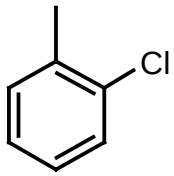
SIDS INITIAL ASSESSMENT PROFILE

CAS No.	95-49-8
Chemical Name	2-Chlorotoluene
Structural Formula	

RECOMMENDATIONS

Human Health: If substantial exposure cannot be ruled out, there is need for further work.

Environment: The substance is a candidate for further work.

SUMMARY CONCLUSIONS OF THE SIAR

Human Health

The acute oral toxicity: LD_{50} (Rat, male): 3227 mg/kg bw; LD_{50} (Rat, female): 3860 mg/kg bw
The acute inhalation toxicity: LC_{50} (Rat): 37517 mg/m^3 (4 h)
The acute dermal toxicity: LD_{50} (Rat): > 1083 mg/kg bw; LD_{50} (Rabbit): > 2165 mg/kg bw
2-Chlorotoluene, tested according to OECD Guideline 404, is slightly irritating to the skin. However, when tested under occlusive conditions, the substance is corrosive.
2-Chlorotoluene, tested according to OECD Guideline 405, was irritating to the eye in 1 out of 3 animals.
2-Chlorotoluene, tested according to OECD Guideline 406, is not sensitizing to the skin of guinea pigs.

The NOEL for repeated dosing (3 months) by gavage in rats is 20 mg/kg bw. In higher dosage (80 or 320 mg/kg bw) unspecific signs of toxicity were observed, e.g. reduced body weight gain in male animals, elevated BUN, elevated WBC count, reduced prothrombin time.

The NOEL for repeated dosing via capsule (3 months) in dogs is 20 mg/kg bw. In higher dosage (80 mg/kg bw) one animal showed vomiting, and red blood was detected in faeces, which might be due to the slightly irritating property of 2-chlorotoluene.

In range finding study tests, the LOAELs after inhalation were 4 mg/l (approx. 4000 mg/m^3, 14 d) in rats and 8 mg/l (approx. 8000 mg/m^3, 23 d) in rabbits. There is no NOEL from these data.

2-Chlorotoluene showed no mutagenic activity in bacterial and in mammalian cell test systems *in vitro*.
2-Chlorotoluene showed no clastogenic activity *in vitro* and *in vivo*.

Regarding reproductive toxicity there are 3 months-studies on rats and dogs which evaluated also the reproductive organs.

In the rat study, males and females received 2-chlorotoluene 0, 20, 80, or 320 mg/kg bw solution by gavage for 103-104 days. Gross and histological evaluation revealed that the administration of 2-chlorotoluene to rats did not produce any treatment-related pathology in these organs. Histopathologic examination of the reproductive organs showed that in 1/20 male rats and in 3/20 female rats in the lowest dose group testicular atrophy or hydrometra occurred.

In the dog study, males and females received 0, 5, 20, or 80 mg/kgbw as via capsule for 95-96 days. Also in this study, there were no treatment related changes regarding gross examination of the organs, and the histological examination showed no pathological alteration.

However, there are data from structurally related compounds showing effects on fertility.

Developmental toxic effects in rats and rabbits occur in the presence of maternal toxicity and without a clear dose-response relationship, however as a specific malformation, brachydactyly.

Rats: NOAEL: 1.0 mg/l (maternal toxicity) and no NOAEL, LOAEL 1.1 mg/l (developmental toxicity)
Rabbit: NOAEL: 1.0 mg/l (maternal toxicity) and 4 mg/l (developmental toxicity)

Environment

2-Chlorotoluene is a colourless liquid, with a solubility in water of 47 mg/l and with a vapour pressure of 360 Pa at 20 °C. The log Kow was measured to 3.42.

The favourite target compartment for 2-chlorotoluene is air with 98.8 % according to Mackay I. In air 2-chlorotoluene is indirectly photodegradable with $t_{1/2}$ = 8.8 d. The substance is not readily biodegradable. Nevertheless under the conditions of sewage treatment plants the substance will be eliminated by stripping and adsorption. Hydrolysis is not expected to occur under environmental conditions. The bioconcentration factor in fish was measured to 20-112.

2-Chlorotoluene has to be classified as toxic to aquatic organisms. In short-term tests the most sensitive organism was Oncorhynchus mykiss with a 96 h-LC_{50} of 2.3 mg/l. In long-term ecotoxicity tests with aquatic organisms the following effect values were found:

- *Pimephales promelas*: 30d-NOEC = 1.4 – 2.9 mg/l
- *Daphnia magna*: 21d-NOEC = 0.14 mg/l
- *Scenedesmus subspicatus*: 72h-EbC50 > 100 mg/l; 72h-EbC10 = 60 mg/l

The result from the long-term daphnia study is based on measured concentrations.

With an assessment factor of 10 a PNECaqua of 0.014 mg/l was derived.

From ecotoxicity tests with terrestrial plants a PNECsoil of 89 µg/kg can be derived.

Exposure

130,000 t/a chlorotoluenes are produced worldwide, about 60,000 to 70,000 t/a o-chlorotoluene.

In Germany, Bayer AG is the only producer of 2-chlorotoluene. 10,000 to 50,000 t/a chlorotoluene isomer mixture is produced at Bayer AG. More than 50 % of the produced isomer mixture is processed on-site to cresoles. About 5,000 t/a 2-chlorotoluene are separated from the isomer mixture for serving as basic chemical in the chemical industry for producing intermediates. 2-chlorotoluene is also directly used as a solvent for chemical processing as well as a solvent for the formulation of agricultural pesticides.

NATURE OF FURTHER WORK RECOMMENDED

Human Health: The route and level of possible exposure has to be clarified. Depending on the level of exposure further data on toxicity to reproduction are necessary.

Environment: The relevance of the releases to the terrestrial compartment due to the use as solvent in agricultural pesticides should be clarified.