

9	CAS No.: 9036-19-5(<i>o-,m-,p</i> -mixture) 9002-93-1(<i>p</i> -isomer)	Substance: Poly (oxyethylene) octylphenyl ether
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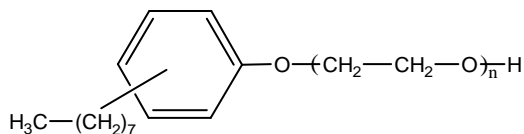
Chemical Substances Control Law Reference No.: 7-172 (Polyoxyalkylene (C 2-4, 8) mono [alkyl or alkenyl (C 1-18) phenyl] ether (n = 1-150))

PRTR Law Cabinet Order No.: 1-308

Structural Formula:

Molecular Formula: $(C_2H_4O)_n C_{14}H_{22}O$ ("n" indicates the average number of ethylene oxide units.)

Molecular Weight: 602.8 (9EO), 1968.4 (40EO) ("9EO" indicates the average number of ethylene oxide units of 9.)



1. General Information

This substance is freely miscible (5-15EO, *p*-isomer), and the vapor pressure is less than 1 mmHg (= less than 133 Pa) (25°C, 10EO, *p*-isomer). This substance is determined to be persistent but not highly bioaccumulative.

This substance is a Type 3 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). It is mainly used for surfactants, grease cutting agents for industrial machines, dispersants of mineral oil, dispersants of pigments and paints, spreading agents that make agricultural chemicals adhere uniformly, emulsifiers of pesticide formulation, industrial detergents for laundry, emulsifiers of pharmaceutical products, quasi-drugs, and cosmetics. The production, exports, and imports as OPE sterling converted values in FY2005 were 954, 207, and zero tons, respectively, and it is categorized as within the 10,000-ton class of production and imports under the PRTR Law.

The added mol number of ethylene oxide of this substance was 9-10 for the most common products, and some other products have a number of approximately 40.

2. Exposure assessment

Total release to the environment in FY2005 under the PRTR Law came to approximately 120 tons, of which approximately 2.3 tons (2% of the total) was reported. Release to public water bodies accounted for a large part of the reported releases. The transfers to waste and sewage were approximately 110 and 10 tons, respectively. Large releases to air were reported by manufacturing industry of plastic products, and to public water bodies, by textile, chemical, and electric machinery and apparatuses manufacturing industries.

When estimated releases are included, release to the soil accounted for the greatest quantity of releases to the environment. Because this substance is a mixture whose average number of ethylene oxide units and substitution position of alkyl group are differ and its composition is unclear, the rate of distribution to each media of the substance was not predicted.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was estimated to be approximately 10 µg/L for freshwater and less than 0.1 µg/L for seawater public water bodies (for both freshwater and seawater bodies, as octylphenyl phenol ethoxylate (total of EO 1-10)).

3. Initial assessment of ecological risk

With regard to acute toxicity, reliable information of a 96-hour median effective concentration (EC₅₀) population change value exceeding 220,000 µg/L was found for the algae *Pseudokirchneriella subcapitata*, a 24-hour median lethal concentration (LC₅₀) value of 7,750 µg/L was found for the crustacea *Balanus amphitrite amphitrite*, a subspecies of *Amphibalanus amphitrite*, and a 96-hour LC₅₀ value of 5,380 µg/L was found for the fish *Pimephales*

promelas (fathead minnow). Accordingly, an assessment factor of 100 was used, and a predicted no effect concentration (PNEC) of 54 µg/L was obtained based on the acute toxicity values. As for chronic toxicity, a 72-hour no observed effect concentration (NOEC) for growth inhibition of green algae *P. subcapitata*, a 21-day NOEC for reproduction of the crustacea *Daphnia magna*, and a NOEC of 1-2 months after hatching for mortality of the fish (fathead minnow) *P. promelas* were 22,000, 4,600, and 960 µg/L, respectively. From these reliable data, a PNEC based on chronic toxicity was determined to be 96 µg/L with an assessment factor of 10. As the PNEC for the substance, a value of 54 µg/L obtained from the acute toxicity for the fish was used.

The PEC/PNEC ratio was 0.2 for freshwater bodies and less than 0.002 for seawater bodies. Accordingly, efforts to gather information are thought to be needed. It would be advisable to review this substance based on the difference of toxicity of average number of ethylene oxide units, and if necessary, measurement of environmental concentration and a collection of toxicity data should be conducted.

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)		
Fish (fathead minnow)	Acute	LC ₅₀ mortality	100	54	Freshwater	10	0.2	▲
					Seawater	<0.1	<0.002	

4. Conclusion

	Conclusions	Judgment
Ecological risk	Information collection is required. It would be advisable to review this substance based on the difference of added mol numbers of ethylene oxide, and if necessary, measurement of environmental concentration and a collection of toxicity data should be conducted.	▲

[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.