## SIDS INITIAL ASSESSMENT PROFILE

CAS No.	76-03-9
Chemical Name	Trichloroacetic acid
Structural Formula	ССІ <sub>3</sub> -СООН

## CONCLUSIONS AND RECOMMENDATIONS

**Environment**: A potential risk to the aquatic compartment is identified due to high toxicity to algae and local exposure from use as auxiliary in textile dyes, waste water from electroplating facilities, textile washing and pulp mills. A potential risk to the terrestrial environment is identified due to high toxicity to plants and global exposure from the decomposition of C2-chlorocarbons.

**Human Health**: The chemical is reprotoxic, corrosive and an eye irritant but adequate protection measures are currently being applied. Trichloroacetic acid is currently considered of low potential risk and low priority for further work.

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

The production volume of trichloroacetic acid (TCA) is ca. 1000 t/a in Germany. TCA is mostly used in the production of TCA Na-salt used as a herbicide. TCA is also used as an auxiliary in textile dying processes.

TCA is stable in neutral solution and is classified as "non biodegradable" with a "low bioaccumulation potential" for fish and a "high bioaccumulation potential" for terrestrial plants. The most sensitive environmental species to TCA is the alga *Chlorella pyrenoidosa* (14d-NOEC = 0.01 mg/l) and pine (60d-EC10 = 0.12 mg/kg).

The acute oral, dermal and inhalation toxicity is low. This chemical is corrosive and strongly irritant to the eyes. The NOEL in a 90-day study in dogs - the most sensitive species tested - was determined as 500 ppm (approx. 30 mg/kg bw/day). The NOEL for repeated dose toxicity in a 4-month feeding study with rats was 4000 ppm (365 mg/kg bw/day), the NOEL in a 2-year feeding study in rats was 1600 ppm (80 mg/kg bw/day).

An inconsistent picture was found in tests on genotoxic action. Point-mutation tests were predominantly negative. *In vivo* tests of chromosome mutations were mostly positive, but effects only appeared after high loading of the animals. The SCE test in mice was negative. The results of a micronucleus test in mice are apparently not reproducible. The end point of the sperm anomaly test is not necessarily due to genetic damage. The validity of the positive test results described for the clastogenic effects in mice suffers from the partly insufficient experimental procedure.

Drinking water studies in male and female mice to 52 or 61 weeks gave an increased incidence of tumours in the livers of the male mice only. A 2-year feeding study with rats and a drinking water study over 100 - 104 weeks in rats showed no evidence of carcinogenicity.

Reproduction toxicology investigations in rats showed maternal and embryonic toxicity from 330 mg/kg bodyweight and from 800 mg/kg also embryo-lethality. In all dose-groups there was a dose-dependent increase in visceral anomalies, particularly in the cardiovascular system. The mean frequency of soft tissue malformations ranged from 9% at the low dose (330 mg/kg) to 97% at the high dose (1800 mg/kg/day). A NOAEL could not be established. Based on these findings TCA was considered to be developmentally toxic in the pregnant rat at doses of 330 mg/kg and above.

The aquatic local PEC probably due to its use in textile finishing industry was estimated to be 7 - 27  $\mu$ g/l. The PEC in natural soil due to atmospheric oxidation of C2-chlorocarbons is 8 - 150  $\mu$ g/kg.

In conclusion, TCA represents a risk to both the hydrosphere as well as the soil compartment.

Considering the low exposure potential to humans, available toxicity data support a low risk to human health. The tumorigenic action in male mouse liver corresponds to the type, which leads to liver tumours preferentially in male mice via peroxisome proliferation, hepatotoxicity and liver cell proliferation.

## NATURE OF FURTHER WORK RECOMMENDED

There is a need for consideration of risk management measures, concerning the environment and these should be addressed by the Risk Management Advisory Group.

Measurements in forest soils should be performed to actualise the soil pollution.