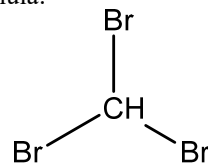| 3	CAS No.: 75-25-2	Substance: Bromoform

Chemical Substances Control Law Reference No.: 2-40

PRTR Law Cabinet Order No.: 2-66

Molecular Formula: $CHBr_3$

Molecular Weight: 252.73

Structural Formula:

1.General information

The aqueous solubility of this substance is 3×10^3 mg/1,000 g (25°C), the partition coefficient (1-octanol/water) (log K_{ow}) is 2.38, and the vapor pressure is 5.6 mmHg (=750 Pa) (25°Ç). The biodegradability (aerobic degradation) is characterized by a GC degradation rate of 0%, and bioaccumulation is thought to be nonexistent or low.

This substance is classified as a Class 2 Designated Chemical Substance under the PRTR Law. The main uses of this substance are in geological analysis and sink-float separation. The production and import quantity in fiscal 2015 was not disclosed because the number of reporting businesses was not more than two. The production and import quantity in fiscal 2016 was not reported. The production and import category under the PRTR Law is more than 1 t and less than 100 t.

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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 use of a Mackay-type level III fugacity model indicate that if equal quantities were released to the atmosphere, water bodies, and soil, the proportion distributed to water bodies and soil would be largest.

Predicted environmental concentrations (PEC) for water quality could not be set as assessment values err on the side of caution due to lack of data. However, using measurements of drinking water sourced from surface water, lake water and dam reservoir water for the PEC gives a value of 5 µg/L for freshwater. Further, past data, albeit surveyed for a limited area, indicate a maximum value of around 7 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 48-h EC_{50} of 240 µg/L for growth inhibition in the halophile green micro-alga *Dunaliella salina*, a 96-h LC_{50} of 26,000 µg/L for the crustacean *Farfantepenaeus aztecus* (penaeid shrimp), and a 96-h LC_{50} of 7,100 µg/L for the fish species *Cyprinodon variegatus* (sheepshead minnow). Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 2.4 µg/L was obtained.

With regard to chronic toxicity, the following reliable data were obtained: A 28-d of NOEC of 4,800 µg/L for embryo and post-hatch mortality in the fish species *C. variegatus* (sheepshead minnow). Accordingly, based on this chronic toxicity value and an assessment factor of 100, a PNEC of 48 µg/L was obtained.

The value of 2.4 µg/L obtained from the acute toxicity to the alga was used as the PNEC for this substance. Data to determine the predicted environmental concentration (PEC) of this substance could not be obtained. Accordingly, ecological risk could not be determined. However, albeit data for a limited area, a maximum concentration of around 7 µg/L was detected for public seawater and the ratio of this concentration to the PNEC is 2.9. Further, using measurements of drinking water sourced from surface water, lake water and dam reservoir water for the PEC gives a

value of 5 µg/L for freshwater and the ratio to the PNEC is 2.1. Furthermore, obtaining an even lower toxicity value for algae, which forms the basis for derivation of the PNEC, than that reported above was considered a possibility; accordingly, efforts to collect data are needed, and environmental concentration data needs to be augmented taking into consideration emission sources.

Hazard assessment (basis for PNEC)			Assessment coefficient	Predicted no effect concentration PNEC (µg/L)	Exposure assessment		PEC/ PNEC ratio	Assessment result
Species	Acute/ chronic	Endpoint			Water body	Predicted environmental concentration PEC (µg/L)		
Green algae	Acute	EC_{50} growth inhibition	100	2.4	Freshwater	—	—	(▲)
					Seawater	—	—	

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4. Conclusions

	Conclusions	Judgment
Ecological risk	Further efforts to collect data required based on comprehensive review of existing relevant data.	(▲)

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

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

(▲) : Further efforts to collect data required based on comprehensive review of existing relevant data

(■) : Candidate for further work based on comprehensive review of existing data