



19 October 2022

## *IChEMS Advisory Committee: Advice to the Decision Maker*

# Polychlorinated naphthalenes (PCN)

The Advisory Committee on the Environmental Management of Industrial Chemicals (IChEMS Advisory Committee) provides independent, expert advice to the decision maker on matters related to scheduling industrial chemicals under section 28 of the *Industrial Chemicals Environmental Management (Register) Act 2021*. The matters for consideration by the IChEMS Advisory Committee include environmental, social and economic factors.

Rachel Burgess (Acting Branch Head, Chemicals Management Branch), as a delegate for the Minister for the Environment, requested that the IChEMS Advisory Committee provide advice on matters that relate to the making of a scheduling decision on the industrial chemical polychlorinated naphthalenes (PCN).

## Summary

### Background information

- Polychlorinated naphthalenes (PCN) were historically widely used for their flame retardant and dielectric properties.
- Polychlorinated naphthalenes are listed as a Persistent Organic Pollutant (POP) on the Stockholm Convention on Persistent Organic Pollutants due to their high persistence in the environment, high bioaccumulation potential, strong potential for long-range environmental transport and chronic toxic effects.
- No Australian manufacture, import, sale, use, stockpiling, storage, disposal or waste management of PCN was reported in response to a public call for information made in August 2022 under section 20(1) of the *Industrial Chemicals Environmental Management (Register) Act 2021* (the ICEMR Act).
- No Australian jurisdiction has reported stockpiles or waste containing PCN.

### IChEMS Advisory Committee Advice

The IChEMS Advisory Committee advises the delegate that PCN should be listed in Schedule 7 of the IChEMS Register. This listing should:

- Prohibit the import, export, manufacture (including as an unintentional by-product) and use of PCN. Limited exceptions for laboratory and research use and for the purposes of environmentally sound disposal should apply.

- Include risk management measures to manage wastes and stockpiles and require compliance with the Industrial Chemicals Environmental Management Standards (IChEMS) Minimum Standards.

## Detailed advice

The IChEMS Advisory Committee's responses to the delegate's questions are provided below.

### **Question 1: Is the Committee satisfied with the characterisation of the relevant risks from polychlorinated naphthalenes in Australia?**

The Committee notes that PCN is listed as a Persistent Organic Pollutant (POP) on the *Stockholm Convention on Persistent Organic Pollutants*.

The Committee advises that the relevant risks posed by PCN are consistent with the criteria for Schedule 6 or 7 of the IChEMS Scheduling Principles.

Polychlorinated naphthalenes are listed on the Stockholm Convention. The Committee acknowledges that chemicals listed on the Stockholm Convention have toxic properties, resist degradation, are bioaccumulative and are transported across international boundaries through air, water, and migratory species. They can be deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems and may cause harm.

The Committee advises that chemicals listed on the Stockholm Convention should be considered as of equivalent environmental concern to chemicals that are persistent, bioaccumulative and toxic (PBT), noting that a precautionary approach is warranted where there is a high degree of uncertainty.

The Stockholm Convention Risk Profile for PCN, which is available on the Stockholm Convention website ([www.pops.int](http://www.pops.int)), summarises the key scientific data available on PCN internationally. In reviewing this data, the Committee concludes that some PCN congeners are likely to meet the [Australia PBT criteria](#) for persistence and toxicity. Other congeners, particularly the dichlorinated naphthalene congeners (with two chlorine atoms), are unlikely to meet the persistence or toxicity criteria.

The Committee nevertheless concludes that it is appropriate to consider PCN as a mixture or UVCB (unknown or variable composition, complex reaction products or biological materials), as different PCN congeners will generally occur together. The Committee advises that it is appropriate to schedule these chemicals as a group. The uncertainty around the exact properties of some individual congeners can be bridged by evidence from other congeners in the group, given the high degree of structural similarity.

**Question 2: Is the Committee satisfied with the identification of polychlorinated naphthalenes?**

The Committee advises that PCN should be identified by the definition used under the Stockholm Convention, but with additional text to clarify that the definition captures any mixture of the possible congeners.

The Stockholm Convention Risk Profile for PCN states that PCN comprise of 75 possible congeners with chlorine atoms substituted around the planar aromatic naphthalene molecule. The homologue groups captured by the Stockholm Convention are dichlorinated naphthalenes, trichlorinated naphthalenes, tetrachlorinated naphthalenes, pentachlorinated naphthalenes, hexachlorinated naphthalenes, heptachlorinated naphthalenes and octachlorinated naphthalenes.

The Committee advises that “including any mixture” should be added to this definition to clarify that the scheduling decision is intended to cover any relevant congener, whether it exists independently or in a mixture with other congeners.

**Question 3: Is the Committee satisfied that polychlorinated naphthalenes do not have an essential use in Australia, taking into consideration the IChEMS Scheduling Principles?**

The Committee advises that PCN does not have an essential use in Australia.

The Committee has reviewed the below information and concludes that PCN does not have an essential use in Australia:

- No Australian manufacture, import, sale, use, stockpiling, storage, disposal or waste management of PCN was reported in response to a public call for information made in August 2022 under section 20(1) of the ICEMR Act.
- The National Industrial Chemical Notification and Assessment Scheme (NICNAS) conducted a call for information on Australian use of PCN in 2002. It was reported that two PCN were used for scientific research purposes. The total volume introduced for this purpose was less than 10kg. It was also reported that some PCN were unintentionally produced in the manufacture of a polychloroprene polymer. The production of the polymer ceased in 2002, with the manufacturer changing to an alternative.
- The Stockholm Convention listing of PCN includes a specific exemption for use in the production of polyfluorinated naphthalenes, including octafluoronaphthalene. Parties that wish to use a Stockholm listed chemical in accordance with a specific exemption must register this use, which is then published on the Stockholm Convention website. The Russian Federation has registered the production of an estimated 500 tonnes PCN per year for use in accordance with the specific exemption. This use has not been reported in Australia.
- No Australian jurisdiction has reported stockpiles or waste containing PCN.

In reviewing this information, the Committee concludes that ongoing import and use of PCN for research purposes should be permitted. The Committee notes that, in accordance with section 14(2) of the ICEMR Principles, activities for research or laboratory purposes or for the purposes of disposing of the chemicals in an environmentally sound way are not intended to be identified as essential uses. By default, activities for these purposes will be exempted from the prohibitions that apply to chemicals listed in Schedule 7.

**Question 4: Is the Committee satisfied that the proposed prohibitions and restrictions are appropriate? Is the Committee satisfied that the exceptions are appropriate?**

The Committee advises that the proposed prohibitions, restrictions and exceptions should prohibit the import, export, manufacture (including as an unintentional by-product) and use of PCN. Limited exceptions for laboratory and research use and for the purposes of environmentally sound disposal should apply.

The Committee advises that the prohibitions and restrictions for PCN, and any exceptions to them, should achieve the following objectives:

- From 1 July 2023, the import, manufacture (including as an unintentional by-product) and use of PCN should be prohibited. This should include the neat chemical PCN, or PCN in mixtures or in articles. This prohibition should not apply where:
  - PCN is present as an unintentional trace contaminant (see below).
  - PCN is introduced for laboratory-scale research or as a reference standard.
  - Import is permitted for the purposes of environmentally sound disposal in accordance with the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, subject to approval under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989*.
  - Articles containing PCN were already in use before or on 1 July 2023. This should allow continued use of articles that were in service before the date the scheduling decision on PCN takes effect. When an article containing PCN becomes waste, the risk management measures for waste disposal should apply.
- From 1 July 2023, the export of PCN should be prohibited. This should include the neat chemical PCN, or PCN in mixtures or in articles. This prohibition should not apply where:
  - PCN is present as an unintentional trace contaminant (see below).
  - Export is permitted for the purposes of environmentally sound disposal in accordance with the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, subject to approval under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989*.

The Committee recognises the benefits of aligning the approach taken to unintentional trace contaminants with that of Regulation 2019/1021 of the European Parliament and of the Council on Persistent Organic Pollutants (Regulation (EC) 2019/1021). Under Regulation (EC) 2019/1021, unintentional trace contaminants are qualitatively defined as a substance that is incidentally present in a minimal amount, below which the substance cannot be meaningfully used, and above the detection limit of existing detection methods to enable control and enforcement. For some priority chemicals, quantitative thresholds are defined in the regulation to improve regulatory clarity.

The Committee advises that, for all high-concern chemicals prohibited or restricted under IChEMS, it is appropriate to adopt a default qualitative threshold for unintentional trace contaminants, with a specific quantitative threshold to be set where necessary. The qualitative threshold should encompass all of the following aspects:

- The chemical should be present at trace levels only
- The chemical should not be present intentionally
- The chemical should be unavoidably present (for example, it is not possible to prevent its formation through improved manufacturing processes)
- The chemical should only be present at a level which has no meaningful functional purpose
- The chemical should only be present at a level that does not result in significant environmental exposure (that is, representing a relatively low environmental risk). While the Committee advises that it would be preferable to manage incidental contamination in a way that does not result in harm, it also recognises the difficulties in estimating risks of harm from exposure to persistent organic pollutants in products and articles.

The Committee notes that no quantitative threshold has been defined for PCN in Regulation (EC) 2019/1021. The Committee advises that the default qualitative threshold be adopted for the IChEMS Scheduling Decision for PCN.

**Question 5: Is the Committee satisfied that the proposed risk management measures for polychlorinated naphthalenes are appropriate to manage the relevant risks?**

The Committee advises that the proposed risk management measures should ensure management of wastes and stockpiles containing PCN and require compliance with the IChEMS Minimum Standards.

The Committee advises that the risk management measures for PCN should achieve the following objectives:

- From 1 July 2023, disposal or recovery operations that may lead to recovery, recycling, reclamation or re-use of PCN, on its own, should be prohibited.
- Producers and holders of waste should undertake reasonably practicable measures to avoid contamination of this waste with PCN.
- Waste consisting of, containing or contaminated by PCN at a concentration of greater than 10 mg/kg should be disposed of or recovered, as soon as reasonably practicable, either:
  - in such a way as to ensure that the chemical is destroyed or irreversibly transformed so that the remaining waste and releases do not contain chemicals that exhibit Schedule 6 or Schedule 7 risk characteristics, or
  - as authorised under a law of an Australian State or Territory or Australian government, where destruction or irreversible transformation is not the environmentally preferable option.
- Waste consisting of, containing or contaminated by PCN at a concentration of less than 10 mg/kg should be disposed of or recovered, as soon as reasonably practicable, in an environmentally sound manner as authorised under a law of an Australian State or Territory or Australian government.
- Isolation of PCN from waste should be allowed, provided that the PCN is subsequently disposed of as outlined above.
- Any remaining stockpiles should be treated as waste. A holder of an accumulated mass of PCN, whether on its own, in mixtures or in articles, for which import, manufacture, use and export is prohibited, should:
  - notify the relevant agency responsible for environmental protection of the nature and size of the stockpile, and
  - manage that stockpile as waste, as outlined above, and comply with all jurisdictional legislation.
- Any person becoming aware of any failure to comply with any of these prohibitions, restrictions or risk management measures should, as soon as reasonably practicable, notify the relevant agency responsible for environmental protection.



- Any person handling PCN, whether on its own, in mixtures or in articles, should comply with the IChEMS Minimum Standards. By applying a standard risk management measure that points to the Minimum Standards, the Minimum Standards can be implemented using the same regulatory mechanisms as other risk management measures.

The Committee recognises that the proposed 10 mg/kg concentration limit for PCN aligns with the 'low persistent organic pollutant content level' for PCN agreed under the auspices of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. This level is referenced under the Stockholm Convention and is used to determine waste disposal requirements. International legislation on the waste management of POPs has adopted this value, including Regulation (EC) 2019/1021.