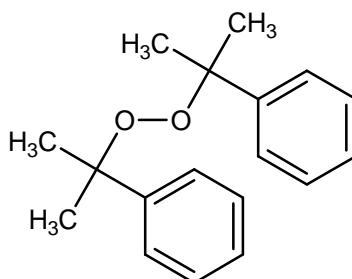| 3	CAS No.: 80-43-3	Substance: Dicumyl peroxide

Chemical Substances Control Law Reference No.: 3-1086

PRTR Law Cabinet Order No.*: 1-330

Molecular Formula: $C_{18}H_{22}O_2$ 　　　　Structural formula:

Molecular Weight: 270.37

*Note: No. in Revised Cabinet Order enacted on October 1, 2009

1. General information

The aqueous solubility of this substance is 0.4 mg/L, the partition coefficient (1-octanol/water) (log K_{ow}) is 5.50, and the vapor pressure is 7.51×10^{-6} mmHg (=0.001 Pa) (25°C, calculated value). The biodegradability (aerobic degradation) is characterized by a BOD degradation rate of 0%, and bioaccumulation is thought to be nonexistent or low.

This substance is designated as a Type II and Type III 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). The main uses are as a polymerization initiator for styrene; cross-linking agent for various olefinic polymers, copolymers and synthetic rubbers such as PE, EPR and EPDM; curing agent for heated molding of unsaturated polyester resins; and polymer flame retardant synergist. The production and import quantity in fiscal 2009 was 1,528 t. The production and import category under the PRTR Law was ≥100 t.

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2. Exposure assessment

Because this substance was not classified as a Class 1 Designated Chemical Substance prior to revision of substances regulated by the 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 greater.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was less than around 0.007 µg/L for both public freshwater bodies and seawater.

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3. Initial assessment of ecological risk

With regard to acute toxicity, the following reliable data were obtained: a 48-h EC_{50} of 262 µg/L for swimming inhibition in the crustacean *Daphnia magna* and a 96-h LC_{50} of 469 µg/L for the fish species *Oryzias latipes* (medaka). Accordingly, based on these acute toxicity values and an assessment coefficient of 100, a predicted no effect concentration (PNEC) of 2.6 µg/L was obtained.

With regard to chronic toxicity, reliable data of a 21-d NOEC of 117 µg/L was obtained for reproductive inhibition in the crustacean *D. magna*. Accordingly, based on this chronic toxicity value and an assessment coefficient of 100, a predicted no effect concentration (PNEC) of 1.2 µg/L was obtained. The value of 1.2 µg/L obtained from the chronic toxicity to the crustacean was used as the PNEC for this substance.

The PEC/PNEC ratio for both freshwater bodies and seawater was less than 0.006. Accordingly, further work is thought to be unnecessary at this time.

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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 *Daphnia magna*	Chronic	NOEC reproductive inhibition	100	1.2	Freshwater	<0.007	<0.006	○	○
					Seawater	<0.007	<0.006		

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4. Conclusions

	Conclusions	Judgment
Ecological risk	No need of further work at present	○

〔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.