SIDS INITIAL ASSESSMENT PROFILE



SUMMARY CONCLUSIONS OF THE SIAR

Human Health

Acute lethal toxicity of glycidyl methacrylate is low via the oral administration route. No mortality was observed in rats following inhalation exposure up to 2,394 mg/m³, the highest practically attainable vapor concentration. This chemical is considered both highly irritating (including necrosis, degeneration and hyperplasia) to the skin, eyes and respiratory tracts and a skin sensitizer. In an oral (via gavage) OECD combined repeat dose and reproductive/ developmental screening toxicity test (TG 422) in rats at doses of 10, 30, 100 mg/kg/day, squamous hyperplasia in forestomach was induced at 30 and 100 mg/kg/day. Thus, the NOAEL was 10 mg/kg/day. In many repeated inhalation studies, the changes were observed only in respiratory tract (necrosis, inflammation etc. in nasal tissues), and were likely due to irritation. The lowest NOAEL was 0.5 ppm (equivalent to 0.26 mg/kg/day) in a rabbit study. In the OECD combined study (TG 422), the NOAEL for reproductive toxicity was considered to be 30 mg/kg/day, based on a decrease in the fertility index (number of delivered animals/ number of mated animals) at 100 mg/kg. In developmental toxicity studies, teratogenic effects were not induced either by oral administration at 108 mg/kg for rats or inhalation at 291 mg/m³ for rabbits. Most *in vitro* genotoxicity studies showed positive results. In an *in vivo* micronucleus test, oral administration of glycidyl methacrylate increased the frequency of micronucleated polychromatic erythrocytes only at the highest dose (750 mg/kg in males and 1000 mg/kg in females), although mostly negative results were shown in other in vivo genotoxicity studies including micronucleus tests by intraperitoneal administration. Therefore, the genotoxic potential of this chemical can not be ruled out. There was no available data on carcinogenicity of this chemical.

Environment

Glycidyl methacrylate is readily biodegradable (OECD 301C: 100 % after 28-d) and readily hydrolyzed ($T_{1/2} = 3.66$ days at pH 7). This chemical has a low bioaccumulative potential judging from the low log Pow value, 0.96 at 25 °C.

The lowest acute and chronic aquatic toxicity data reported were 14d LC_{50} (1.9 mg/l) of fish (Medaka; *Oryzias latipes*) and 21d NOEC (1.02 mg/l) of *Daphnia magna*, respectively. An assessment factor of 100 was chosen and applied to the chronic toxicity data to determine PNEC, which is 0.01 mg/l.

Exposure

About 3,000 tones/year of glycidyl methacrylate is produced as intermediate for resins in the closed system in Japan, and ca. 3.3 tones (ca. 0.1%)/ year is released into rivers. Release to air phase is negligible. A generic fugacity model (Mackey level III) shows this chemical will be distributed mainly to water phase (99.1%) when it is discharged into water.

NATURE OF FURTHER WORK RECOMMENDED

There is a need for limiting the risk; risk reduction should be taken into account because of the high irritation, sensitization, and the genotoxic potential.

Occupational exposure information should be collected by individual member countries.