## SIDS INITIAL ASSESSMENT PROFILE

CAS No.	105-05-5
Chemical Name	Benezene, 1,4-diethyl-
Structural Formula	$C_2H_5$ $C_2H_5$ $C_2H_5$
CONCLUSIONS AND RECOMMENDATIONS	

It is currently considered of low potential risk and low priority for further work.

# SHORT SUMMARY WHICH SUPPORTS THE REASONS FOR THE CONCLUSIONS AND RECOMMENDATIONS

#### Exposure

1,4-Diethylbenzene is a volatile liquid. Its production volume is ca. 1,300 tonnes/year in 1990 - 1992 in Japan and 1,200 tonnes/year were exported to the USA. This chemical is used as a solvent in closed systems. This chemical is stable in neutral, acidic or alkaline solution, and is considered to be "not readily biodegradable" (OECD TG 301C; 0 % by BOD; 0-2 % by GC after 28 days). Experimental BCF values (OECD TG 305) of the chemical are 320 – 629 in carp after 6 weeks.

PECs have been calculated based on a fugacity level III model considering its physico-chemical properties (e.g. molecular weight, water solubility, vapour pressure and partition coefficient). The estimated environmental concentrations were  $1.5 \times 10^{-8}$  mg/l (air),  $4.9 \times 10^{-6}$  mg/l (water),  $5.4 \times 10^{-4}$  mg/kg (soil),  $4.6 \times 10^{-3}$  mg/kg (sediment).

No monitoring data at the work place or the environment have been reported. The chemical is used in closed systems, and no data for consumer use are available. Based on the physico-chemical properties, the total exposed dose indirectly through the environment was estimated to be  $8.8 \times 10^{-4}$  mg/man/day. Also, the daily intake through drinking water is estimated to be  $9.7 \times 10^{-6}$  mg/man/day and through fish is calculated to be  $5.7 \times 10^{-4}$  mg/man/day.

#### Environment

For the environment, various NOEC and LC<sub>50</sub> values were gained from test results; 96 h LC<sub>50</sub> = 1.8 mg/l (acute fish); 24 h EC<sub>50</sub> = 32 mg/l (acute daphnia); 72 h EC<sub>50</sub> = 29 mg/l (algae); 21 d NOEC = 0.93 mg/l (long-term daphnia reproduction). As the lowest chronic toxicity result, the 21 d-NOEC (reproduction) for *Daphnia magna* (0.93 mg/l) were adopted. As assessment factor of 100 is applied. Thus the PNEC of 1,4-diethylbenzene is 0.0093 mg/l. Since the PEC is lower than the PNEC, the environmental risk is presumed to be low.

### Human Health

The chemical showed no genotoxic effects in bacteria and chromosomal aberration test in vitro.

In a combined repeat dose and reproductive/developmental toxicity screening test (OECD TG 422), increases of liver and kidney weights were observed at the dose level of 750 mg/kg/day and 150 mg/kg/day. In relation to the increase of liver weights, increases of incidence of brown colored livers and enlargement of the livers were observed at the highest dose (750 mg/kg/day) with histopathological findings of swelling of liver cells. For reproductive/developmental toxicity end-points, there were no effects observed concerning mating, fertility and oestrus cycle and also for dams during the pregnancy and lactation period. Therefore, the NOEL was 30 mg/kg/day for repeated dose toxicity and 750 mg/kg/day for reproductive toxicity.

The total exposure dose indirectly through the environment was estimated to be  $8.8 \times 10^{-4}$  mg/man/day. Also, the daily intake through drinking water is estimated as 9.7 x  $10^{-6}$  mg/man/day and through fish is calculated as 5.7 x  $10^{-4}$  mg/man/day. For human health, the margins of safety by indirect exposure from fish or drinking water are very large. Therefore, health risk is presumed to be low.

In conclusion, no further testing is needed at present considering its toxicity and exposure levels.

## NATURE OF FURTHER WORK RECOMMENDED

This chemical is not a candidate for further work because all SIDS endpoints are sufficient.