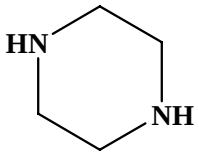
6	CAS No.: 110-85-0	Substance: Piperadine

Chemical Substances Control Law Reference No.: 5-953

PRTR Law Cabinet Order No.: 1-258

Molecular Formula: $C_4H_{10}N_2$ Structural Formula:

Molecular Weight: 86.14



1. General information

The aqueous solubility of this substance is freely miscible, and the partition coefficient (1-octanol / water) (log Kow) is -1.50. The vapor pressure is 0.160 mmHg (= 21.3 Pa) (20°C). Degradability is 1.4% by BOD degradation rate, and accumulation is judged 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). Its primary uses and release sources are as a catalyst (for urethane), as a synthetic raw material, and as a reagent (used in the detection of antimony, bismuth and gold). Salts of organic and inorganic acids are used in anthelmintic preparations. Domestic production in 2003 was 200 tons (estimated).

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2. Exposure assessment

Total release to the environment in FY2003 under the PRTR Law came to 20 tons, of which 17 tons (83% of the total) was reported. Release to public water bodies accounted for a large part of the reported release. In addition, 93 tons was transferred as waste. Chemical Industry accounted for high levels of release to the atmosphere. Electric machinery and equipment and Chemical Industry accounted for high levels of reported release to 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 99.2 % 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.

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3. Initial assessment of ecological risk

With regard to acute toxicity, reliable information of a 72-hour EC_{50} growth inhibition value of 132,000 µg/L was found for the algae *Pseudokirchneriella subcapitata*, a 48-hour EC_{50} immobilization value of 106,000 µg/L was found for the crustacea *Daphnia magna* (water flea), and a 96-hour LC_{50} value of more than 100,000 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 1,100 µg/L was obtained based on the acute toxicity values. With regard to chronic toxicity, reliable information of a 21-day no observed effect concentration (NOEC) reproduction value of 32,700 µg/L was found for the crustacea *D. magna* . Accordingly, an assessment factor of 100 was used, and a PNEC of 330 µg/L was obtained based on the chronic toxicity values. As the PNEC for the substance, a value of 330 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 and environmental release quantities 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)		
Crustacea	Chronic	NOEC reproduction	100	330	Freshwater	–	–	×
					Seawater	–	–	

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4. Conclusions

	Conclusions	Judgment
Ecological risk	Impossible of risk characterization. Trends in production quantities and environmental release quantities 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