

4	CAS No.: 75-00-3	Substance: Chloroethane
<p>Chemical Substances Control Law Reference No.: 2-53  PRTR Law Cabinet Order No.: 1-74  Molecular Formula: C<sub>2</sub>H<sub>5</sub>Cl                      Structural Formula:  Molecular Weight: 64.51                              <b>CH<sub>3</sub>—CH<sub>2</sub>—Cl</b></p>		
<p><b>1. General information</b></p> <p>The aqueous solubility of this substance is 5.68 x 10<sup>3</sup> mg/L (20°C), and the partition coefficient (1-octanol / water) (log Kow) is 1.43. The vapor pressure is 1.01 x 10<sup>3</sup> mmHg (= 1.35 x 10<sup>5</sup> Pa) (20°C). The biodegradability of the substance is 1% by BOD degradation rate, and the accumulation factor is thought to be zero or very low. The hydrolyzability is a half-life of 38 days at 25°C (pH = 7).</p> <p>This substance is a Type 2 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 used primarily as a raw material for other chemical substances, as a raw material for the medium (triethylaluminum) used to manufacture polyethylene, as a foaming agent for expandable polystyrene, and as a raw material for ethyl cellulose. Production and import quantities under the PRTR Law came to 1,000 tons.</p> <p>-----</p> <p><b>2. Exposure assessment</b></p> <p>Total release to the environment in FY2003 under the PRTR Law came to approximately 1,300 tons, all of which was reported. Moreover, all of the reported quantity was released to the atmosphere. Plastic products and chemical Industry accounted for large quantities of the reported release.</p> <p>As release to the environment comprised only release to the atmosphere, the distribution into each environmental medium as determined by means of a multimedia model was 100.0% atmospheric release.</p> <p>The predicted maximum exposure concentration for inhalation exposure to human beings was approximately 0.37 µg/m<sup>3</sup>. The predicted maximum oral exposure was assessed at more than 0.0012 µg/kg/day but less than 28 µg/kg/day.</p> <p>The predicted environmental concentration (PEC) that indicates exposure to aquatic organisms was estimated to be approximately 0.21 µg/L for freshwater and 0.5 µg/L for seawater public water bodies.</p> <p>-----</p> <p><b>3. Initial assessment of health risk</b></p> <p>Even brief exposure to this substance may result in slight irritation of the eyes, skin and respiratory tract, and rapid vaporization of the liquid may also cause frostbite. The substance also has a narcosis, and exposure to high concentrations may result in unconsciousness, arrhythmia and death.</p> <p>There is insufficient information regarding the carcinogenicity of the substance, and it is not possible to make a judgment as to whether it causes cancer in humans. For this reason, an initial assessment of the substance was conducted based on information of non-carcinogenic effects.</p> <p>As the 'Non-toxic level' was observed, used to estimate the margin of exposure (MOE), it was not possible to establish a value for oral exposure. For inhalation exposure, a value of 1,000 mg/m<sup>3</sup> was established by correcting the NOAEL of 4,000 mg/m<sup>3</sup> (delay in fetal ossification), obtained from mouse reproductive and developmental toxicity testings, to match the exposure circumstances.</p> <p>The health risk with respect to oral exposure could not be determined. However, the substance is only released to the atmosphere, and virtually all distribution is also predicted to be in the atmosphere. Moreover, as a reference, if the</p>		

rate of absorption is postulated to be 100% and the 'Non-toxic level' for inhalation exposure is converted to the 'Non-toxic level' for oral exposure, a value of 300 mg/kg/day is obtained. The MOE assessed from this value and the predicted maximum exposure is more than 1,100,000 and less than 25,000,000. Accordingly, there is thought to be little need to gather information in order to evaluate the health risk from oral exposure to this substance.

With regard to inhalation exposure, the predicted maximum exposure concentration in ambient air was estimated at approximately 0.37  $\mu\text{g}/\text{m}^3$ . As the 'Non-toxic level' 1,000  $\text{mg}/\text{m}^3$  and the predicted maximum exposure concentration were established by means of animal testing, the value was divided by 10 to derive an MOE of 270,000. Accordingly, there is thought to be no need at this time for assessment of the health risk with regard to inhalation exposure to the substance in the ambient air.

Knowledge of toxicity				Exposure assessment		Result of risk assessment			Judgment
Exposure path	Guidelines for risk assessment	Animal	Impact assessment guideline (endpoint)	Exposure medium	Predicted maximum exposure quantity and concentration				
Oral	No observed adverse effect level — mg/kg/day	—	—	Drinking water / food	— $\mu\text{g}/\text{kg}/\text{day}$	MOE	—	×	×
				Groundwater / food	0.012 – 28.0000 $\mu\text{g}/\text{kg}/\text{day}$	MOE	—	×	
Inhalation	No observed adverse effect level 1,000 $\text{mg}/\text{m}^3$	Mouse	Delay in fetal ossification	Ambient air	0.37 $\mu\text{g}/\text{m}^3$	MOE	270,000	○	○
				Indoor air	— $\mu\text{g}/\text{m}^3$	MOE	—	×	×

#### 4. Initial assessment of ecological risk

As the information needed for an initial assessment of ecological risk could not be obtained, no determination of ecological risk can be made. It is necessary to conduct ecological impact testing and otherwise conduct studies to improve knowledge relating to ecotoxicity.

Hazard assessment (basis for PNEC)			Assessment factor	Predicted no effect concentration PNEC ( $\mu\text{g}/\text{L}$ )	Exposure assessment		PEC/PNEC ratio	Result of assessment
Species	Acute / chronic	Endpoint			Water body	Predicted environmental concentration PEC ( $\mu\text{g}/\text{L}$ )		
—	—	—	—	—	Freshwater	0.21	—	×
					Seawater	0.5	—	

#### 5. Conclusions

	Conclusions		Judgment
Health risk	Oral exposure	Risk cannot be determined. There is thought to be little need to gather information, etc.	×
	Inhalation exposure	Assessment with regard to the ambient air is thought to be unnecessary at this time.	○
Ecological risk	Impossible of risk characterization. It is necessary to conduct ecological impact testing and otherwise conduct studies to improve knowledge relating to ecotoxicity.		×

[Risk judgments] ○: No need of further work ▲: Requiring information collection

■: Candidates for further work ×: Impossible of risk characterization