

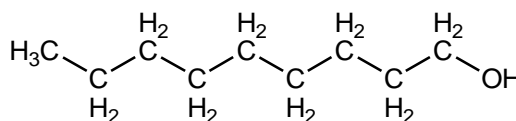
Chemical Substances Control Law Reference No.: 2-217 (Alkanol (C=5–38))

PRTR Law Cabinet Order No.: – (Cabinet Order No. after revision*: 1-319)

Structural Formula:

Molecular Formula: C₉H₂₀O

Molecular Weight: 144.25



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

1. General information

The aqueous solubility of this substance is 140 mg/1000 g (25°C), the partition coefficient (1-octanol/water) ($\log K_{ow}$) is 4.02, and the vapor pressure is 3.8×10^{-3} mmHg (=0.50 Pa) (25°C). The biodegradabilities (aerobic degradation) of tridecyl alcohol and 1-octanol, whose alkyl chain lengths are close to that of this substance, are considered to be good and unfavorable, respectively. Furthermore, 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. Its main applications are as a fine chemical intermediate and as a synthetic flavoring raw material. In addition, it is a volatile substance emitted from plants such as orange, kiwifruit, and nectarine. Production (shipments) and import quantity in fiscal 2004 as alkanols (C=5–38) was 100,000 to <1,000,000 t.

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 about 0.39 µg/L for public freshwater bodies and generally 0.006 µg/L for seawater.

3. Initial assessment of ecological risk

With regard to acute toxicity, the following reliable data were obtained: a 72-h median effective concentration (EC₅₀) of 2,170 µg/L for growth inhibition in the green algae *Pseudokirchneriella subcapitata*; a 48-h EC₅₀ of 361 µg/L for swimming inhibition in the crustacean *Ceriodaphnia* cf. *dubia*; a 96-h median lethal concentration (LC₅₀) of 3,200 µg/L for the fish species *Oryzias latipes* (medaka); and a 48-h median impairment of growth concentration (IGC₅₀) of 24,350 µg/L for *Tetrahymena pyriformis*. Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 3.6 µg/L was obtained. With regard to chronic toxicity, reliable data of a 72-h no observed effect concentration (NOEC) of 307 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 3.1 µg/L was obtained. The value of 3.1 µg/L obtained from the chronic toxicity to the algae was used as the PNEC for this substance.

The PEC/PNEC ratio was 0.1 for freshwater bodies and 0.002 for seawater. Accordingly, data collection is considered required. The PEC/PNEC ratio was greater than 0.1 at one sampling point. For this reason, it is desirable that data be collected for this substance centering on data related to 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	3.1	Freshwater	0.39	0.1	▲
					Seawater	0.006	0.002	

4. Conclusions

	Conclusions	Judgment
Ecological risk	Requiring information collection.	▲

[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.