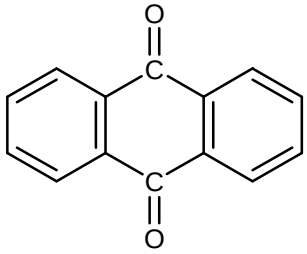
1	CAS No.: 84-65-1	Substance: Anthraquinone

Chemical Substances Control Law Reference No.: 4-686

PRTR Law Cabinet Order No.:

Molecular Formula: $C_{14}H_8O_2$ Structural formula:

Molecular Weight: 208.21



1. General information

The aqueous solubility of this substance is 1.4 mg/1,000 g (25°C), the partition coefficient (1-octanol/water) (log K_{ow}) is 3.39, and the vapor pressure is 1.16×10^{-7} mmHg (=1.55×10^{-5} Pa) (25°C). Biodegradability (aerobic degradation) is good. The substance does not have any hydrolyzable groups.

The main uses are as an intermediate for a wide variety of dyestuffs such as acid dyes, mordant dyes, vat dyes, and disperse dyes; pulp digestion additive; a hydrogen carrier for production of hydrogen peroxide; and a starting raw material for anthraquinone-based dyestuffs. The production (shipments) and import quantity in fiscal 2007 was 1,000 to <10,000 t/y. The export and import quantities in 2009 were 1,542 t and 0 t, respectively.

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2. Exposure assessment

Because this substance is not 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), release and transfer quantities could not be obtained. Predictions of distribution by medium using a Mackay-type level III fugacity model indicated that if equal quantities were released to the atmosphere, water bodies, and soil, the proportion distributed to soil would be higher.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was about 6.6 µg/L for freshwater bodies and generally less than 0.02 µg/L for seawater.

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3. Initial assessment of ecological risk

With regard to acute toxicity, the following reliable data were obtained: a 24-h EC_{50} of 370 µg/L for growth inhibition in the green algae *Scenedesmus armatus*, a 48-h LC_{50} of 94.2 µg/L for the crustacean *Americamysis bahia*, a 96-h LC_{50} of more than 240 µg/L for the fish species *Pimephales promelas* (fathead minnow), and an 8-d EC_{50} of 500 µg/L for growth inhibition in *Lemna gibba* (duckweed). Accordingly, based on these acute toxicity values and an assessment coefficient of 100, a predicted no effect concentration (PNEC) of 0.94 µg/L was obtained. Because reliable chronic toxicity data could not be obtained, the value of 0.94 µg/L obtained from the acute toxicity to the crustacean was used as the PNEC for this substance.

The PEC/PNEC ratio was 7 for freshwater bodies and less than 0.02 for seawater. Accordingly, this substance is considered a candidate for detailed assessment. Considering that aquatic plants are likely to be highly susceptible to this substance, detailed assessment is considered desirable.

Hazard assessment (basis for PNEC)			Assessment coefficient	Predicted no effect concentration PNEC (μg/L)	Exposure assessment		PEC/ PNEC ratio	Judgment based on PEC/PNEC ratio	Assessment result
Species	Acute/ chronic	End point			Water body	Predicted environmental concentration PEC (μg/L)			
Crustacean *Americamysis bahia*	Acute	LC_{50} mortality	100	0.94	Freshwater	6.6	7	■	■
					Seawater	<0.02	<0.02		

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4. Conclusions

	Conclusions	Judgment
Ecological risk	Considered candidate for detailed assessment.	■

［Risk judgments］ ○: No need for further work ▲: Requiring information collection

■: Candidates for further work ×: Impossibility of risk characterization

（○）: Though a risk characterization cannot be determined, there would be little necessity of collecting information.

（▲）: Further information collection would be required for risk characterization.