

7	CAS No.: 9002-92-0 (C=12–13) 27306-79-2 (C=14–15) 27731-62-0 (C=13–15)	Substance: Poly(oxyethylene)=alkyl ether
<p>Chemical Substances Control Law Reference No.: 7-97 (Polyoxyalkylene (C2–4, 8) monoalkyl (or alkenyl) (C1–24) ether (n=1–150))</p> <p>PRTR Law Cabinet Order No.*: 1-407</p> <p>Molecular Formula: $C_{m+2n}H_{2+2m+4n}O_{1+n}$ (n indicates number of moles of ethylene oxide added, and m indicates alkyl group chain length. The PRTR Law prescribes m as 12–15, but it does not prescribe n)</p> <p>Molecular Weight: 626.86 ($C_{12}EO_{10}$) (C_{12} means an alkyl group chain length of 12, and EO_{10} means 10 moles of ethylene oxide added)</p> <p>*Note: No. in Revised Cabinet Order enacted on October 1, 2009</p> <p>Structural formula: $H_{2m+1}C_m-O-(CH_2-CH_2-O)_n-H$</p>		
<p>1. General information</p> <p>The aqueous solubility of this substance is more than 10,000 mg/L ($C_{12}EO_{40}$), the partition coefficient (1-octanol/water) (log K_{ow}) is 3.45 ($C_{10}EO_8$), and the vapor pressure is <0.1 mmHg (<13.3 Pa) (20°C, unknown composition). Biodegradability (aerobic degradation) is considered to be good.</p> <p>This substance is designated 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). It is primarily used as a household kitchen and laundry detergent, and it also finds institutional use. It is also used as an emulsifier in cosmetic creams and lotions, as an agricultural chemical adjuvant, and as an emulsifier and dispersant for pharmaceuticals. The production quantity, export quantity and import quantity in 2007 were 120,885 t, 24,134 t, and 3,228 t, respectively (all based on reduced value for pure AE).</p> <hr/> <p>2. Exposure assessment</p> <p>Total release to the environment in fiscal 2007 under the PRTR Law was approximately 18,000 t, of which approximately 180 t or 1% of overall releases were reported. Among reported release destinations, release to public water bodies was the largest. Industry types with large reported releases were the textile industry and chemical industry for public water bodies, and the plastic product manufacturing industry, rubber product manufacturing industry, and pulp & paper and processed paper product manufacturing industry for the atmosphere. This substance is a mixture in which the number of moles of ethylene oxide added and the alkyl chain length vary, and the exact composition is not clear. For this reason, a prediction of distribution by medium was not carried out.</p> <p>The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was around 7.3 µg/L for public freshwater bodies and generally less than 0.264 µg/L for seawater.</p> <hr/> <p>3. Initial assessment of ecological risk</p> <p>With regard to acute toxicity, the following reliable data were obtained: 48-h median effective concentration (EC_{50}) of 2,000–4,000 µg/L for growth inhibition in the green algae <i>Pseudokirchneriella subcapitata</i>; a 48-h EC_{50} of 460 µg/L for swimming inhibition in the crustacean <i>Daphnia magna</i>; and a 96-h median lethal concentration (LC_{50}) of 960 µg/L for the fish species <i>Pimephales promelas</i> (fathead minnow). Also obtained was a 72-h LC_{50} of 4,590 µg/L for the African clawed frog <i>Xenopus laevis</i>. Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no</p>		

effect concentration (PNEC) 4.6 µg/L was obtained.

With regard to chronic toxicity, the following reliable data were obtained: a 21-d no observed effect concentration (NOEC) of 240 µg/L for reproductive inhibition in the crustacean *D. magna*; and a 28-d NOEC of 820 µg/L for growth inhibition in the fish species *P. promelas* (fathead minnow). Accordingly, based on these chronic toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) 2.4 µg/L was obtained. The value of 2.4 µg/L obtained from the chronic toxicity to the crustacean was used as the PNEC for this substance.

The PEC/PNEC ratio was 3 for freshwater bodies and less than 0.1 for seawater. For this reason, this substance is a candidate for conducting more detailed study.

Hazard assessment (basis for PNEC)			Assessment factor	Predicted no effect concentration PNEC (µg/L)	Exposure assessment		PEC/PNEC ratio	Assessment result
Species	Acute/ chronic	Endpoint			Water body	Predicted environmental concentration PEC (µg/L)		
Crustacean <i>Daphnia magna</i>	Chronic	NOEC Reproductive inhibition	100	2.4	Freshwater	7.3	3	■
					Seawater	<0.264	<0.1	

4. Conclusions

	Conclusions	Judgment
Ecological risk	Candidate for conducting more detailed study.	■

[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.