

RISK ASSESSMENT OF SHORT CHAIN CHLORINATED PARAFFINS IN JAPAN

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Short chain length chlorinated paraffins (SCCPs) are mainly used as an additive in metal working fluids and as a flame retardant in rubber or plastic formulations. EU amended the directive relating the restriction on the marketing and use of SCCPs in metal working and leather finishing in 2002, and US-EPA has required annual reporting on SCCPs on the Toxics Release Inventory since 1995. However, production and use of SCCPs in industries are not regulated in Japan. Therefore, this study conducted risk assessment of SCCPs concerning the structure of production and use in Japan.

As the result, the use of SCCPs was estimated 500t/year in Japan, and the use stage of metal working fluids had the largest release of 31.2t/year to water. Predicted concentrations of SCCPs was calculated in the local, Kanto area and Japan scenarios for individual environmental compartments and various parts of food chain using EUSES. High concentrations in local water and sediment were predicted due to high $\log K_{ow}$ values of the substance.

This study conducted environmental monitoring in freshwater and sediment, and shopping basket analyses in human foodstuffs. Predicted concentrations were verified compared to the monitoring data. Thus, the maximum monitoring data were identified as the aquatic and benthic exposure concentration in Kanto area and in Japan, and predicted concentrations in local area were identified as local exposure concentration. On the other hand, human daily intake was estimated from the data of shopping basket analyses.

In dose-response assessment, no observed effect concentration

(NOEC) of 0.0024mg/L for the aquatic organisms was derived from the species sensitivity distribution (SSD) with toxicity data available, and NOEC of 0.61mg/kg-wet for sediment-dwelling organisms was calculated using equilibrium partitioning method from NOEC for aquatic organisms. At the same time, NOAEL of 100mg/kg/day for effects which are considered to be relevant to human health, were identified for kidney toxicity and NOAEL of 500mg/kg/day were identified for developmental effects.

Risk characterization was conducted by calculating margin of exposure (MOE). MOE indicated probability of a significant risk to aquatic and sediment-dwelling organisms from local sources. On the other hand, MOE suggested no significant risk for man exposed via the environment.