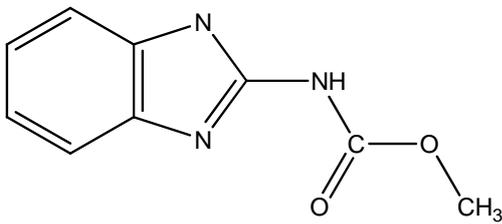


4	CAS No: 10605-21-7	Substance: Methyl benzimidazol-2-yl carbamate
Chemical Substances Control Law Reference No.: 5-465		
PRTR Law Cabinet Order: 2-95		
Molecular Formula: C <sub>9</sub> H <sub>9</sub> N <sub>3</sub> O <sub>2</sub>		
Molecular Weight: 191.19		
		Structural formula:
		

### 1. General information

The aqueous solubility of this substance is 5.8 mg/L (20°C), the partition coefficient (1-octanol/water) (log  $K_{ow}$ ) is 1.52, and the vapor pressure is  $4.88 \times 10^{-10}$  mmHg (=  $6.51 \times 10^{-8}$  Pa) (20°C). Biodegradability (aerobic degradation) is characterized by a BOD degradation rate of 0% and bioaccumulation is judged to be non-existent or low. Its half-life for hydrolysis exceeds 35 d at 22°C and a pH of 5–7; is 65 d in warm water (25±1°C) at a pH of 9 (test duration, 24 d); and is 124 d at 22°C and a pH of 9. Some evidence indicates that the substance does not hydrolyze in warm water (25±1°C; pH = 5 and 7; test duration, 24 d).

This substance is designated 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). The main use of this substance is as a fungicide for one-component polyurethane sealants, paper, paints, and wood. The production and import quantity in fiscal 2012 was less than 1000 t. The production and import category under the PRTR Law is 1 to <100 t.

### 2. Exposure assessment

Because this substance is not classified as a Class 1 Designated Chemical Substance under the PRTR Law, release and transfer quantities could not be obtained. Predictions of proportions distributed to individual media by 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 largest.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was around 0.12 µg/L for public freshwater bodies and around 0.015 µg/L for seawater. A maximum of 5.6 µg/L for public freshwater bodies and seawater has been reported in an environmental survey of a limited area.

### 3. Initial assessment of ecological risk

With regard to acute toxicity, the following reliable data were obtained: a 72-h  $EC_{50}$  of more than 2,700 µg/L for growth inhibition in the green alga *Pseudokirchneriella subcapitata*, a 48-h  $EC_{50}$  of 160 µg/L for swimming inhibition in the crustacean *Daphnia magna*, and a 96-h  $LC_{50}$  of 10 µg/L for the fish species *Ictalurus punctatus* (American catfish). Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 0.1 µg/L was obtained.

With regard to chronic toxicity, the following reliable data was obtained: a 72-h NOEC of 1,000 µg/L for growth inhibition in the green alga *P. subcapitata*. Accordingly, based on this chronic toxicity value and an assessment factor of 100, a PNEC of 10 µg/L was obtained.

The value of 0.1 µg/L obtained from the acute toxicity to the fish species was used as the PNEC for this substance.

The PEC/PNEC ratio is 1.2 for freshwater bodies and 0.15 for seawater. Accordingly, the substance is

considered as a candidate for further work.

Hazard assessment (basis for PNEC)			Assessment coefficient	Predicted no effect concentration PNEC ( $\mu\text{g/L}$ )	Exposure assessment		PEC/PNEC ratio	Judgment based on PEC/PNEC ratio	Assessment result
Species	Acute/ chronic	Endpoint			Water body	Predicted environmental concentration PEC ( $\mu\text{g/L}$ )			
Fish <i>Ictalurus punctatus</i>	Acute	LC <sub>50</sub> mortality	100	0.1	Freshwater	0.12	1.2	■	■
					Seawater	0.015	0.15		

#### 4. Conclusions

	Conclusions	Judgment
Ecological risk	Candidates for further work	■

[Risk judgments] ○: No need for further work      ▲: Requiring information collection  
 ■: Candidates for further work      ×: Impossibility of risk characterization  
 (○) : Although risk characterization could not be confirmed, collection of further information would not be required.  
 (▲) : Further information collection would be required for risk characterization.