SIDS INITIAL ASSESSMENT PROFILE

| CAS No. | 78-97-7 |
|--------------------|-------------------------|
| Chemical Name | 2-Hydroxypropanenitrile |
| Structural Formula | CH ₃ -CH-CN |

CONCLUSIONS AND RECOMMENDATIONS

It 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 2-hydroxypropanenitrile was ca. 11,000 tonnes/year in 1990 - 1993 in Japan. This chemical is used as an intermediate for the production of lactic acid, alanine, acrylic fibres and resins in closed systems in Japan. Also, it is used as and intermediate for acrylic acid and resins in Europe. This chemical is stable in neutral or acidic solutions, it is unstable in alkaline solution, and it is considered as "readily biodegradable".

PECs have been calculated based on fugacity level III models considering its physico-chemical properties (e.g. molecular weight, water solubility, vapour pressure and partition coefficient). The worst estimated concentrations were 7.0×10^8 mg/l (air), 6.7×10^{-5} mg/l (water), 3.7×10^{-4} mg/kg (soil), 1.2×10^{-4} mg/kg (sediment).

No monitoring data at the work place are available. As the chemical is used in closed systems, so far no data for consumer use are available. Based on the physico-chemical properties, the level exposed indirectly through the environment was estimated as 3.2×10^{-3} mg/man/day. The daily intake through drinking water is estimated as 1.3×10^{-4} mg/man/day and through fish is calculated as 2.2×10^{-6} mg/man/day.

For the environment, various NOEC and LC_{50} values were gained from test results; $LC_{50} = 0.98 - 1.1 \text{ mg/l}$ (acute fish); $EC_{50} = 17 \text{ mg/l}$ (acute daphnia); $EC_{50} = 0.14 \text{ mg/l}$ (acute algae); NOEC = 0.17 mg/l (long-term daphnia reproduction). Based on these values, the PNEC was estimated to be 0.0017 mg/l for aquatic organisms. Although the chemical is strongly toxic to fish and algae and moderately toxic to daphnids, PEC/PNEC ratio is less than 1. Therefore, it is considered to be of low risk for the environment.

Although the chemical showed no genotoxic effects in bacteria, weakly positive result was obtained in a chromosomal aberration test *in vitro*.

In a combined repeat dose and reproductive/developmental toxicity screening test, transient hypolocomotion, hypopnea and salivation were found at the highest dose (30 mg/kg/d) in both sexes. Increased liver weights occurred in the highest male group. In a pathological examination, enlargement of the liver was also observed in the same group. Such hepato-toxic effects were revealed to be due to a centrilobular hypertrophy and a fatty change of hepatocytes in a historical examination. For reproductive/developmental toxicity end-points, there were no effects observed concerning mating, fertility and oestrus cycle and also for dams during the pregnancy and lactation period. Therefore, NOEL was 6 mg/kg/day for repeated dose toxicity and 30 mg/kg/day for reproductive toxicity.

In conclusion, no further testing is needed at present considering its toxicity and exposure levels.

NATURE OF FURTHER WORK RECOMMENDED