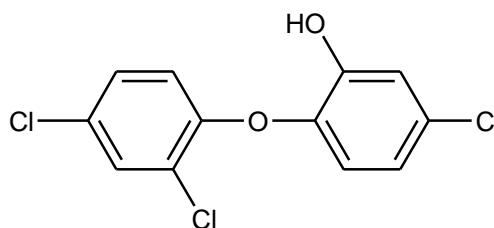| 3	CAS No.: 3380-34-5	Substance: 5-Chloro-2-(2',4'-dichlorophenoxy)phenol

Chemical Substances Control Law Reference No.: 9-922, 9-381

PRTR Law Cabinet Order No.:

Structural Formula:

Molecular Formula: $C_{12}H_7Cl_3O_2$

Molecular Weight: 289.54

1. General information

The aqueous solubility of this substance is 10 mg/L (20°C), the partition coefficient (1-octanol/water) (log K_{ow}) is 4.76, and the vapor pressure is 4×10^{-6} mmHg (=5.33×10^{-4} Pa) (20°C). The biodegradability (aerobic degradation) is characterized by a BOD degradation rate of 0%, and bioaccumulation is thought to be nonexistent or low. In addition, it is stable with regards to hydrolysis in water.

This substance is designated as a Type III Monitoring Chemical Substance under the Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances. Its primary use is an antimicrobial active agent, and it is added to soap, detergent, etc., as a disinfectant. An import quantity estimated at 20 t has been reported.

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2. Exposure assessment

Because this substance is not 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), 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 proportion distributed to soil would be higher.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was estimated to be around 0.035 μg/L for public freshwater bodies, and less than around 0.007 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 2.8 μg/L for growth inhibition in the green algae *Desmodesmus subspicatus*; a 48-h EC_{50} of 270 μg/L for swimming inhibition in the crustacean *Daphnia magna*; a 48-h median lethal concentration (LC_{50}) of 270 μg/L for the fish species *Pimephales promelas* (fathead minnow); and a 7-d EC_{50} of more than 62.5 μg/L was obtained for growth inhibition in the duckweed *Lemna gibba*. Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 0.028 μg/L was obtained. With regard to chronic toxicity, the following reliable data were obtained: a 72-h no observed effect concentration (NOEC) of 1.0 μg/L for growth inhibition in the green algae *Pseudokirchneriella subcapitata*; a 21-d NOEC of 0.34 μg/L for reproductive inhibition in the crustacean *D. magna*; and a 61-d posthatching NOEC of 15.1 μg/L for mortality in the fish species *Oncorhynchus mykiss* (rainbow trout). Accordingly, based on these chronic toxicity values and an assessment factor of 10, a predicted no effect concentration (PNEC) of 0.034 μg/L was obtained. The value of 0.028 μg/L obtained from the acute toxicity to the algae was used as the PNEC for this substance.

The PEC/PNEC ratio was 1.3 for freshwater bodies and less than 0.3 for seawater. Accordingly, this substance is considered to be a candidate for detailed assessment.

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)	Acute	EC_{50} Growth inhibition	100	0.028	Freshwater	0.035	1.3	■
					Seawater	<0.007	<0.3	

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4. Conclusions

	Conclusions	Judgment
Ecological risk	Candidates for further work.	■

〔Risk judgments〕　〇: No need for further work　　▲: Requiring information collection

■: Candidates for further work　　✕: Impossibility of risk characterization

（〇）: Though a risk characterization cannot be determined, there would be little necessity of collecting information.

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