regulatory settings and updated Australian Drinking Water Guidelines, and should reconsider the need to establish regulatory limits on PFAS in food.

The study did not consider the presence of PFAS in recycled materials. Where packaging containing PFAS is recycled, the PFAS may remain in the system and result in cumulative levels of PFAS in the recycled materials. Similarly, composting packaging that contains PFAS may contaminate soil & waterways.

2022 Action Plan to Phase Out PFAS in Fibre-Based Food Contact Packaging

Following the 2021 study, APCO worked with its members to develop an action plan for the phase out of PFAS in fibre-based, food contact packaging. The Action Plan was published in 2022 with the aim of achieving a total phase out of PFAS in this type of packaging by 2023. A threshold of 100 ppm was set as the maximum threshold for total fluorine. This level was set as a reliable indicator that PFAS had been intentionally added to the packaging material, while a detectable level below 100 ppm could potentially have resulted unintentionally from other sources, such as residual PFAS from recycled materials. A level of 100 ppm was also consistent with levels set in overseas programs. The Action Plan encouraged APCO members to identify the presence of, and phase out, PFAS in other types of packaging.

The Action Plan requests that companies with fibre-based, food contact packaging undertake testing of in-scope packaging and report to APCO on the results. Summaries of reported data

are provided by APCO to the Department of Climate Change, Energy, the Environment and Water (DCCEEW). Data reported in 2023 and 2024 is presented in the table below. The data shows that, although these members had not phased out PFAS entirely, they are placing a lower percentage of packaging on the market with total fluorine concentrations above 100 ppm than was the case in 2021, when 45.9% of samples were found to have total fluorine concentrations above 100 ppm.

For all products tested > 100 ppm, all companies have indicated they are finding alternatives.

PFAS reporting was incorporated into APCO Annual Reporting for the 2025 reporting round, with all Members encouraged to undertake testing of in-scope packaging and report to APCO on the results annually. APCO is considering ways to engage with members to increase the uptake of reporting on the phase out.

Current State of Policy and Regulation on PFAS in Packaging

Internationally

Global action

Increasingly, global institutions and governments are highlighting the need for stricter regulations on PFAS. Various measures have been brought in around the world to address the concerns of PFAS in packaging.

Global efforts to protect human health and the environment from persistent organic pollutants (POPs) such as some types of PFAS have been recognised through the Stockholm Convention on Persistent Organic Pollutants. Australia ratified the Stockholm Convention in 2004 and has listed 12 POPs which have placed controls on the import, manufacture, use and export of certain chemicals. Australia is yet to have ratified the listing related to PFAS (Department of Climate Change, Energy, the Environment and Water 2023).

EU and member states

In the European union (EU), from 12 August 2026 the Packaging and Packaging Waste Regulation (PPWR) will prohibit the use of food contact packaging containing PFAS in concentrations of or above the following limits:

(a) 25 ppb for any PFAS as measured with targeted PFAS analysis (polymeric PFAS excluded from quantification);

(b) 250 ppb for the sum of PFAS measured as sum of targeted PFAS analysis, optionally with prior degradation of precursors (polymeric PFAS excluded from quantification); and

(c) 50 ppm for PFASs (polymeric PFAS included); if total fluorine exceeds 50 mg /kg the manufacturer, importer or downstream user shall upon request provide to the enforcement authorities a proof for the fluorine measured as content of either PFAS or non-PFAS.

In July 2020, Denmark banned cardboard and paper food contact materials containing PFAS. Packaging containing PFAS may not be used to package food unless the packaging materials are separated from the food by a functional barrier which prevents the migration of fluorinated substances to the food (Department of Agriculture, Fisheries and Forestry 2020). In 2023 Denmark won a Future Policy Award issued by the World Future Council, highlighting the preventative ban on PFAS as a successful policy that protects both the environment and human health.

The governments of Germany, Denmark, the Netherlands, Norway and Sweden are proposing a restriction covering a wide range of PFAS uses – in support of the statements made in the Environment Council in December 2019. They submitted their proposal to the European Chemicals Agency (ECHA) in January 2023, and ECHA has recently published its updated PFAS restriction proposal which is now being evaluated. Often referred to as the Universal PFAS Restriction, this approach proposes to regulate the entire class of PFAS restricting manufacture, import, use, and placing on the market of all PFAS, with limited time-bound exemptions for critical uses where no viable alternatives exist.

North America

The U.S Food and Drug Administration is working with industry to monitor the impacts of PFAS in food packaging, and voluntarily phase these substances out. Last year the FDA announced that grease-proofing materials containing PFAS would no longer be allowed to be sold for use in food packaging in the U.S.

Many U.S. states have gone further and either proposed or enacted legislation that targets the presence of PFAS in consumer goods including packaging. Twelve states have or are enacting phase-outs of PFAS in food packaging e.g. California, Colorado and Washington (Safer States, 2025). In California, Senate Bill 682 which was vetoed as of the 13th of October, would have prohibited the sale and distribution of food packaging, cleaning products, and several other products containing intentionally added PFAS starting in 2028 and then cookware in 2030.

Furthermore, retailers in the U.S., from Amazon to McDonalds, are adopting policies to phase out and ban PFAS from food packaging and/or products. Currently, 32 unique retail chains with

more than 150,000 stores and more than $654 billion in sales have committed to eliminating or reducing PFAS in food packaging, textiles and/or other products (Safer States, 2025).

In Canada, the recently published State of Per- and Polyfluoroalkyl Substances (PFAS) Report concluded that all PFAS are toxic under the Canadian Environmental Protection Act (CEPA), enabling targeted and phased approaches to risk management that balance economic feasibility, environmental protection, and reduced human exposure (Food Packaging Forum 2025). Uniquely, Canada has excluded fluoropolymers from its classification of PFAS because its "current evidence suggests that they may have different hazard profiles compared to the other PFAS" Most other regulations around the world include fluoropolymers in the class definition of PFAS as it aligns with the OECD definition of PFAS.

Australia

Intergovernmental Agreement

In February 2018, the Australian and state and territory governments established the Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination (the Intergovernmental Agreement). This agreement supports collaboration and cooperation between jurisdictions to respond consistently and effectively to PFAS contamination. This was revised in February 2020.

The Intergovernmental Agreement establishes that a precautionary approach should be taken to PFAS exposure, stating that: "While it is clear that PFAS can persist in humans, animals and the environment, understanding of the human health effects of long-term PFAS exposure is still developing. As a precaution, governments in Australia recommend that exposure be reduced wherever possible while research into any potential health effects continues".

PFAS National Environmental Management Plan (NEMP)

The PFAS National Environmental Management Plan (NEMP) Version 3.0, was released in March 2025, and is Australia's national framework for managing PFAS contamination. It is an Appendix to the Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination. The PFAS NEMP provides nationally agreed guidance on the management of PFAS contamination in the environment, including prevention of the spread of contamination. It supports collaborative action on PFAS by the Commonwealth, state and territory and local governments around Australia and the government of New Zealand.

Australia's states and territories are progressively adopting the PFAS NEMP Version 3.0. The Environmental Legislation Amendment Regulation 2025 commenced in Queensland on 6 June 2025 and has made various changes to make it easier to recycle waste and reduce costs for recycling businesses including increasing the regulated waste thresholds for PFAS, so materials with very low levels don't need special disposal. The aim is to better balance

environmental protection with practical, proportionate regulation, particularly for low-risk materials.

The NSW EPA is taking a staged, risk-based approach to the implementation of NEMP 3.0. In Victoria, the PFAS NEMP forms part of overall assessments rather than providing strict compliance limits. SA has aligned several guidelines to align with the PFAS NEMP including the Landfill disposal criteria for PFAS-contaminated waste (SA), and the Environmental management of landfill facilities – solid waste disposal (SA).

IChEMS Register

In March 2021, the Australian Government passed legislation (the Industrial Chemicals Environmental Management (Register) Act 2021) to establish the IChEMS Register. The Industrial Chemicals Environmental Management Standard (IChEMS) establishes nationally consistent standards for managing the import, manufacture, export, use, and disposal of industrial chemicals in Australia. This includes the use of these chemicals in packaging. The IChEMS applies only to chemicals with an industrial use and does not apply when a chemical is used for:

- agricultural or veterinary chemical purposes.
- therapeutic purposes.
- food, or food additives, intended for consumption by humans or animals.

In December 2023, the Commonwealth scheduled the following PFAS chemicals on Schedule 7 of the IChEMS register, to come into effect from 1 July 2025. These PFAS chemicals will be prohibited from import, manufacture and export:

- perfluorooctanoic acid (PFOA) and related substances.
- perfluorooctanesulfonic acid (PFOS) and related substances.
- perfluorohexanesulfonic acid (PFHxS) and related substances.

The reason these three PFAS have been targeted is because they are the most well documented profiles linked to human health issues. Recent data from the Australian Bureau of Statistics (ABS) shows that these three types of PFAS were detected in the blood of over 85 per cent of the Australian population.

Regulation of IChEMS relies on the Commonwealth, states and territories adopting them into their environmental laws. Jurisdictions are at various stages of implementing the IChEMS to their regulatory frameworks. The 3 PFAS listed make up close to 500 various individual PFAS, however do not regulate PFAS as a class, meaning there are many thousands of other PFAS chemicals that are not targeted by this regulation. These three PFAS being regulated are also not those typically used in packaging applications.

Parliamentary inquires and regulatory reform

A 2025 report from the NSW Select Committee on PFAS Contamination in Waterways and Drinking Water Supplies is calling for an overhaul in how Australia manages forever chemicals, including a recommendation to plan to phase out all non-essential uses of PFAS in consumer, commercial, and industrial products by 2030.

The Senate Select Committee on PFAS recently tabled its final report in the Inquiry into the extent, regulation and management of PFAS, recommending the Australian Government fast-tracks regulatory reforms to remove PFAS from all food contact packaging imported into and/or used in Australia and considers encouraging the establishment of a domestic, toxic-free packaging industry.

DCCEEW has signalled through its Reform of Packaging Regulation that chemicals of concern that affect the recyclability of packaging could be banned, including PFAS. Australia's environment ministers have identified the removal of PFAS in packaging as an urgent priority for all jurisdictions to be dealt with through packaging regulatory reform. This supports a key outcome of the reform process that chemicals of concern in packaging are either eliminated, phased-down or minimised.

Discussion

Proposals

The purpose of this Discussion Paper is to seek the view of members and stakeholders on an update to the approach on PFAS set out in APCO's 2022 PFAS Action Plan. In particular, views are sought on the six proposals set out below. It is important to note that these are proposals for discussion only; no decisions or commitments have been made.

The proposals are:

PROPOSAL ONE

Phase out intentionally added PFAS from all food contact packaging by **30 June 2028**.

PROPOSAL TWO

Phase out intentionally added PFAS from all other packaging, where possible, by **30 June 2030**.

PROPOSAL THREE

By **30 June 2030**, establish a timeframe to phase out intentionally added PFAS in all remaining packaging.

PROPOSAL FOUR

Revise the maximum allowable phase-out threshold level of PFAS from 100ppm to 50ppm, measured as total fluorine, effective **30 June 2028** *or* **30 June 2030**.

PROPOSAL FIVE

Establish *"No Intentionally Added PFAS"* as accepted wording for claims relating to PFAS in packaging, and establish guidance to members on making evidence-based claims.

PROPOSAL SIX

Investigate opportunities to strengthen the voluntary phase out through its inclusion in APCO programs, such as the Sustainable Packaging Guidelines (SPGs) and APCO member reporting under the Australian Packaging Covenant.

Following receipt of member and stakeholder input, APCO will undertake any further analysis and consultation needed before reaching conclusions about the proposals.

Expanding the scope of the existing voluntary phase out of intentionally added PFAS to include all packaging

Food contact packaging

APCO's 2021 study and 2022 Action Plan addressed food contact fibre-based packaging, as literature showed that PFAS is used in this type of packaging for its water and grease resistant properties. In the context of a circular economy, PFAS in fibre-based recyclable or

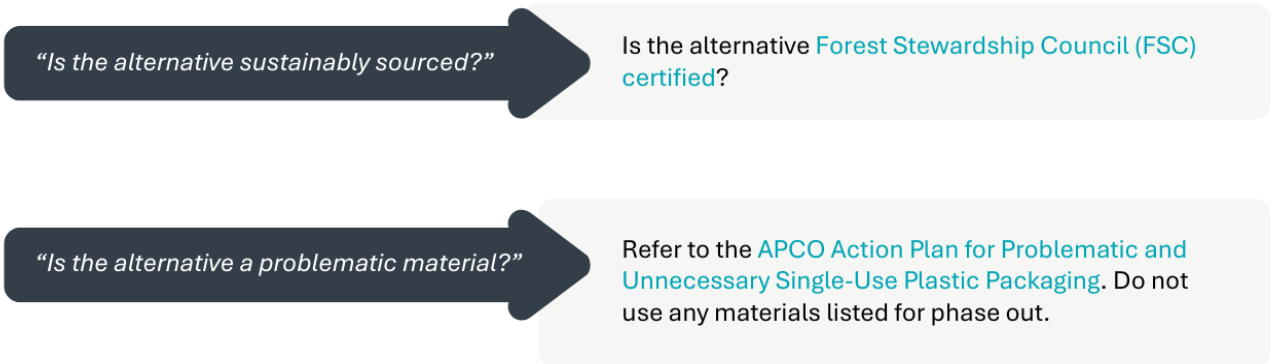
compostable packaging has the potential to contaminate recovery system outputs over time. If composted, most of these chemicals will not break down, and those that do will form other PFAS. This has given these chemicals the name "forever chemicals" due to their ability to persist in the environment and accumulate in living organisms, including humans.

PFAS is not limited to fibre-based food contact packaging. It is also found in plastic packaging and other formats of non-fibre packaging. To support members to address PFAS risks in these types of packaging, this discussion paper sets out proposals to expand the scope of the current Action Plan to address intentionally added PFAS in all packaging. Food contact packaging is the highest priority, and a proposal is included to phase put PFAS from all food contact packaging by 30 June 2028. The priority focus on all food contact packaging would align with approaches internationally, such as the PPWR in the EU.

Other packaging

Although food contact packaging is the priority, PFAS in other packaging is important, including because of the risk of accumulation of materials in recycling streams and therefore in products – including packaging – that contain recycled content. Although further work is needed to understand and quantify this risk, this is not a reason for inaction. The National PFAS Position Statement, as noted in the Background to this Discussion Paper, establishes an expectation that businesses that use PFAS should inform themselves of the presence of PFAS in their articles and, where possible, phase them out. This discussion paper therefore includes proposals that members identify the presence of PFAS in all other packaging and where possible, phase it out by 30 June 2030.

In APCO's 2022 Action Plan, alternatives to PFAS in fibre-based packaging were explored and a range of considerations and supporting resources provided to assist industry when exploring opportunities to remove intentionally added PFAS from their packaging. While one of the main challenges in adopting non-fluorinated alternatives was the additional cost, findings from our 2021 PFAS in fibre-based packaging report indicated that there are alternatives to PFAS available in fibre-based food contact packaging. These resources will be updated to provide guidance and considerations on selecting alternatives for other material formats. The below criteria for assessing alternatives were provided in the original Action Plan:



"Is the alternative currently included in any state or territory single-use plastic bans?"	View National Retail's Action on Single-Use Plastics. Do not use any banned formats.
"Is the recoverability of the packaging impacted?"	Is the alternative recyclable and certified compostable? Is the recoverability higher or lower in the waste hierarchy than the existing packaging?
"How does the alternative compare in a Life Cycle Assessment (LCA)?"	If relevant.
"Does the packaging meet the Sustainable Packaging Principles of the Sustainable Packaging Guidelines (SPGs)?"	See page 26 of the APCO Action Plan to Phase Out PFAS in Fibre-Based Food Contact Packaging.

A key consideration in deciding on alternatives to PFAS is to ensure the problem is solved, not shifted. There is a risk of regrettable substitution if the health and environmental hazards of these alternatives are not understood and communicated. When choosing alternatives, businesses should ensure that new packaging formats have been assessed against the Sustainable Packaging Guidelines (SPGs). The SPGs are designed to assist the design and manufacture of packaging that meets the sometimes conflicting demands of the market, consumer protection and the environment.

Evaluating current testing methods and thresholds

Testing Thresholds

100 ppm total fluorine as the threshold for 'no intentionally added PFAS'

Setting a threshold for PFAS is important for two reasons. One is to minimise risk from PFAS contamination. The second is to provide a benchmark to enable brand owners to make evidence-based claims about PFAS.

APCO's 2022 Action Plan urged members to test for fluorine in fibre-based food contact packaging to determine the presence of PFAS. A threshold of 100 ppm was set as the maximum threshold for total fluorine. This level was set as a reliable indicator that PFAS had been intentionally added to the packaging material, while a detectable level below 100 ppm

could potentially have resulted unintentionally from other sources, such as residual PFAS from recycled materials. A level of 100 ppm was also consistent with levels set in overseas programs at the time. The Action Plan encouraged APCO members to identify the presence of, and phase out, PFAS in other types of packaging.

Thresholds internationally and in Australia

Since the release of the Action Plan, the *European Council* formally adopted the European Union's long-anticipated PPWR. As from 12 August 2026, the PPWR will prohibit food packaging from being placed on the EU market if it contains PFAS in a concentration equal to or greater than the following limit values:

- 25 ppb for any PFAS as measured with targeted PFAS analysis.
- 250 ppb for the sum of PFAS measured as the sum of targeted PFAS analysis.
- 50 ppm for PFASs (polymeric PFAS included).

These thresholds align with those set out in the European Chemicals Agency (ECHA) PFAS restriction proposal under REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). The below table sets out some of the key international regulations, standards and certifications targeting PFAS in food contact packaging, and the testing thresholds required for compliance.

Jurisdiction / Regulation / Standard / Certification	Threshold for Total Fluorine (TF)	Scope
European Union PPWR (August 2026)	- 25 ppb for any PFAS as measured with targeted PFAS analysis - 250 ppb for the sum of PFAS measured as the sum of targeted PFAS analysis - 50 ppm (total fluorine) for PFASs (polymeric PFAS included).	All food contact packaging.
Unites States (* Varies from state to state) 12 states have enacted laws addressing PFAS in food packaging	California: 100 ppm Colorado, Connecticut, Hawaii, Maine, Maryland, Minnesota, New York, Oregon, Rhode Island, Vermont, Washington : No intentionally added PFAS (NIAP).	Any food packaging. Definitions differ slightly in some states
Denmark (Since 2020)	20 ppm	Paper and board food contact materials, unless a functional barrier which prevents the substances

		from migrating to food is included in the product.
Biodegradable Products Institute (BPI) ASTM standards for compostable products in North America.	100 ppm and a declaration of no intentionally added PFAS	Certified compostable products and packaging.
Australasian Bioplastics Association (ABA) Australian Standard 4736-2006, Australian Standard AS 5810-2010.	100 ppm and a declaration of no intentionally added PFAS	Certified Compostable products and packaging

This discussion paper seeks member and other industry views on the appropriateness of retaining the current 100 ppm threshold as an indicator of intentionally added PFAS in packaging. In particular, it proposes that the threshold be aligned with the EU's PPWR threshold of 50 ppm, either from June 2028 or June 2030. It is important to note that the EU's 50 ppm threshold applies specifically to food contact packaging; it does not apply to other types of packaging.

Aligning with the EU's PPWR threshold of 50 ppm may be feasible for some packaging. However, the implications of different thresholds for the use of recycled content are not well understood. This is discussed further in this paper, below. It would also impact businesses who have already tested to comply with the 100 ppm threshold. Whilst these businesses may know the levels of fluorine present in their packaging due to previous testing, packaging that may have been compliant under the 100 ppm threshold may now need to be retested if levels were found above the 50 ppm limit.

PFAS and Compostability Standards

The Biodegradable Products Institute (BPI), the largest U.S. certifier of compostable products, requires manufacturers who seek compostability certification to meet standard EN 13432, which sets a 100 ppm limit for Total Organic Fluorine (TOF). This allows for the presence of a low level of non-intentionally added PFAS, for example residual PFAS arising from the use of recycled fibre. As of January 2020, BPI also requires that manufacturers provide a statement of no intentionally added fluorine. The U.S. Environment Protection Agency recognises the 100 ppm limit set by the BPI in the EPA's Recommendations of Specifications, Standards and

Ecolabels as helping purchasers identify and use private sector environmental performance standards and ecolabels within federal procurement to address PFAS.

The 100 ppm total fluorine threshold is also used in compostability certification through the Australasian Bioplastics Association (ABA). The ABA administers a voluntary verification scheme, for companies or individuals wishing to have their claims of compliance with Australian Standard 4736-2006, compostable and biodegradable plastics – "Biodegradable plastics suitable for composting and other microbial treatment" and Australian Standard AS 5810-2010 Home Composting – "Biodegradable plastics suitable for home composting" verified. To be certified compostable to either Standard, Fluorine levels must be 100 ppm or less.

To be certified to both Australian and U.S. compostable standards, packaging needs to be tested and proven to have a Fluorine level below 100 ppm. Any packaging above this limit will not receive compostable certification. Both the ABA and BPI have introduced requirements for a declaration of "No Intentionally Added Substances" (NIAS) such as PFAS for an application for verification to the Australia Standards to proceed.

Testing for Total Fluorine (TF)

Whilst there is no standardised testing method for PFAS, testing for total fluorine is seen as the preferred method of testing for the presence of intentionally added PFAS by APCO. It provides results that align with international regulations and provides an indication of intentionally added PFAS. Testing for total fluorine is considered a screening method for testing for PFAS. Whilst this method cannot indicate the specific types of PFAS that may be present in packaging, it is a cost-effective way for businesses to screen for the potential of intentionally added PFAS. This method is also preferable as APCO's phase out targets PFAS as a class, and not specific PFAS chemicals. If businesses were looking to confirm whether packaging included PFAS listed under IChEMS, testing for fluorine would not be able to identify these specific types of PFAS, and further targeted testing would be needed. APCO's view is that any intentionally added PFAS in packaging should be phased out. Testing for fluorine and ensuring packaging tests below 100 ppm is recommended for businesses looking to comply with the phase out of intentionally added PFAS in packaging.

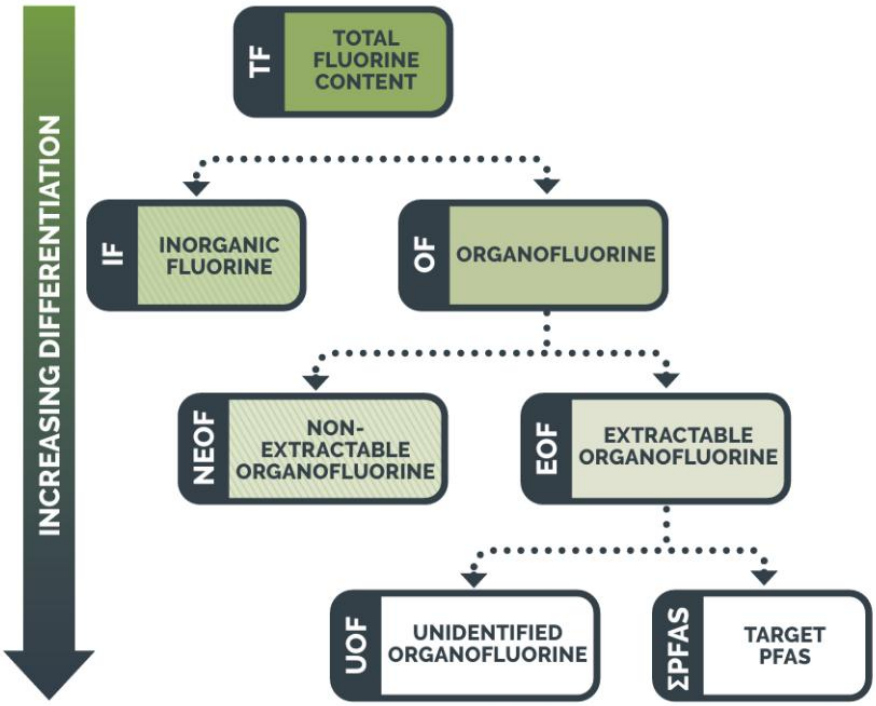
In APCO's Action Plan, testing results above the 100ppm threshold for total fluorine (TF), total organic fluorine (TOF), or extractable organic fluorine (EOF) would all be indicative of the presence of intentionally added PFAS.

To align with international approaches, intentionally added PFAS will be defined as:

- TF a level of total fluorine.
- TOF total organic fluorine.
- EOF extractable organic fluorine.

All indicative of PFAS - above 100ppm.

If a business receives a testing result over the 100ppm limit, the business should work to find alternatives.



The below table sets out fluorine testing methodologies suggested in APCO's Action Plan.

Methodology	Description	Pros	Cons
Particle induced gamma ray emission - PIGE	This technology uses an ion beam to penetrate the first 100 to 200 micrometres of the fibre-based material and measures the reflected energy in the wavelengths associated with fluorine nucleus in the atom.	Non-destructive. Good accuracy and precision. In an Australian context, it is practical for batch testing, cost effective and has a quick turnaround (2-3 weeks after test conducted)	Given it can only penetrate the first 100 to 200 micrometres, only the surface fluorine content is measured in thick samples.
Combustion ion chromatography - CIC	This technology involves combustion under oxygen or argon atmosphere; all gases are collected in water, with fluoride ions separated on an ion exchange	Is highly sensitive and can display the lowest detection levels. Most common method, first used for	Destructive. Slower screening process compared to PIGE and INAA as the samples are

	column and measured by conductivity detection.	fluorine mass balance experiments in 2007.	chemically treated.
Instrumental neutron activation analysis - INAA	This technology involves combustion with a known amount of buffer solution in a Schoniger Tube. The solution is analysed by a fluoride-specific electrode calibrated with external fluoride standards.	Quick screening applications.	Traditionally used in biological and environmental matrices.

"No Intentionally Added PFAS" – Background levels and Trace Contamination Through Recycled Content and Processing

PFAS may be present in packaging regardless of whether it was intentionally added or not. Businesses should ensure their packaging has been tested before making claims and avoid claiming that packaging is "PFAS free", as trace contamination of PFAS may be present due to the inclusion of recycled materials and through other inputs throughout the supply chain. APCO recommends using wording such as "No intentionally added PFAS" instead of "PFAS free".

Australian packaging manufacturers/suppliers/ importers (and international packaging manufacturers/suppliers selling into Australia) are responsible for testing their products for PFAS. Manufacturers and suppliers can supply businesses with declarations that PFAS have not been intentionally added to the products they are selling, as well as testing results to prove this. In the absence of testing from their packaging manufacturers/suppliers/importers, brand owners should test for PFAS in their packaging as set out in our Action Plan.

Do	Don't
Use the preferred language of "No Intentionally Added PFAS".	Claim packaging is "PFAS Free".
Ensure you have declarations of no intentionally added PFAS from your suppliers/manufacturers, and testing results to prove claims.	Make any claims without evidence of testing to prove levels are below certain thresholds.

Recycled Content

Complexities and knowledge gaps exist around the presence and measurement of PFAS in recycled content. While it is known that PFAS has been identified in packaging due to the inclusion of recycled content, it is understood that the levels can be variable for reasons that are not fully understood.

In APCO's Action Plan the 100 ppm of total fluorine threshold was chosen as it was seen as a reliable indicator of intentionally added PFAS. It was considered highly likely that fluorine levels above this threshold would indicate intentionally added PFAS, while fluorine levels below this threshold could indicate detectable background levels or presence from sources such as recycled content. Further research is needed to understand whether the threshold used in the EU under the PPWR of 50 ppm would allow for the same assumption to be made. For example, whether or not packaging with no intentionally added PFAS could still test above the 50 ppm due to the inclusion of recycled content.

APCO encourages the inclusion of recycled content in packaging, and does not want to see businesses discouraged from aiming to include as much PCR as possible due to possible PFAS concerns. APCO is looking to explore opportunities to address the knowledge gaps in the research around recycled content and PFAS to understand where complexities and irregularities exist and will inform engagement with governments and industry on future actions.

PFAS used as a processing aid

PFAS can also be introduced in the manufacturing process through mechanical processing aids. For example, some manufacturers use PFAS as lubricants on machinery to improve processing. This can lead to PFAS transferring into and accumulating in products or packaging.

If PFAS is used in the production process and the finished product tests above 100 ppm, APCO would classify this as intentionally added PFAS. If testing shows below 100 ppm, APCO would treat this as unintentional trace contamination—however, APCO recommends that manufacturers should look for alternatives to prevent PFAS from accumulating in packaging.

APCO also encourages brand owners to speak with their manufacturers and suppliers to understand whether PFAS is being used during their production processes. Supplier declarations stating "No Intentionally Added PFAS" are an important tool and should be written into contracts to help manage regulatory risks related to chemicals of concern.

This approach to unintentional trace contamination levels aligns with guidance under IChEMS, where the use of chemicals as a processing aid would not be considered unintended contamination in an article if found to test above the listed threshold level, and would be prohibited under the standard. IChEMS defines unintentional trace contamination as

circumstances where a chemical is present unintentionally and unavoidably below the level specified in the entry for that chemical at which the chemical cannot be meaningfully used.

Strengthening the voluntary phase out through its inclusion in other APCO programs

APCO is interested in hearing from members on whether options to strengthen the voluntary phase out through its incorporation into other APCO programs would be supported and is an area for future consideration.

The Sustainable Packaging Guidelines (SPGs) are a central part of the co-regulatory framework established by the National Environment Protection (Used Packaging Materials) Measure 2011 (the NEPM) and the Australian Packaging Covenant (the Covenant). The NEPM and the Covenant state that the SPGs are to assist the design and manufacture of packaging that meets the sometimes conflicting demands of the market, consumer protection and the environment. APCO is currently in the process of updating the SPGs to make them more practical, easier to apply and better able to underpin future national design standards. Addressing chemicals of concern such as PFAS, is an area which could be incorporated into the SPGs to strengthen industries efforts to remove chemicals of concern from packaging. 'Principle 4: Eliminate Hazardous Materials' in the SPGs targets chemicals of concern more broadly, however an update could provide further detail and guidance on PFAS specifically.

As of the 2025 APCO Annual Reporting round, voluntary PFAS reporting has been incorporated into the Packaging Metrics Upload (PMU) component of reporting. APCO is looking for feedback on ways in which this mechanism could be improved, to increase the participation rate of those members placing packaging on the Australian market that is in scope of the voluntary phase out. This reporting mechanism has been simplified for the 2026 reporting round, and we are planning exploring ways in which we can engage members and provide guidance to encourage participation in PFAS reporting.

The Australasian Recycling Label Program (ARL) requires assessments of the recyclability of all packaging to which the label is applied. Given the desirability of excluding PFAS from recycling streams, there may be value in considering whether a below-threshold level of PFAS could be part of the ARL's recyclability assessment.

What this means for members

The purpose of this Discussion Paper is to build upon the APCO 2022 Action Plan to Phase Out PFAS in Fibre Based Food-Contact Packaging and the work already underway by industry to phase out these chemicals in packaging. To track industry's progress in achieving the phase out a reporting mechanism was set up. Reporting has since been incorporated as an optional tab in the Packaging Metrics Upload (PMU) component of APCO Annual Reporting, with all members using in scope packaging encouraged to report on the phase out.

Feedback received through this Discussion Paper will help inform any changes needed to reporting guidance.

Expanding the scope of the voluntary phase out to include all food contact packaging will increase the number of members involved in the phase out. Although the phase-out remains voluntary, we encourage all relevant members to inform themselves about PFAS in their supply chains, including SMEs and import reliant businesses. For SMEs, communication with suppliers and manufactures of packaging will be essential to identifying PFAS inputs.

Supporting resources for members, such as an updated supplier declaration template, testing decision tree, guidance on testing and reporting to assist with the phase out, and considerations for alternatives, will be developed along with the updated Action Plan. These will also be useful for importers of packaging who may find that their suppliers and manufactures are already having to navigate stricter PFAS regulations around the world.

How to have your say

We're inviting our members to help shape the next phase of APCO's approach to phasing out intentionally added PFAS in packaging.

This consultation focuses on six key proposals outlined in this paper, including:

- Expanding the phase-out to all food contact packaging.
- Proposed timelines for implementation.
- A potential future reduction of the 'No intentionally added PFAS' threshold.
- Updates to testing guidance and requirements.

Share your feedback via the survey by 29 May 2026.

Your input will directly inform how the Action Plan is updated. After the consultation closes, we will share a summary of insights with participating members and outline next steps and indicative timelines. We will continue to engage with you where further input is needed.

We're also seeking expressions of interest from members who would like to play a more active role. If you're interested in contributing to a PFAS Technical Working Group, you'll have the opportunity to help shape definitions, evidence requirements and practical tools that support industry implementation.

If you'd like to get involved, or have any questions, please contact us at apco@apco.org.au

Glossary

Bagasse	Pulp made from sugar-cane stalks from which most of the sugar juice and pith cells have been removed
Certified Compostable	Means that claims of compliance with Australian Standard 4736-2006, compostable and biodegradable plastics – "Biodegradable plastics suitable for composting and other microbial treatment" and Australian Standard AS 5810-2010 Home Composting – "Biodegradable plastics suitable for home composting" have been verified.
Compostable packaging	A packaging or packaging component (1) is compostable if it is certified to AS4736 or a similar standard for commercial composting or AS5810 for home composting, and if its successful post-consumer (2) collection, (sorting), and composting is proven to work in practice and at scale (3) Supporting notes: 1. ISO 18601:2013: A packaging component is a part of packaging that can be separated by hand or by using simple physical means (e.g., a cap, a lid and (non in-mould) labels). 2. ISO 14021 clarifies post-consumer material as material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. 3. 'At scale' implies that there are significant and relevant geographical areas, as measured by population size, where the packaging is actually composted in practice
Food contact packaging	Any container or wrapper in or by which food for sale is wholly or partly encased, covered, enclosed, contained or packaged, including primary and secondary packaging. The definition of "package" excludes bulk cargo containers, pallet overwrap, crates and packages that do not obscure food labels, transportation vehicles, containers and wrappers for food served in prisons, hospitals, and medical institutions, and food containers that serve a medical purpose that are used in institutional settings
Fibre-based packaging	Packaging primarily made from plant-based fibre, including wood, bamboo and bagasse. Throughout the action plan the general term 'fibre-based packaging' is used to cover packaging material types such as boxboard, carton board, corrugated board, paper bags, and other natural fibre-based packaging.
Fluorine	Fluorine is a univalent poisonous gaseous halogen, it is pale yellow-green in its gaseous form and it is the most chemically reactive and electronegative of all the elements. Fluorine readily forms compounds with most other elements, even with the noble gases krypton, xenon and radon
Long chain PFAS	PFAS with a long-fluorinated carbon chain including: • Perfluorocarboxylic acids (PFCAs) with carbon chain lengths C8 and higher, including perfluorooctanoic acid (PFOA). • Perfluoroalkane sulfonic acids (PFSAs) with carbon chain lengths C6 and higher, including perfluorohexane sulfonic acid (PFHxS) and perfluorooctane sulfonate

	(PFOS). Precursors of these substances that may be produced or present in products
PCR	Post-Consumer Recycled Content
PPM	Parts per million
PPB	Parts per billion
PFAS	Per- and polyfluoroalkyl substances, including both long and short chain.
PFCAs	Perfluorocarboxylic acids.
PFHxS	Perfluorohexane sulfonic acid.
PFOA	Perfluorooctanoic acid.
PFOS	Perfluorooctane sulfonate.
PFSAs	Perfluoroalkane sulfonic acids.
PIGE	Particle-Induced Gamma-Ray Emission analysis
Recycled Content	Is the proportion, by mass, of pre-consumer and post-consumer recycled material in packaging (AS/ISO 14021). 'Pre-consumer' material is material diverted from the waste stream during manufacturing (excluding rework). 'Post-consumer' material is material waste generated by households or by commercial, industrial and institutional facilities. The amount of renewable or recycled material is expressed as a percentage of the quantity of packaging material put onto the market.
Short chain PFAS	PFAS with shorter fluorinated carbon chains including: • PFCAs with carbon chain lengths of < C8. • PFSAs with carbon chain lengths < C6.3
TOPA	Total Oxidisable Precursor Assay analysis

Links to Regulations / Agreements / Standards / Certifications relevant to PFAS

- Stockholm Convention on Persistent Organic Pollutants
- The European Chemicals Agency (ECHA) proposal to restrict PFAS under REACH
- Packaging and Packaging Waste Regulation (PPWR)
- Canada: State of Per- and Polyfluoroalkyl Substances (PFAS) Report
- Australian Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination (the Intergovernmental Agreement)
- PFAS National Environmental Management Plan (NEMP) Version 3.0
- Industrial Chemicals Environmental Management (Register) Instrument 2022
- California Bill SB-682 Environmental health: product safety: perfluoroalkyl and polyfluoroalkyl substances
- Biodegradable Products Institute (BPI) Certification for compostability
- Australasian Bioplastics Association (ABA) Verification scheme for compostability

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