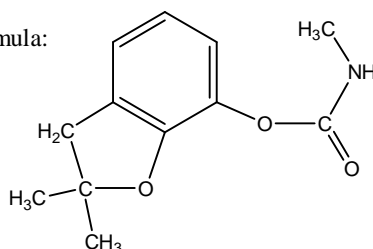


11	CAS No.:1563-66-2	Substance: 2,3-Dihydro-2,2-dimethyl-7-benzo[b]furanyl N-methylcarbamate (Synonyms: Carbofuran)
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Chemical Substances Control Law Reference No.: 5-5540
PRTR Law Cabinet Order No.: 1-327

Molecular Formula: C₁₂H₁₅NO₃
Molecular Weight: 221.26

Structural Formula:



1. General Information

The aqueous solubility of this substance is 320 mg/L (19°C) and the partition coefficient (1-octanol/water) (log Kow) is 2.32. The vapor pressure is 4.85×10^{-6} mmHg (= 6.47×10^{-4} Pa) (19°C).

This substance is a Type 2 and 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). This substance is used as pesticide abroad, but has not been domestically registered as an agricultural chemical and its use for this purpose is unknown. The total of production and imports in FY2006 was 140 tons and it was categorized as within the 100-ton class of production and imports under the PRTR Law.

The substance is considered to be generated by degradation of carbosulfan (pesticide), benfuracarb (pesticide), and furathiocarb (pesticide, expired on January 13, 2006).

2. Exposure assessment

Total release to the environment in FY2005 under the PRTR Law came to 0 tons. The transfers to waste were 0.1 tons. Total release of carbosulfan to the environment in FY2005 under the PRTR Law came to 24 tons, all of which was estimated. The transfers to waste were 0.13 tons. The releases and transfers to sewage of this substance based on the PRTR Law were not obtained. The rate distribution to each media was predicted using the Mackay-Type Level III Fugacity Model to reveal that distribution to soil and water bodies were larger when equal amounts were released to air, water, and soil.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was estimated to be approximately 0.04 µg/L for freshwater and less than 0.01 µg/L for seawater public water bodies.

3. Initial assessment of ecological risk

With regard to acute toxicity, reliable information of a 96-hour median inhibition concentration (IC₅₀) population change value of 204,000 µg/L was found for the algae *Chlorella pyrenoidosa*, a 96-hour median effective concentration (EC₅₀) immobilization value of 1.5 µg/L was found for the crustacea *Cancer magister* (dungeness crab), a 96-hour median lethal concentration (LC₅₀) value of 164 µg/L was found for the fish *Salvelinus namaycush* (lake trout), and a 24-hour LC₅₀ value of 27.2 µg/L was found for another organism, the chironomid *Chironomus riparius*. Accordingly, an assessment factor of 100 was used, and a predicted no effect concentration (PNEC) of 0.015 µg/L was obtained based on the acute toxicity values. With regard to chronic toxicity, reliable information of a 7-day no observed effect concentration (NOEC) for mortality of the crustacea *Ceriodaphnia dubia* (water flea) was 1.3 µg/L, and a 19-week NOEC for mortality of the fish *Cyprinodon variegatus* (Cyprinodontidae) was 15 µg/L. Accordingly, an assessment factor of 100 was used, and a PNEC value of 0.013 µg/L was obtained based on the chronic toxicity

values. As the PNEC for the substance, a value of 0.013 µg/L obtained from the chronic toxicity for the crustacea was used.

The PEC/PNEC ratio was 3 for freshwater bodies and less than 0.8 for seawater bodies. This substance is thought to be a candidate for further work.

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)		
Crustacea (water flea)	Chronic	NOEC mortality	100	0.013	Freshwater	0.04	3	■
					Seawater	<0.01	<0.8	

4. Conclusion

	Conclusions	Judgment
Ecological risk	This substance is a candidate for further work.	■

[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.