

8	CAS No.: 124-09-4	Substance: 1,6-hexanediamine
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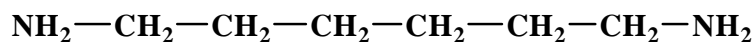
Chemical Substances Control Law Reference No.: 2-153

PRTR Law Cabinet Order No.: 1-292

Molecular Formula: C₆H₁₆N₂

Structural Formula:

Molecular Weight: 116.21



1. General information

The aqueous solubility of this substance is freely miscible, and the partition coefficient (1-octanol / water) (log Kow) is 0.35 (calculated value). The vapor pressure is 0.118 mmHg (= 15.7 Pa) (extrapolated value, 25°C). Degradability is good, and the substance is thought to not have hydrolyzable groups.

This substance is 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). Its primary uses and release sources are as a raw material for synthetic resin (polyamide [nylon 66] and polyurethane). Export and import quantities in 2003 were 66 tons and 39,565 tons, respectively. Production and import quantities under the PRTR law are 10,000 tons.

2. Exposure assessment

Total release to the environment in FY2003 under the PRTR Law came to 46 tons, of which 46 tons was reported. Release to public water bodies accounted for a large part of the reported release. Chemical Industry accounted for high levels of reported release into both the atmosphere and public water bodies.

When estimated releases outside notification are included, release to water bodies accounted for the greatest quantity of release to the environment. The distribution into the different media in the environment predicted by means of a multimedia model was 96.7 % for water bodies.

It was not possible to establish a predicted environmental concentration (PEC) that indicates exposure to aquatic organisms, as environmental concentrations sufficient for assessment have not been obtained.

3. Initial assessment of ecological risk

With regard to acute toxicity, reliable information of a 72-hour EC₅₀ growth inhibition value of 18,600 µg/L was found for the algae *Pseudokirchneriella subcapitata*, a 48-hour EC₅₀ immobilization value of 27,200 µg/L was found for the crustacea *Daphnia magna* (water flea), and a 96-hour LC₅₀ value of 70,700 µg/L was found for the fish *Oryzias latipes* (medaka). Accordingly, an assessment factor of 100 was used, and a predicted no effect concentration (PNEC) of 190 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 10,000 µg/L was found for the algae *P. subcapitata*, and a 21-day NOEC reproduction value of 4,160 µg/L was found for the crustacean *D. magna*. Accordingly, an assessment factor of 100 was used, and a PNEC of 42 µg/L was obtained based on the chronic toxicity values. As the PNEC for the substance, a value of 42 µg/L obtained from the chronic toxicity for the crustacea was used.

As sufficient data for assessment have not been obtained at present, it was not possible to assess the ecological risk. Trends in production quantities, environmental release quantities, etc. should be monitored, and then a study should be conducted to assess the need for determination of the environmental concentration.

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)		
Crustacean	Chronic	NOEC reproduction	100	42	Freshwater	–	–	x
					Seawater	–	–	

4. Conclusions

	Conclusions	Judgment
Ecological risk	Impossible of risk characterization. Trends in production quantities, environmental release quantities, etc. should be monitored, and then a study should be conducted to assess the need for determination of the environmental concentration.	×

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