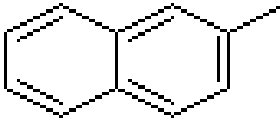


**SIDS INITIAL ASSESSMENT PROFILE**

<b>CAS No.</b>	91-57-6
<b>Chemical Name</b>	2-methylnaphthalene
<b>Structural Formula</b>	

**SUMMARY CONCLUSIONS OF THE SIAR****Human Health**

Following absorption, 2-Methylnaphthalene enters the systemic circulation and is widely distributed to liver and other organs. The distribution to the tissues was similar regardless of exposure routes. 2-Methylnaphthalene is metabolised to 2-naphthuric acid and 2-naphthoric acid after oral administration. 2-Methylnaphthalene is cleared from the body within 1-3 days via urinary excretion

2-Methylnaphthalene has a low acute toxicity. Dermal LD<sub>50</sub> values are greater than 2,000 mg/kg bw in rats [OECD TG 402], an oral LD<sub>50</sub> value is 4050 mg/kg in rats, a inhalation RD<sub>50</sub> (concentration depressing the respiratory rate to 50%) value is considered 67 mg/m<sup>3</sup> in mice.

No information is available on the irritation and sensitization potential of 2-methylnaphthalene.

In the chronic oral dietary study in mice, mortality was observed in males and females at all dose groups. Body weight gains were decreased in males of 113.8 mg/kg/day group. 2-methylnaphthalene revealed systemic effects at all dose levels on kidney and brain weights in males. The most sensitive effects were neutral fat level and pulmonary alveolar proteinosis at all treated groups. A LOAEL of 54.3 and 50.3 mg/kg/day 2-methylnaphthalene (0.075% in diet) was noted in males and females respectively.

In sub-chronic dermal examinations in B6C3F<sub>1</sub> mice (50-week), methylnaphthalene (1-methyl and 2-methylnaphthalene mixture) revealed some pulmonary toxicity at all dose levels (118.8 or 237.6 mg/kg/day) with proteinosis and increased cholesterol and dipalmitoylglycerophosphocholine contents in the lung. The LOAEL of methylnaphthalene was estimated to be 29.7 mg/kg bw/day in female mice based on the increase in lipid pneumonia.

2-Methylnaphthalene did not induce reverse mutations in *Salmonella typhimurium* TA 97, 98, 100 and 1535 regardless of metabolic activation. In mammalian *in vitro* systems, 2-methylnaphthalene did not induce chromosomal aberrations in Chinese hamster lung cells. No information is available on *in vivo* genotoxicity.

2-Methylnaphthalene in diet showed no oncogenic potential in mice after daily oral exposure for 81 weeks.

There is no standard study for reproductive toxicity. The only available information comes from histopathological investigations of reproductive tissues in repeated dose toxicity. No adverse histopathological changes in gonads were observed in repeated dose dietary study (81 weeks) at the highest dose tested (113.8 mg/kg/day and 107.6 mg/kg/day in male and female mice, respectively) in mice.

There is no information available for 2-methyl naphthalene developmental toxicity. The only information available comes from standard developmental toxicity studies conducted with structurally related substance, naphthalene. 2-methyl naphthalene is anticipated to have similar toxicokinetic and toxicodynamic properties to naphthalene. Therefore, developmental toxicity studies with naphthalene are used as supporting information. Prenatal developmental

toxicity of naphthalene following oral application was investigated in rats and rabbits. The exposure to naphthalene via oral route led to maternal toxicity at the high concentrations (150 or 450 mg/kg/day) and suggested the signs of central nervous toxicity and body weight changes. The NOAEL for maternal toxicity was 50 mg/kg/day and the NOAEL for fetal developmental toxicity was 450 mg/kg/day, the highest dose. Based on the studies conducted with naphthalene, 2-methyl naphthalene is not predicted to be a developmental toxicant. Additional studies on the developmental toxicity are not considered to be necessary due to low exposure.

## Environment

2-Methylnaphthalene is a white solid. It has a melting point of 34.6°C, a boiling point of 241.1°C, a density of 1.0058 g/cm<sup>3</sup> at 20°C, a water solubility of 24.6 mg/L at 25°C, a log K<sub>OW</sub> value of 3.86 at 25°C. A vapour pressure of 0.055 mmHg at 25°C, and a Henry's law constant of 5.18×10<sup>-4</sup> atm m<sup>3</sup>/mole at 25°C designate this substance is semi-volatile.

2-Methylnaphthalene distributes in environmental compartments according to a fugacity level III model as follows: 2-methylnaphthalene is mainly distributed to soil (98.3%). If the substance is emitted to air, it will partition into air (51.1%) and soil (43.8%), and if it is released to water, it will remain in water (72.8%). If it is released to soil, it will mainly remain in soil (99.8%). If released to soil, 2-methylnaphthalene is expected to have slight to no mobility based upon K<sub>OC</sub> values ranging from 4400 to 8500. A Henry's Law constant of 5.18×10<sup>-4</sup> atm m<sup>3</sup>/mole at 25°C suggests that volatilization of 2-methylnaphthalene from environmental waters may be significant.

2-Methylnaphthalene was readily biodegradable in activated sludge (61.9% biodegradation in 28-d according to OECD TG 301C). Vapour-phase 2-methylnaphthalene is degraded in the atmosphere via the reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 7.4 hours. The direct aqueous photolysis half-life for midday, midsummer sunlight at 40 deg N latitude was predicted to be 54 hours.

2-Methylnaphthalene is moderately bioaccumulative (BCF 100-895 measured in fish muscle tissues in three studies).

The following studies for aquatic organisms are available:

Fish ( <i>Oncorhynchus mykiss</i> ):	LC <sub>50</sub> (96 h) = 1.46 mg/L (measured concentration)
Invertebrates ( <i>Daphnia magna</i> ):	EC <sub>50</sub> (48 h) = 1.42-2.99 mg/L (measured concentration)
Green algae ( <i>Pseudokirchneriella subcapitata</i> ):	E <sub>r</sub> C <sub>50</sub> (72 h) = 2.3 mg/L (measured concentration), E <sub>b</sub> C <sub>50</sub> (72 h) = 0.72 mg/L

## Exposure

The estimated amount of production for 2-methylnaphthalene was 4183 tons in the Republic of Korea in 2002.

2-Methylnaphthalene is produced as a by-product (0.14%) during the production of naphthalene in the chemical manufacturing industry in the Republic of Korea. This substance's production and use as a synthetic intermediate may result in its release to the environment through waste streams. This chemical is a product of combustion and can be released to the environment via natural fires associated with lightning, volcanic activity, and spontaneous combustion. Monitoring data indicate that consumers would be exposed to 2-methylnaphthalene via the food as a volatile component of cassava and cooked meat (mutton, beef, chicken and pork) etc., drinking water, and dermal contact with this chemical and products containing 2-methylnaphthalene. The 2-methylnaphthalene contents are 2.8-49.2 ppb in assorted vegetables and 344.3-4,800.5 ppb in crab meat.

However, occupational and consumer exposures are expected to be negligible in the sponsor country, because 2-methylnaphthalene is produced in a closed system as a by-products and therefore, a direct exposure is not likely to occur from final products in the sponsored country.

**RECOMMENDATION AND RATIONALE FOR THE RECOMMENDATION AND NATURE OF FURTHER WORK RECOMMENDED**

**Human health:** The chemical is of low priority for further work. The chemical has possible toxicity to human health (acute toxicity via inhalation and repeated dose toxicity). Based on the data presented by the sponsor country, exposure is anticipated low. Countries may desire to investigate any exposure scenarios that were not presented by the sponsor country.

**Environment:** The chemical is a candidate for further work. The chemical has properties indicating a hazard for the environment (acute aquatic toxicity to fish, invertebrates and algae). Member countries are invited to perform an exposure assessment, and if necessary, a risk assessment.