5	CAS No.: 112-30-1	Substance: 1-Decyl alcohol

Chemical Substances Control Law Reference No.: 2-217 (Alkanol (C=5–38))

PRTR Law Cabinet Order No.: (Cabinet Order No. after revision*: 1-257)

Structural Formula:

Molecular Formula: $C_{10}H_{22}O$

Molecular Weight: 158.28

*Note: No. according to revised order enacted on October 1, 2009.

1. General information

The aqueous solubility of this substance is 37 mg/1000 g (25°C), the partition coefficient (1-octanol/water) (log K_{ow}) is 4.57, and the vapor pressure is 8.51×10^{-3} mmHg (=1.13 Pa) (25°C). In biodegradability tests utilizing various activated sludges, the BOD degradation rates for tests of 6-, 12-, and 24-h duration were 0.9%, 9.2%, and 29.3%, respectively. The substance does not have any hydrolyzable groups.

Based on a revision of substances regulated by the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law) (enacted on October 1, 2009), this substance was newly designated as a Class 1 Designated Chemical Substance. The main applications are as an inhibitor of axillary buds in tobacco plants and as a herbicide for nonagricultural land, while it is also used in food additives (flavorings). Furthermore, this substance is found in citrus fruit oils, almond flowers, and ambrette seed essential oil, while it has also been detected in apple juice, and orange essential oil. There are also reports of it being released by leaves.

The production quantity in 2005 was 267.1 t or kL. The production (shipments) and import quantity in fiscal 2004 as alkanols (C=5–38) was 100,000 to <1,000,000 t.

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2. Exposure assessment

Because this substance was not a Class 1 Designated Chemical Substance prior to revision of substances regulated under 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 proportions distributed to soil and water bodies would be higher.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was estimated to be approximately 1.4 µg/L for public freshwater bodies and generally less than 0.002 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 72-h median effective concentration (EC_{50}) of 565 µg/L for growth inhibition in the green algae *Pseudokirchneriella subcapitata;* a 48-h EC_{50} of 1,350 µg/L for swimming inhibition in the crustacean *Daphnia magna*; a 96-h median lethal concentration (LC_{50}) of 2,400 µg/L for the fish species *Pimephales promelas* (fathead minnow)*;* and a 48-h median inhibition of growth concentration (IGC_{50}) of 8,830 µg/L for the ciliated freshwater protozoan *Tetrahymena pyriformis*. Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 5.7 µg/L was obtained. With regard to chronic toxicity, reliable data of a 72-h no observed effect concentration (NOEC) of 28.5 µg/L for growth inhibition in the green algae *P. subcapitata* was obtained. Accordingly, based on this chronic toxicity value and an assessment factor of 100, a predicted no effect concentration (PNEC) of 0.29 µg/L was obtained. The value of 0.29 µg/L obtained from the chronic toxicity to the algae was used as the PNEC for this substance.

The PEC/PNEC ratio was 5 for freshwater bodies and less than 0.007 for seawater. Accordingly, this substance is

considered a candidate for detailed assessment. When the concentration at secondary sampling points for water for public use/freshwater is taken as the PEC for this substance, the PEC/PNEC ratio decreases by an order of magnitude. Accordingly, it is desirable that detailed assessment be carried out centered on elucidation of the detection factors at points where high concentrations are detected.

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)		
Algae (green algae)	Chronic	NOEC Growth inhibition	100	0.29	Freshwater	1.4	5	■
					Seawater	<0.002	<0.007	

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4. Conclusions

	Conclusions	Judgment
Ecological risk	Candidates for further work.	■

〔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.