SIDS INITIAL ASSESSMENT PROFILE

CAS No.	97-99-4
Chemical Name	2-Furanmethanol, tetrahydro-
Structural Formula	OCH ₂ OH

SUMMARY CONCLUSIONS OF THE SIAR

Human Health

There is no available information on toxicokinetics, metabolism or distribution.

In an acute oral toxicity study [OECD TG 423] of 2-furanmethanol, tetrahydro- in rats, no changes in survival rate, body weight gain or necropsy findings were observed at 2000 mg/kg bw. At this dose, decreased locomotor activity and hypotonia were observed.

This chemical was a moderate eye irritant in rabbits but did not irritate the rabbit skin. Review sources suggest that it might be a moderate skin and eye irritant in humans.

There is no available information on sensitization.

In a repeated oral dose toxicity study [Japanese TG equivalent to OECD TG 407], Crj:CD(SD)IGS rats were administered by gavage at 0 (vehicle: distilled water), 10, 40, 150 or 600 mg/kg bw/day for 28 days. The initial numbers of rats were 10/sex at 0 and 600 mg/kg bw/day, and 5/sex at other doses. Five rats/sex from each group were killed on day 29, and the remaining 5 rats/sex at 0 and 600 mg/kg bw/day were kept without further treatment for another 14 days (recovery period). Increased locomotor activity followed by decreased locomotor activity and adoption of a prone position in males and females, and lowered grip strength of the hindlimb in males were found at 600 mg/kg bw/day. Increased locomotor activity was observed in females at 150 mg/kg bw/day. At 600 mg/kg bw/day, animals showed decreased body weight gain in males, reduced food consumption in males and females, and decreased urinary pH in males. . At this dose, hematological examinations revealed decreases in the mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), leukocyte count and platelet count, and prolonged prothrombin time in males and females and decreases in the reticulocyte count in males and hemoglobin concentration in females. Blood biochemical examinations revealed decreases in the levels of alkaline phosphates (ALP), total protein, albumin, total bilirubin and calcium in males and females, and lactate dehydrogenase (LDH), triglyceride, blood urea nitrogen (BUN) and sodium in males at 600 mg/kg bw/day. At 150 mg/kg bw/day, a decrease in total protein was observed in males. Decreases in the relative weights of the thymus in males and females and pituitary in females, and an increase in the relative weights of the kidney in females were found at 600 mg/kg bw/day. At 150 mg/kg bw/day, a decrease in the relative weight of the pituitary was noted in females. Histopathological examinations revealed atrophy of the thymus in males and females, and atrophy of the red pulp with decreased extramedullary hematopoiesis and inflammation of the capsule of the spleen in males at 600 mg/kg bw/day. Necrosis of seminiferous tubular epithelium of the testes was observed at 150 and 600 mg/kg bw/day. Examination of the spermatogenic cycle showed a decrease in the ratio of the spermatid to Sertoli cell counts at 600 mg/kg bw/day. Histopathological examinations of the testes revealed a tendency for increase in the severity of changes at the end of

This document may only be reproduced integrally. The conclusions and recommendations (and their rationale) in this document are intended to be mutually supportive, and should be understood and interpreted together.

the 14-day recovery period. Based on these findings, the NOAELs for repeated dose toxicity were 40 mg/kg bw/day in males and females.

In a reverse gene mutation assay [OECD TG 471], this chemical was not mutagenic in *Salmonella typhimurium* TA100, TA1535, TA1537, TA98 or *Escherichia coli* WP2 *uvrA*/ pKM101 with or without an exogenous metabolic activation. In a chromosomal aberration test [OECD TG 473], this chemical did not cause structural chromosomal aberration or polyploidy with or without an exogenous metabolic activation in cultured Chinese hamster lung (CHL/IU) cells.

There is no available information on carcinogenicity.

In a preliminary reproductive toxicity study [OECD TG 421], Crj:CD(SD)IGS rats (12 animals/sex/dose) were administered by gavage at 0 (vehicle: distilled water), 15, 50, 150 or 500 mg/kg bw/day. Males were dosed for a total of 47 days beginning 14 days before mating. Females were dosed for a total of 42-52 days beginning 14 days before mating to day 4 of lactation throughout the mating and gestation period. Males showed decreased body weight gain at 500 mg/kg bw/day. At 150 mg/kg bw/day and higher, an increased locomotor activity in males and females, and decreased body weight gain in females were observed. At 500 mg/kg bw/day, decreased relative weights of the thymus, testes and epididymides, atrophy of the seminiferous tubule with hyperplasia of the interstitial cell in the testes, and decreased intraluminal sperms with cell debris in the epididymides were noted in males. Prolonged estrous cycles were observed at 500 mg/kg bw/day. At this dose, no females delivered their offspring and examination of the uterus of dams revealed early embryonic resorptions. Prolonged gestation length, decreased gestation index, and lowered delivery index, live birth index, numbers of pups born and live pups on postnatal days (PNDs) 0 and 4, and viability on PND 4 were observed at 150 mg/kg bw/day. No increase in the incidence of morphological abnormalities was found in pups of rats given this chemical. Based on these findings, the NOAEL for reproductive/developmental toxicity was 50 mg/kg bw/day.

Decreased testes weight, low sperm activity and/or testicular atrophy were caused in Beagle dogs fed a diet containing 1000 ppm 2-furanmethanol, tetrahydro- and higher for 90 days.

Rats (eight animals/group) were orally given this chemical at 0, 10, 50, 100, 500 or 1000 mg/kg bw/day on days 6 to 15 of pregnancy. Decreases in maternal body weight gain and food consumption were observed at 500 and 1000 mg/kg bw/day. A 100% incidence of early resorptions at 500 and 1000 mg/kg bw/day and decreased fetal weight at 100 mg/kg bw/day were found. The NOAELs for maternal and developmental toxicity were considered to be 100 and 50 mg/kg bw/day, respectively.

Environment

2-Furanmethanol, tetrahydro- is a colorless and flammable liquid with a water solubility of more than 250 g/L at 20 °C, a melting point of less than – 120 °C, a boiling point of 177.7 °C at 1013 hPa, a vapor pressure of 1.86 hPa at 25 °C and a relative density of 1.0544 at 20/20 °C. Based on the measured log Kow value of -0.11 bio- or geoaccumulation of this chemical is unlikely. Environmental distribution using Mackey level III suggests that when this chemical is released into the environment, it distributes mainly into water and soil. A calculated Henry's Law constant of 4.09^{-9} atm-m³/mole indicates that only a limited extent of volatilisation from water may occur. 2-Furanmethanol, tetrahydro- is readily biodegradable (10-day window fulfilled) but abiotic degradation is not expected in water. In the atmosphere this chemical is indirectly photodegraded by reaction with OH radicals with a half-life of 0.5 days.

Ecotoxicity data for this substance was available in aquatic species from three trophic levels. In the algal growth inhibition test (OECD TG 201, *Pseudokirchneriella subcapitata*, open system), both the (0-72 h) ErC_{50} and the (0-72 h) EbC_{50} were > 98.9 mg/L. For daphnids, a 48 h EC_{50} of > 91.7 mg/L was reported (OECD TG 202, *Daphnia magna*, semi-static). For fish (OECD TG 203, *Oryzias latipes*, semi-static) a 96 h $\text{LC}_{50} > 101$ mg/L is available.

Regarding chronic toxicity to algae, the (0-72 h) NOEC by growth rate and biomass methods was 98.9 mg/L (OECD TG 201, *Pseudokirchneriella subcapitata*, open system). For daphnids, a 21 d EC₅₀ of > 95.1 mg/L for reproduction

This document may only be reproduced integrally. The conclusions and recommendations (and their rationale) in this document are intended to be mutually supportive, and should be understood and interpreted together.

and a 21 d NOEC of 95.1 mg/L for reproduction are available (OECD TG 211, Daphnia magna, semi-static).

Exposure

2-Furanmethanol, tetrahydro- is manufactured by a single manufacture in Japan with an annual production volume of approximately 30 tonnes. Worldwide production capacity outside Japan is not known. The major uses of this chemical are: solvents for various products and uses (fats, waxes, resins, dyes, vegetable oils, cleaners, paints, inks and others: ca 50 to 70% in total) and intermediate in industrial applications (ca. 30 to 50%). Human exposure to this chemical is expected in both occupational settings and consumer sites since some of the applications include open and direct uses (solvents for paints and nail cleaning agents). Such exposure can occur through inhalation and dermal routes. Exposure into the environment may also occur primary through evaporation during the production and down stream user sites.

The routes of occupational exposure are inhalation of vapor and dermal contact to liquid. As a volatile liquid and used as a solvent for various products, workers at production and user sites of this chemical may be exposed.

RECOMMENDATION AND RATIONALE FOR THE RECOMMENDATION AND NATURE OF FURTHER WORK RECOMMENDED

Human Health: The chemical is a candidate for further work. The chemical possesses a hazard for human health (repeated dose toxicity, irritation, reproductive/developmental toxicity). Exposure to general public is expected through dermal contact and inhalation. This chemical is produced in a closed system in Japan, but used to formulate various products, occupational exposure through inhalation and dermal route is possible in both production and user sites. Therefore, an exposure assessment and, if necessary, a risk assessment for workers and consumers are recommended.

Environment: The chemical is currently of low priority for further work because of its low hazard potential.

This document may only be reproduced integrally. The conclusions and recommendations (and their rationale) in this document are intended to be mutually supportive, and should be understood and interpreted together.