SIDS INITIAL ASSESSMENT PROFILE

CAS No.	98-82-8
Chemical Name	Cumene
Structural Formula	CH ₃ CH ₃ CH ₃

CONCLUSIONS AND RECOMMENDATIONS

This risk assessment only covers the life cycle of cumene production and use. The potential risks related to the natural occurrence of cumene in petroleum products have not been assessed.

Environment: There is at present no need for further information and/or testing and for risk reduction measures beyond those which are being applied already.

Human Health: There is at present no need for further information and/or testing and for risk reduction measures beyond those which are being applied already.

SHORT SUMMARY WHICH SUPPORTS THE REASONS FOR THE CONCLUSIONS AND RECOMMENDATIONS

Environment

Cumene is used in chemical industry in categories 2 (basic chemicals) and 3 (chemical used in synthesis). The compound is mainly used as an intermediate in the production of phenol and acetone. It is also a minor constituent of gasoline and solvents, but its presence should not be regarded as an additive but as an integrated ingredient from a petroleum derivative. The risks related to the presence of cumene in petroleum products cannot be evaluated independently for cumene but considering the presence of several other non-polar narcotic hydrocarbons in the mixture, therefore these risks have not been included in this assessment.

Cumene is a volatile compound, practically insoluble in water, inherently biodegradable and bioaccumulative. PEC values were estimated using the data provided by the industry and default values when required. The highest PEC local values for water, sediment and soil are 7.13 μ g/l; 143 μ g/kg; and 181 μ g/kg respectively. Following the previous recommendation, two new studies on the chronic toxicity of cumene on daphnia and algae respectively were presented. The chronic NOEC for fish was estimated by the sponsor country using QSARs. The recalculated PNEC values are 22 μ g/l; 388 μ g/kg; and 340 μ g/kg for aquatic, sediment dwelling and soil dwelling organisms respectively. Therefore, it is concluded that the environmental risks associated to the life cycle of cumene production and use is low.

Human Health

Acute exposure to high concentrations of cumene can produce respiratory irritation and CNS depression. A NOAEL of 100 ppm is obtained from a subchronic toxicity study involving exposure to cumene vapour. In this study, the

SIAM 5, 28-30 October 1996

observed effects at a dose above the NOAEL (500 ppm) are weak and a mild toxicity response it is obtained at a dose 10 times the NOAEL (1200 ppm). This study has been carried out in rats proved being one of the most sensitive animal species to cumene. Cumene's toxicokinetics does not seems qualitative different between human and animals. No evidence for the accumulation following repeated dose was observed. Due to these reasons, this NOAEL is considered reliable.

Comparing the worst case estimated occupational exposure level with the NOAEL it is concluded that the potential risk for workers is low.

Current information indicates that there is no use of cumene in any consumer's product. Therefore, cumene is not of concern for consumers.

Consumer's exposure to cumene respecting its use as constituent of gasoline and solvents should be assessed when a petroleum products risk assessment report will be elaborated.

With respect to man exposed via the environment, most of the environmental exposure to cumene is predicted to be from the air contributing some 97% of the total intake. Comparing the local atmospheric concentrations of cumene identified as reasonable worst case level with the observed NOAEL it is concluded that the potential risk is low

The substance is of low concern for human health.

NATURE OF FURTHER WORK RECOMMENDED

No further work is recommended.