

3	CAS No.: 120-61-6	Substance: Dimethyl terephthalate
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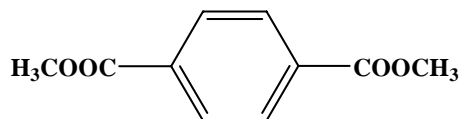
Chemical Substances Control Law Reference No.: 3-1328

PRTR Law Cabinet Order No.: 1-206

Molecular Formula: C₁₀H₁₀O₄

Structural Formula:

Molecular Weight: 194.18



1. General information

The aqueous solubility of this substance is 19.0 mg/L (25°C), and the partition coefficient (1-octanol / water) (log Kow) is 2.25. The vapor pressure is 0.01 mmHg (= 1.33 Pa) (25°C). Degradability is judged to be good. In terms of hydrolyzability, the half-life is 320 days (at 25°C, pH = 7).

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 polymeric resins (polyester synthetic fiber and resin). Domestic production in 2003 was 7,970 tons, and the import quantity was 39,400 tons. Production and import quantities under the PRTR law are 100,000 tons.

2. Exposure assessment

Total release to the environment in FY2003 under the PRTR Law came to 0.071 tons, all of which was reported. The quantity of reported release to the atmosphere came to 0.071 tons. In addition, 29 tons was transferred as waste. Chemical Industry accounted for high levels of reported release.

When estimated releases outside notification are included, release to the atmosphere 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 63.0% for atmosphere and 35.8% 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 more than 5,270 µg/L was found for the algae *Pseudokirchneriella subcapitata*, a 48-hour EC₅₀ immobilization value of more than 6,500 µg/L was found for the crustacea *Daphnia magna* (water flea), and a 96-hour LC₅₀ value of more than 53,700 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 more than 53 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 5,270 µg/L was found for the algae *P. subcapitata*, and a 21-day NOEC reproduction value of 1,720 µg/L was found for the crustacea *D. magna*. Accordingly, an assessment factor of 100 was used, and a predicted no effect concentration (PNEC) of 17 µg/L was obtained based on the chronic toxicity values. As the PNEC for the substance, a value of 17 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 determined, 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	17	Freshwater	–	–	x
					Seawater	–	–	

4. Conclusions

	Conclusions	Judgment
Ecological risk	Impossible of risk characterization. Trends in production quantities and environmental release quantities should be determined, 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