

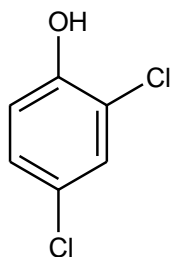
Chemical Substances Control Law Reference No.: 3-903 and 3-930 (dichlorophenol)

PRTR Law Cabinet Order No.*: 2-34

Molecular Formula: C₆H₄Cl₂O

Structural formula:

Molecular Weight: 163.00



*Note: No. in Revised Cabinet Order enacted on October 1, 2009

1. General information

The aqueous solubility of this substance is 4.9×10^3 mg/1000 g (20°C), the partition coefficient (1-octanol/water) ($\log K_{ow}$) is 3.23, and the vapor pressure is 0.0670 mmHg (=8.93 Pa) (25°C). The biodegradability (aerobic degradation) is characterized by a BOD degradation rate of 0%, and bioaccumulation is thought to be nonexistent or low. The substance does not have any hydrolyzable groups.

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. This substance is classified as a Class 2 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 raw material for organophosphate insecticides (ECP, prothiofos) and fungicides (phosdiphen [registration as an agricultural chemical expired on January 12, 1994]), phenoxy herbicides (2,4-PA [and 2,4-D], bifenox [registration as an agricultural chemical expired on January 25, 2007]) and herbicides (oxadiazon). The production and import category under the PRTR Law is 1 t to <100 t.

2. Exposure assessment

Because this substance is not a Class 1 Designated Chemical Substance 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 proportion distributed to soil would be greater.

The predicted maximum exposure to humans via inhalation, based on general environmental atmospheric data, was less than around $0.01 \mu\text{g}/\text{m}^3$, albeit based on past data.

The predicted maximum oral exposure was estimated to be around $0.072 \mu\text{g}/\text{kg}/\text{day}$ from groundwater, food, and soil data, and around $0.097 \mu\text{g}/\text{kg}/\text{day}$ from public freshwater body, food, and soil data. The predicted maximum oral exposure of this substance was estimated to be around $0.097 \mu\text{g}/\text{kg}/\text{day}$.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was around $0.62 \mu\text{g}/\text{L}$ for public freshwater bodies and generally less than $0.01 \mu\text{g}/\text{L}$ for seawater.

3. Initial assessment of health risk

This substance is escharotic to eyes, skin and respiratory tracts, and it is escharotic also in the case of its oral intakes. Its exposure in high concentrations may result in mortality. When exposed even to a small quantity of its molten or

liquidized material, most of it will be absorbed through skin, and this may result in death immediately. When inhaled, it will cause burning sensation, sore throat, coughing and short breath. When orally taken, burning sensation, stomachache, thrill, torpor, twitch, breathlessness, shock or collapse will occur. When attached to skin, it will turn to be red, there will occur pain and blisters will be produced. When taken into eyes, they will turn to be red, there will occur pain, and severe thermal injury will take place.

Sufficient information could not be obtained on its carcinogenicity, and its initial assessment was conducted on the basis of data on its non-carcinogenic effects.

As for its oral exposure, NOAEL of 0.3 mg/kg/day (for suppressed delayed-type hypersensitivity reaction) obtained from reproductive and developmental toxicity tests for rats was identified as its ‘non-toxic level*’. For inhalation exposure, its ‘non-toxic level*’ could not be established.

As for its oral exposure, its maximum exposure was estimated to be around 0.097 µg/kg/day, when intakes of freshwater from public water supply and intakes of food and soil were assumed. Its margin of exposure (MOE) would be 310, when calculated from its ‘non-toxic level*’ of 0.3 mg/kg/day and its estimated maximum exposure, and then divided by 10 due to the fact that the ‘non-toxic level*’ was obtained from animal experiments. No further action will be required at the moment to assess health risk from oral exposure to this substance.

As for inhalation exposure to this substance, its ‘non-toxic level’ could not be identified, and its health risk could not be assessed. Its half-life in the atmosphere is 5.1 to 51 days. When released to the atmosphere, most of it goes into media other than the atmosphere. The ‘non-toxic level’ for its oral exposure, if 100% absorption is assumed for it, turns to be the ‘non-toxic level’ of 1 mg/m³ for its inhalation exposure. When combined with its estimated maximum concentration of around less than 0.01 µg/m³ in the ambient air, MOE will be calculated to be more than 10,000. Collection of information on its inhalation exposure to assess health risk associated with exposure to it in the ambient air would not be required.

Information of toxicity				Exposure assessment		Result of risk assessment			Judgment
Exposure Path	Criteria for risk assessment	Animal	Criteria for diagnoses (endpoint)	Exposure medium	Predicted maximum exposure quantity and concentration				
Oral	‘Non-toxic level’ 0.3 mg/kg/day	Rats	suppressed delayed-type hypersensitivity reaction	Drinking water	— µg/kg/day	MOE	—	×	○
				Freshwater, food, and soil	0.097 µg/kg/day	MOE	310	○	
Inhalation	‘Non-toxic level’ — mg/m ³	—	—	Ambient air	0.01 µg/m ³	MOE	—	×	(○)
				Indoor air	— µg/m ³	MOE	—	×	×

Non-toxic level *

- When a LOAEL is available, it is divided by 10 to obtain a level equivalent to NOAEL.
- When an adverse effect level for the short-term exposure is available, it is divided by 10 to obtain a level equivalent to an adverse effect level for the long-term exposure.

4. Initial assessment of ecological risk

An initial assessment of ecological risk posed to aquatic organisms was not carried out for this substance because a water quality target value related to the preservation of aquatic organisms has been derived.

5. Conclusions

	Conclusions		Judgment
Health risk	Oral exposure	No further action required.	○
	Inhalation exposure	Risk can not be assessed. Collection of information would not be required.	(○)

Ecological risk	An initial assessment of ecological risk posed to aquatic organisms was not carried out for this substance because a water quality target value related to the preservation of aquatic organisms has been derived.	(—)
<p>[Risk judgments] ○: No need for further work ▲: Requiring information collection</p> <p>■: Candidates for further work ×: Impossibility of risk characterization</p> <p>(○) : Though a risk characterization cannot be determined, there would be little necessity of collecting information.</p> <p>(▲) : Further information collection would be required for risk characterization.</p>		