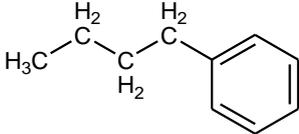


8	CAS No.: 104-51-8	Substance: <i>n</i> -Butylbenzene
Chemical Substances Control Law Reference No.: 3-11 (Butylbenzene), 3-21 ( <i>n</i> -Alkylbenzene (C=3–36))		
PRTR Law Cabinet Order No.:		
Molecular Formula: C <sub>10</sub> H <sub>14</sub>	Structural Formula:	
Molecular Weight: 134.22		

### 1. General information

The aqueous solubility of this substance is 13.8 mg/1000 g (25°C), the partition coefficient (1-octanol/water) (log  $K_{ow}$ ) is 4.26, and the vapor pressure is 1.13 mmHg (=150 Pa) (25°C). Its biodegradability (aerobic degradation) is characterized by a degradation rate of 72–80%. The substance does not have any hydrolyzable groups.

The main applications of this substance are as a synthetic intermediate and for liquid crystal manufacturing. The production (shipments) and import quantity in fiscal 2004 as *n*-alkyl benzene (C=3–36) were 100,000 to <1,000,000 t.

### 2. Exposure assessment

Because this substance is not 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), 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 proportions distributed to soil and water bodies would be higher.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was estimated to be around 0.093 µg/L for public freshwater bodies and less than around 0.01 µg/L for seawater.

### 3. Initial assessment of ecological risk

With regard to acute toxicity, the following reliable data were obtained: a 72-h median effective concentration (EC<sub>50</sub>) of 15,90 µg/L for growth inhibition in the green algae *Pseudokirchneriella subcapitata*; a 48-h EC<sub>50</sub> of 340 µg/L for swimming inhibition in the crustacean *Daphnia magna*; and a 96-h median lethal concentration (LC<sub>50</sub>) of 3,330 µg/L for the fish species *Oryzias latipes* (medaka). Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 3.4 µg/L was obtained. With regard to chronic toxicity, the following reliable data were obtained: a 72-h no observed effect concentration (NOEC) of 424 µg/L for growth inhibition in the green algae *P. subcapitata*; and a 21-d NOEC of 332 µg/L for reproductive inhibition in the crustacean *D. magna*. Accordingly, based on these chronic toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 3.3 µg/L was obtained. The value of 3.3 µg/L obtained from the chronic toxicity to the crustacean was used as the PNEC for this substance.

The PEC/PNEC ratio was 0.03 for freshwater bodies and less than 0.003 for seawater. Accordingly, further work is thought to be unnecessary at this time.

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)		
Crustacean (water flea)	Chronic	NOEC Reproductive inhibition	100	3.3	Freshwater	0.093	0.03	○
					Seawater	<0.01	<0.003	

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**4. Conclusions**

	Conclusions	Judgment
Ecological risk	No need 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.