



26 July 2024

Chemical profile

Hexachlorobenzene (HCB)

Summary

- Hexachlorobenzene (HCB) is internationally recognised as an environmental pollutant. It is listed on the Stockholm Convention on Persistent Organic Pollutants to globally eliminate production and use.
- It is a chemical of high concern due to its persistence in the environment, bioaccumulation properties, toxic and adverse effects to humans and animal life, and tendency to undergo long-range transport through the environment.
- It was historically used as an intermediate in the manufacture of dyes, in the production of fireworks, ammunition, rubber and aluminium, and in the synthesis of organic chemicals.
- Hexachlorobenzene is a priority for scheduling under the [Industrial Chemicals Environmental Management Standard \(IChEMS\)](#) to improve management of its long-term risks to the environment and to fulfill Australia's international obligations.

Introduction and use of hexachlorobenzene in Australia

There are currently no known commercial uses of hexachlorobenzene in Australia and its only introduction is through unintentional production during the manufacture of products using other chemicals. Hexachlorobenzene has been used as a pesticide but is no longer registered for this use in Australia. It was also used in the production of fireworks, ammunition, rubber, aluminium and dyes, and in wood preservation. Articles produced or imported containing HCB in the past may still be in use.

Controls under international conventions

Chemicals listed on the [Stockholm Convention of Persistent Organic Pollutants](#) (POPs) are persistent, toxic, bioaccumulative and undergo long-range transport in the environment.

Hexachlorobenzene was listed on the Stockholm Convention when the convention first entered into force in 2004. It is listed in Annex A of the convention, with the aim to globally eliminate intentional production of the substance. Restrictions on import, manufacture, use and disposal of HCB apply in countries that are parties to the Stockholm Convention. Australia is a party to the convention and implemented controls on the import, export, use and disposal of HCB.

Chemical identity

- CAS Name: Benzene, hexachloro-
- CAS registry number: 118-74-1
- Synonyms: Hexachlorobenzene; HCB; 1,2,3,4,5,6-hexachlorobenzene; perchlorobenzene; phenyl perchloryl; hexachlorbenzol; pentachlorophenyl chloride

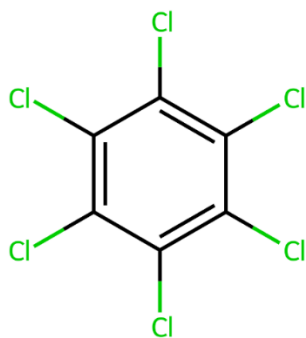


Figure 1 - Chemical structure of HCB.

Hazards and risks to the environment

Industrial use of HCB presents a risk to the environment because of its persistence, bioaccumulation and toxicity in animals and its adverse effects to humans and animal life in the environment. It has been detected in areas far from the sources of release due to its long-range environmental transport potential. Hexachlorobenzene is released to the environment through direct emissions to air from the incomplete combustion of solid organic wastes in open landfills and municipal incinerators.

Hexachlorobenzene is also released to the environment through landfill leachates of waste materials from the manufacture of chlorinated solvents and chlorinated pesticides. Diffuse emissions from agricultural fields may also result from either former application of HCB as a fungicide, or impurities present in currently used chlorinated pesticides.

Hexachlorobenzene has been found in organisms across many environmental compartments and trophic levels and is highly bioaccumulative. Hexachlorobenzene shows toxic effects in aquatic organisms over long term exposure timeframes. It also shows toxic effects in birds and mammalian predators exposed to the chemical through diet.

The [Australian Industrial Chemicals Introduction Scheme](#) (AICIS) published an [Evaluation Statement](#) for HCB in December 2022. The evaluation concluded that there are significant long-term risks to the environment from the manufacture and use of the chemical, including from introduction in articles.

Based on the evidence of HCB's persistence, bioaccumulation, toxicity and long-range environmental transport potential, it is likely to lead to significant adverse human health and/or environmental effects.

Additional information: regulation of HCB in Australia

Industrial chemicals must be listed on the Australian Industrial Chemical Inventory (AICI) to be introduced (imported or manufactured) into Australia without prior authorisation. Hexachlorobenzene is not listed on the [Australian Inventory of Industrial Chemicals \(AICI\)](#). It was removed from the inventory in February 2023, which prohibits the introduction and manufacture of the chemical in Australia.

The import of HCB in goods and substances is prohibited under the [Customs \(Prohibited Imports\) Regulations 1956](#).

References

Australian Industrial Chemicals Introduction Scheme (AICIS) (2022). Benzene, hexachloro- (HCB), [Evaluation Statement \[EVA00056\]](#), 22 December 2022.

Agency for Toxic Substances and Disease Registry (2015) [Toxicological profile for hexachlorobenzene](#), ATSDR.

Barber J, Sweetman A and Jones K (2005) '[Hexachlorobenzene - Sources, environmental fate and risk characterisation](#)', *Euro Chlor Science Dossier*, 8:1-120.

National Pollutant Inventory (n.d) [Benzene hexachloro - \(HCB\) Substance Factsheet](#). Department of Climate Change, Energy, the Environment and Water.

Nascimento NRd, Nicola SMC, Rezende MOO, Oliveira TA and Öberg G (2004) '[Pollution by hexachlorobenzene and pentachlorophenol in the coastal plain of São Paulo state, Brazil](#)', *Geoderma*, 121(3):221-232, doi:10.1016/j.geoderma.2003.11.008.

United Nations Environmental Programme (2001) [The Stockholm Convention on Persistent Organic Pollutants \(POPs\)](#), UNEP, accessed May 2024.

More information

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Web [Industrial Chemicals Environmental Management Standard - IChEMS - DCCEEW](#)