Australian Government
Department of Health
Australian Industrial Chemicals Introduction Scheme

# Benzene, 1,1'-(1,2-ethanediyl)bis[2,3,4,5,6-pentabromo-

## Evaluation statement

**18 November 2021**

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# AICIS evaluation statement

## Subject of the evaluation

Benzene, 1,1'-(1,2-ethanediyl)bis[2,3,4,5,6-pentabromo- (Decabromodiphenylethane)

## Chemical in this evaluation

| Name | CAS registry number |
|---|---|
| Benzene, 1,1'-(1,2-ethanediyl)bis[2,3,4,5,6-pentabromo- | 84852-53-9 |

## Reason for the evaluation

The chemical is being evaluated to determine whether the environmental risks from any introduction of the chemical into Australia can be managed within existing risk management frameworks.

## Defined scope of evaluation

On 19 August 2021, the public report for the chemical (STD/1676) was published and an assessment certificate (CERT9258) was issued under transitional legislation to Fibrisol Service Australia Pty Ltd, allowing them to introduce the assessed chemical into Australia. The public report of the assessment recommended the following:

- The chemical is hazardous to the environment and should be prioritised for scheduling and the application of appropriate risk management measures under the *Industrial Chemicals Environmental Management (Register) Act 2021*.

The Industrial Chemicals Environmental Management Standard is not yet fully implemented.

This evaluation considers the risks to the environment identified in the public report of the assessment and determines whether the environmental risks from any introduction and use of the chemical into Australia can be managed within existing risk management frameworks. This evaluation also considers what other actions may be needed in order to manage the environmental risks.

This evaluation report should be read in conjunction with the STD/1676 public report (AICIS 2021).

# Summary of evaluation

## Summary of introduction, use and end use

The chemical can be imported at 100% concentration at up to 120 tonnes/year by Fibrisol Service Australia Pty Ltd in accordance with the assessment certificate (CERT9258).

If introduced (imported), the chemical is intended by the certificate holder to be processed and used as a flame retardant in articles, films and coatings used in electrical, electronic, building and automotive applications.

## Environment

### Summary of environmental hazard characteristics

Results from a ready biodegradability study and OECD aerobic and anaerobic transformation studies in soils and sediments demonstrate that the chemical meets the persistence criterion in Annex D of the Stockholm Convention on Persistent Organic Pollutants (the Stockholm Convention) (AICIS 2021).

Based on the available bioaccumulation data, the chemical meets the bioaccumulation criterion of Annex D of the Stockholm Convention, including section 1(c)(iii), which is relevant when monitoring data in biota indicates the bioaccumulation potential of the chemical is sufficient to justify consideration within the scope of the Convention.

The chemical has the potential to have adverse effects on aquatic and terrestrial organisms, and therefore meets the adverse effects criterion of Annex D, specifically section 1(e)(ii) which is satisfied if there is ecotoxicity data that indicate the potential for damage to the environment.

The available evidence indicates that wet and dry deposition of particulates containing the chemical results in contamination of soils, moss, lichens, trees and surface waters long distances away from emission sources and that the chemical has reached Antarctica. Therefore, the chemical fulfils the long-range environmental transport criterion of Annex D of the Stockholm Convention, specifically section 1(d)(i) and (ii) which are satisfied if measured levels are in locations distant from the sources of its release and monitoring data exist.

### Environmental hazard classification

Environmental classification under the GHS is not mandated in Australia and carries no legal status but is presented for information purposes. The chemical satisfies the criteria for classification according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (UNECE, 2017) for environmental hazards as follows:

| Environmental Hazard | Hazard Category | Hazard Statement |
|---|---|---|
| Hazardous to the aquatic environment (long-term) | Aquatic Chronic. 4 | H413: May cause long lasting harmful effects to aquatic life |

### Summary of environmental risk

The chemical meets the persistence, bioaccumulation, adverse effects and long range transport criteria of Annex D of the Stockholm Convention. Therefore, on the basis of the current hazard information available, the introduction and use of the chemical could pose significant long-term risks to the environment.

Based on environment monitoring, it is likely that articles containing the chemical are already being imported into Australia, and the chemical may be released from these articles, leading to indirect environmental exposure (AICIS 2021). Articles containing the chemical are currently not subject to risk management.

The overall exposure and risk to the environment would be increased through introduction and use of the chemical itself under the certificate, as release to the environment would be increased.

## Conclusions

The conclusions of this evaluation are based on the information described in this statement and the public report of the assessment on the chemical (AICIS 2021), which includes more detailed information on environmental hazard and risk.

The AICIS Public Report STD/1676 concluded that the chemical meets the criteria for persistence, bioaccumulation, adverse effects in aquatic and terrestrial organisms and long-range transport of persistent organic pollutants, as described in Annex D of the Stockholm Convention. Therefore, on the basis of the available hazard information, the assessed chemical could pose significant long-term risks to the environment.

Advice on the existing risk management framework was sought from the Department of Agriculture, Water and the Environment (DAWE). Based on the risk characteristics and the proposed uses of this chemical set out in the AICIS Public Report STD/1676, DAWE advised that the risks to the environment posed by the use of the chemical cannot be managed within the current risk management frameworks.

Australia is a Party to the Stockholm Convention. Under Article 3.3 of the Convention, Australia is bound by international law to take measures to regulate with the aim of preventing the production and use of new industrial chemicals that exhibit the characteristics of a persistent organic pollutant (taking into consideration the criteria in paragraph 1 of Annex D of the Convention).

Based on the characteristics of the chemical and the advice from DAWE, the Executive Director of AICIS is not satisfied that the risks of the chemical to the environment can be managed within existing risk management frameworks. Therefore, under section 52 of the Act the assessment certificate issued to Fibrisol Service Australia Pty Ltd may be cancelled by the Executive Director (refer to **Recommendations**).

Under the current categorisation criteria and associated definitions this chemical may be currently introduced in lower volumes under the Reported category. Based on the summary of environmental risk and Australia's obligations under the Stockholm Convention, introductions of this chemical, even at low volumes, would not be considered low risk. To ensure introductions of this chemical and similar chemicals are categorised appropriately, changes may be needed to the categorisation criteria in the *Industrial Chemicals (General) Rules 2019* and/or the definitions in the Industrial Chemicals Categorisation Guidelines 2020 (refer to **Recommendations**).

# Recommendations

## Assessment certificate

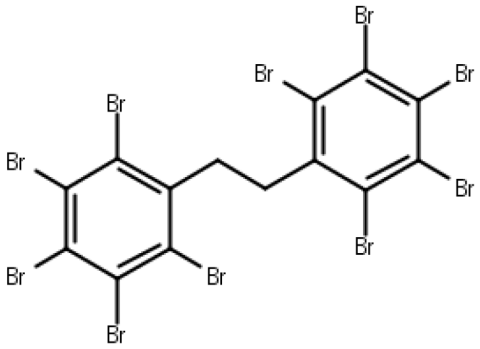
As the Executive Director of AICIS has concluded as part of this evaluation that the risks of the chemical to the environment from its introduction and use cannot be managed, the assessment certificate for the chemical should be cancelled under section 52 of the Act.

## Industrial Chemicals Categorisation

The categorisation criteria in the *Industrial Chemicals (General) Rules 2019* and the definitions in the Industrial Chemicals Categorisation Guidelines 2020 should be reviewed to ascertain whether the introduction of this chemical, and unlisted chemicals with similar properties, are being categorised appropriately.

# Supporting information

## Chemical identity

| | |
|---|---|
| Synonyms | Decabromodiphenylethane; DBDPE; 1,2-Bis(pentabromophenyl)ethane |
| Structural formula |  |
| Molecular formula | $C_{14}H_4Br_{10}$ |
| Molecular weight (g/mol) | 971.22 |
| SMILES | BrC=1C(Br)=C(Br)C(=C(Br)C1Br)CCC=2C(Br)=C(Br)C(Br)=C(Br)C2Br |

For additional supporting information, refer to the STD/1676 public report (AICIS 2021).

## Introduction and use

### Australia

The following information is taken from the STD/1676 public report.

The chemical will be imported through Sydney, Melbourne and other ports to either distributors or compounders (convertors in the plastic industry) in Australia. The chemical will be imported in 25 kg (and possibly 1000 kg) bags and transported by road or rail in Australia.

The introducer proposed that the chemical will be used as a component of articles for electrical and electronics applications, including electronic and electrical home appliances and enclosures. It will also be used for building and construction, as a component of wires, cables and plastic parts in automotive applications at 5 - 30% concentration. Use in coatings may also occur.

The chemical was proposed to be used as an additive in plastics and resins such as:

- Low-density Polyethylene (LDPE) and High-density Polyethylene (HDPE) films and sheets for building and construction
- LDPE, HDPE and Polypropylene (PP) injection moulded parts for electricity and electronics
- Acrylonitrile/Butadiene/Styrene (ABS), High Impact Polystyrene (HIPS), Polyamide (PA), Polybutylene Terepthalate (PBT) and Polyethylene Terephthalate (PET) injection moulded parts for electricity and electronics

- Unsaturated Polyester (UPE), vinyl esters, phenolic resins and epoxy resins for building and construction and electricity and electronics

# References


AICIS (2021) Benzene, 1,1'-(1,2-ethanediyl)bis[2,3,4,5,6-pentabromo-: STD/1676 Public Report. Australian Industrial Chemicals Introduction Scheme. Australia AICIS (2021).

UNECE (2017). Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Seventh Revised Edition. United Nations Economic Commission for Europe (UNECE), Geneva, Switzerland. Accessed October 2021 at https://unece.org/ghs-rev7-2017