SIDS INITIAL ASSESSMENT PROFILE

CAS No.	77-92-9
Chemical Name	Citric acid
Structural Formula	СН СООН НОССООН СН СООН

RECOMMENDATIONS

The chemical is currently of low priority for further work.

SUMMARY CONCLUSIONS OF THE SIAR

Human Health

Based on many experimental data in animals and on human experience, citric acid is of low acute toxicity. The NOAEL for repeated dose toxicity for rats is 1200 mg/kg/d. The major, reversible (sub)chronic toxic effects seem to be limited to changes in blood chemistry and metal absorption/excretion kinetics. Citric acid is not suspected of being a carcinogen nor a reprotoxic or teratogenic agent. The NOAEL for reproductive toxicity for rats is 2500 mg/kg/d. Further, it is not mutagenic *in vitro* and *in vivo*. Also, the sensitising potential is seen as low. In contrast, irritation, in particular of the eyes but also of the respiratory pathways and the skin, is the major toxicological hazard presented by citric acid; this conclusion is confirmed by a series of reports relating to eye and skin irritation.

Environment

Due to its physico-chemical characteristics citric acid is highly mobile in the environment and will partition to the aquatic compartment. Citric acid is rapidly degraded in both sewage works and surface waters and in soil. Citric acid is of low acute toxicity to freshwater fish, daphnia and algae and also to the few marine species tested; longer-term tests show comparable effect values. Similarly, citric acid has no obvious toxic potential against protozoans and many species or strains of bacteria including activated sludge micro-organisms. Based on the available data, citric acid is not judged to be a substance that presents a hazard to the environment.

Exposure

Citric acid is a water soluble organic solid. It is a natural substance that appears as an intermediate in the basic physiological citric acid or Krebs cycle in every eukaryote cell. Citric acid has been produced for many years in high volumes, current global production is estimated to approach 1,000,000 t/a. It has wide dispersive use, being added to processed food and beverages, used in pharmaceutical preparations

and in household cleaners as well as in special technical applications.

A large body of physico-chemical, toxicological and environmentally relevant data exists for citric acid, many of which are relatively old and some located only in standard reference works and reviews. While the quality of a single result often may be hard or even impossible to assess, the sheer volume and high congruence of the data result in a uniform picture all the same.

NATURE OF FURTHER WORK RECOMMENDED

No further work recommended.