6	CAS No.: 112-18-5	Substance: *N*,*N*-Dimethyldodecylamine

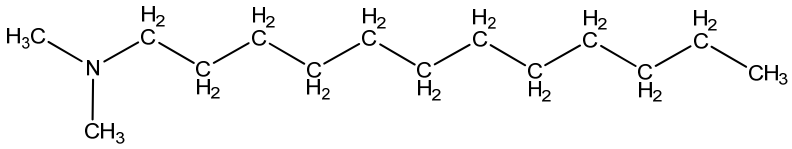
Chemical Substances Control Law Reference No.: 2-176 (*N*,*N*,*N*-Trialkyl (or alkenyl, of which at least one alkyl or alkenyl group is C8–24, and the others are H or C1–5) amine)

PRTR Law Cabinet Order No.: 1-223

Molecular Formula: $C_{14}H_{31}N$

Molecular Weight: 213.40

Structural formula:



1. General information

The aqueous solubility of this substance is 8.6 mg/L (25°C, calculated value), the partition coefficient (1-octanol/water) (log K_{ow}) is 5.5 (calculated value), and the vapor pressure is 0.016 mmHg (2.1 Pa) (25°C, calculated value). Biodegradability (aerobic degradation) is judged to be good. The substance does not have any hydrolyzable groups under environmental conditions.

This substance is designated as a Priority Assessment Chemical Substance, and as 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 of this substance are as a cationic surfactant, amphoteric surfactant, resin processing agent, oil recovery agent, disinfectants, amine oxide and quaternary ammonium salt raw material, flotation reagent, pigment surface treatment agents, pigment flashing agent, manure anticaking agent, and textile softener. The production and import quantity in fiscal 2013 was 6,000 t. The production and import category under the PRTR Law is more than 100 t.

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2. Exposure assessment

Total release to the environment in fiscal 2013 under the PRTR Law was approximately 0.078 t, and all releases were reported. All reported releases were to the atmosphere. In addition, approximately 0.36 t was transferred to waste materials. The sole source of reported releases was the chemical industry. A multi-media model used to predict the proportions distributed to individual media in the environment indicated that in regions where the largest quantities were estimated to have been released to the environment overall or public water bodies in particular, the predicted proportion distributed to the atmosphere was 75.2% and that distributed to soil was 16.3%.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was reported to be around 1.2 µg/L for public freshwater bodies and generally less than 0.0062 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 EC_{50} of 23.5 µg/L for growth inhibition in the green algae *Desmodesmus subspicatus*, a 48-h EC_{50} of 83 µg/L for swimming inhibition in the crustacean *Daphnia magna*, and a 96-h LC_{50} of 570 µg/L for the fish species *Oncorhynchus mykiss* (rainbow trout). Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 0.23 µg/L was obtained.

With regard to chronic toxicity, the following reliable data were obtained: a 72-h NOEC of 2.6 µg/L for growth inhibition in the green algae *D. subspicatus*, and a 21-d NOEC of 36 µg/L for reproductive inhibition in the crustacean *D. magna*. Accordingly, based on these chronic toxicity values and an assessment factor of 100, a PNEC of 0.026 µg/L was obtained.

The value of 0.026 µg/L obtained from the chronic toxicity to the alga was used as the PNEC for this

substance.

The PEC/PNEC ratio is 46 for freshwater bodies and less than 0.2 for seawater; accordingly, the substance is considered as a candidate for further work.

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	Endpoint			Water body	Predicted environmental concentration PEC (μg/L)			
Green algae	Chronic	NOEC growth inhibition	100	0.026	Freshwater	1.2	46	■	■
					Seawater	<0.0062	<0.2		

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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

（○）: Although risk to human health could not be confirmed, collection of further information would not be required.

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