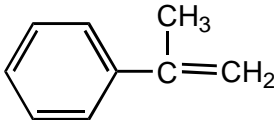


SIDS INITIAL ASSESSMENT PROFILE

CAS No.	98-83-9
Chemical Name	(1-Methylethenyl)benzene
Structural Formula	

CONCLUSIONS AND RECOMMENDATIONS**Environment**

The chemical is moderately toxic to aquatic organisms and is considered as not readily biodegradable. The predicted environmental concentration is lower than the predicted no effect concentration. The chemical is therefore currently considered of low potential risk and low priority for further work.

Health

Within the Sponsor country exposure is well controlled because the only known use is as a closed system intermediate in the production of resins. The chemical is moderately toxic in a repeated dose toxicity study (i.e. kidney, liver, thymus). The chemical is also considered as an irritant to skin and eyes. Risks to human health from daily intake through occupational and indirect exposure are considered low. The chemical is currently considered of low potential risk and low priority for further work.

SHORT SUMMARY WHICH SUPPORTS THE REASONS FOR THE CONCLUSIONS AND RECOMMENDATIONS

(1-Methylethenyl)benzene is a stable liquid with a production volume of ca. 15,000 tonnes/year in 1993 in Japan. The chemical is produced in closed system and is used as intermediate for ABS resins and polyester resins. (1-Methylethenyl)benzene is considered as "not readily biodegradable" with a moderate bioaccumulation potential. It is expected to photodegrade.

Modelling of the potential environmental distribution of (1-methylethenyl)benzene (obtained from a generic fugacity model (Mackay level III)) showed the chemical is expected to distribute mainly to water and air. Using production data from Japan and Germany the predicted environmental concentration (PEC_{local}) of this chemical was estimated as 2.3×10^{-5} mg/l and 5.5×10^{-2} mg/l respectively for local exposure scenarios. In a 1977 Japanese environmental survey, the chemical was not detected from surface water and sediments.

(1-Methylethenyl)benzene is moderately toxic to fish, daphnids and algae. The lowest acute and chronic toxicity data was considered to calculate the predicted no effect concentration. The lowest acute toxicity data was the 24 h-LC₅₀ for *Oryzias latipes* (15 mg/l) and the lowest chronic toxicity was a 21d-NOEC (reproduction) for *Daphnia magna* (1.8 mg/l). An assessment factor of 100 was used to determine a predicted no effect concentration of 0.018 mg/l. The predicted no effect concentration is lower than the predicted environmental concentration and therefore the environmental risk is considered low.

(1-Methylethenyl)benzene is produced in closed systems and therefore only limited occupational exposure is

expected in sampling and bag or tank filling operations. Inhalation is considered the main route of exposure. Concentrations in the atmosphere were measured at two production facilities. An average concentration of 10.1 mg/m³ was found in sampling operations (max 48.7 mg/m³ - min 0.5 mg/m³). The daily intake through inhalation is estimated to be 1.2 mg/kg/day as the worst case. Indirect exposure via the environment, PEC_{local} was estimated as 2.3 x 10⁻⁵ mg/l and daily intake through water is estimated to be 7.7 x 10⁻⁷ mg/day and through fish 4.8 x 10⁻⁶ mg/kg/day. This chemical is used on food contact material constituent, but there are no available data of a migration to food.

The chemical is considered as irritant to skin and eyes. The chemical showed no genotoxic effects in bacteria and chromosomal aberration tests *in vitro*. In a combined repeat dose and reproductive/developmental toxicity screening test, at the highest dose (1,000 mg/kg), histopathological examination demonstrated acidophilic change of hepatocytes and increase of fatty droplets in the fascicular zone of the adrenals in both sexes, increase of hyaline droplets and basophilic changes in the renal tubular epithelium and hyperplasia of the mucosal epithelium in the urinary bladder in male rats, vacuolation and infiltration of lymphocytes in the renal tubular epithelium and atrophy of the thymus in female rats. In the 200 mg/kg group, similar histopathological changes were found in the liver and kidneys of both sexes, and the thymus of female rats. The chemical had no effects on reproductive parameters. The, No-observable-effect-level (NOEL) was 40 mg/kg/day for repeated dose toxicity and 200 mg/kg/day for reproductive toxicity.

For human health, a margin of safety was estimated to be 33, based on occupational exposure calculation. However, the frequency of exposure is very limited and the very few workers involved wear personal protective equipment. Since the margin of safety in other cases is large such as 5.2 x 10⁷ through drinking water and 8.3 x 10⁶ through fish, the human health risks for the public from indirect exposure via the environment are low.

NATURE OF FURTHER WORK RECOMMENDED