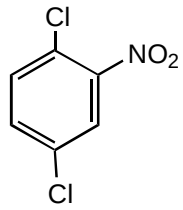
SIDS INITIAL ASSESSMENT PROFILE

CAS No.	89-61-2
Chemical Name	Benzene, 1,4-dichloro-2-nitro- (2,5-Dichloronitrobenzene)
Structural Formula	

CONCLUSIONS AND RECOMMENDATIONS

A potential hazard to man due to genotoxicity is identified, but exposure is low in the sponsor country.

Unless further information on exposure in other Member countries presents evidence to the contrary, 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

The production volume of 2,5-dichloronitrobenzene in Japan was ca. 200 - 1,200 tonnes/year in 1988 – 1992, and 2,400 - 2,800 tonnes/year in Germany. This chemical is used as an intermediate for pigments, pesticides and UV absorbents in closed systems in Japan. This chemical is stable in neutral, acidic or alkaline solutions, and is considered as “not readily biodegradable”.

The potential environmental distribution of the chemical obtained from a generic fugacity model (Mackey level III) showed that the chemical would be distributed mainly to water and soil. The Predicted Environmental Concentration (PEC_{local}) of this chemical was estimated as 8.0×10^{-4} mg/l in a Japanese local exposure scenario

As 2,5-dichloronitrobenzene is produced in a closed system, exposure during synthesis may be excluded. Workers wear personal protective equipment (e.g. a chemical cartridge respirator with an organic vapour cartridge) when filling barrels with the product. Therefore, the exposure in the workplace is considered to be negligible in the present situation. In addition, this chemical is not contained in consumer products, because it is an intermediate in industrial use. As for indirect exposure via the environment, the daily intake through drinking water is estimated to be 2.6×10^{-5} mg/kg/day and through fish is calculated as 1.2×10^{-3} mg/kg/day.

Environment

For the environment, various NOEC and LC_{50} values were gained from test results; 96h-LC_{50} = 5.4 - 8.5 mg/l (acute fish); 24h-EC_{50} = 8.0 mg/l (acute daphnia); 72h-EC_{50} = 5.0 mg/l (acute algae); 72h-NOEC = 2.0 mg/l (algae); 21d-NOEC = 1.0 mg/l (long-term daphnia reproduction). The lowest chronic toxicity result for daphnia [21d-NOEC (reproduction) of *Daphnia magna* (1.0 mg/l)] was used with an assessment factor of 100 to determine the PNEC

according to the OECD Provisional Guidance for Initial Assessment of Aquatic Effects. Thus, the PNEC of the chemical is 0.01 mg/l. The PEC is lower than the PNEC. The environmental risk is presumed to be low.

Human Health

The chemical showed genotoxic effects in the Ames test and the chromosomal aberration test *in vitro*. In a repeated dose toxicity test, a slight effect to the liver (e.g. increased liver weight) and damage in the reproductive system (e.g. necrosis of germ epithelium, azoospermia) were observed. The NOEL was 10 mg/kg/day. In a preliminary reproductive/ developmental screening toxicity test, one dam, receiving 60 mg/kg/day, delivered dead pups. In the highest dose group (200 mg/kg/day), one dam died on day 20 of the pregnancy, one during the delivery period and four during the lactation period. A lack of care behaviour was also found in dams at the highest dose level. At that level, many pups died during the lactation period and a reduced body weight of the pups was observed. In this study, suppression of body weight gains and food consumption and an effect to the testes were also observed in adult rats at the highest dose. The NOEL for reproductive toxicity was 20 mg/kg/day.

For human health, the NOEL is estimated as 10 mg/kg/day for repeated dose and 20 mg/kg/day for reproductive toxicity. As for indirect exposure via the environment, the PEC was estimated as 8.0×10^{-4} mg/l in a local exposure scenario. The daily intake through drinking water is estimated as 2.6×10^{-5} mg/kg/day and through fish is calculated as 1.2×10^{-3} mg/kg/day. The margin of safety is large. Therefore, the health risk through the environment, in general, is considered to be low due to its use pattern and exposure.

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

NATURE OF FURTHER WORK RECOMMENDED