

4	CAS No.: 1163-19-5	Substance: Decabromodiphenyl ether
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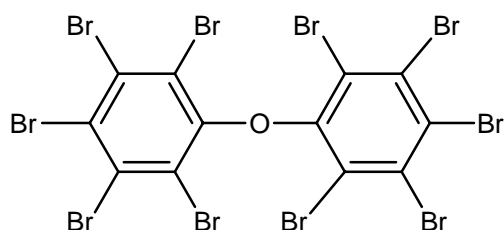
Chemical Substances Control Law Reference No.: 3-2846

PRTR Law Cabinet Order No.: 1-197

Molecular Formula: C<sub>12</sub> Br<sub>10</sub> O

Molecular Weight: 959.17

Structural Formula:



### 1. General information

The aqueous solubility of this substance is 0.02-0.03mg/L (25°C) and the partition coefficient (1-octanol / water) (log Kow) is 5.24. The vapor pressure is  $4.7 \times 10^{-12}$  mmHg (=  $6.3 \times 10^{-10}$  Pa) (25°C, calculated value). Degradability (aerobic degradation) in terms of BOD-based degradation percentage is estimated to be 0%. This substance does not have hydrolyzable groups. The bioconcentration of this substance is determined to be zero or very low.

This substance is a Type 2 Monitoring Chemical Substance under the Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances and a Class 1 Designated Chemical Substance under the Law concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law). It is used primarily as a fire-retardant to add PE, ABS, polyester, PS.

Production and import quantity of this substance in FY2004 was 2,480 tons.

### 2. Exposure assessment

Total release to the environment in FY2004 under the PRTR Law came to 2.0 tons, all of which was reported. Release to the public water bodies accounted for a large part of the reported release. Fiber industry accounted for high levels of release to both the atmosphere and public water bodies.

The distribution into each environmental medium predicted by means of a multimedia model was 98.6% for bottom, and 1.3% for water bodies in the case of the region where the release quantity to the environment and the public water bodies was considered to be the maximum. In the case of the region where the release quantity to the atmosphere was considered to be the maximum, the distributions were 72.2% for bottom, and 26.9% for soil.

The predicted environmental concentration (PEC) that indicates exposure to aquatic organisms was estimated to be approximately 0.30 µg/L for freshwater and approximately less than 0.12 µg/L for seawater public water bodies.

### 3. Initial assessment of ecological risk

With regard to acute toxicity, reliable information of a 72-hour EC<sub>50</sub> growth inhibition value exceeding 5.20 µg/L was found for the algae *Pseudokirchneriella subcapitata*, a 48-hour EC<sub>50</sub> immobilization value exceeding 4.79 µg/L was found for the crustacea *Daphnia magna* (water flea), and a 96-hour LC<sub>50</sub> value exceeding 4.55 µg/L was found for the fish *Oryzias latipes* (medaka). Accordingly, an assessment factor of 100 was used, a predicted no effect concentration (PNEC) exceeding 0.046 µg/L was obtained based on the acute toxicity values. With regard to chronic toxicity, reliable information of a 72-hour no observed effect concentration (NOEC) growth inhibition value of 5.20 µg/L was found for the algae *P. subcapitata*, and a 21-day NOEC reproduction value exceeding 5.05 µg/L was found for the crustacea *D. magna*. So an assessment factor of 100 was used, and a PNEC value exceeding 0.051 µg/L was obtained based on the chronic toxicity values. As the PNEC for the substance, a value exceeding 0.046 µg/L obtained from the acute toxicity for the fish was used.

The PEC/PNEC ratio was less than 7 for freshwater bodies and less than 3 for seawater bodies. Accordingly, the ecological

risk cannot be determined at this time. For this substance, there is thought to be need for the re-assessment through the implementation of the chronic toxicity tests for the fish.

Hazard assessment (basis for PNEC)			Assessment factor	Predicted no effect concentration PNEC (µg/L)	Exposure assessment		PEC/PNEC ratio	Result of assessment
Species	Acute / chronic	Endpoint			Water body	Predicted environmental concentration PEC (µg/L)		
Fish (medaka)	Acute	LC <sub>50</sub> Mortality	100	> 0.046	Freshwater	0.30	< 7	×
					Seawater	< 0.12	< 3	

#### 4. Conclusions

	Conclusions	Judgment
Ecological risk	Impossible of risk characterization. There is thought to be need for the re-assessment through the implementation of the chronic toxicity testings for the fish.	×

[Risk judgments] ○: No need of further work ▲: Requiring information collection  
 ■: Candidates for further work ×: Impossible of risk characterization