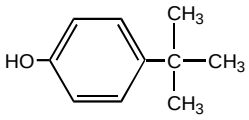
SIDS INITIAL ASSESSMENT PROFILE

CAS No.	98-54-4
Chemical Name	p-tert-Butylphenol
Structural Formula	

SUMMARY CONCLUSIONS OF THE SIAR

Human Health

Acute toxicity of p-t-butylphenol is low via any route of administration. This chemical is considered to be an irritant to skin, eyes and the respiratory tract. The possibility of skin sensitization in human still remains because of negative results in an animal experiment (OECD TG 406) but some positive results in human patch tests. Depigmentation was observed on the skin of various animals and humans exposed to this chemical. This change was likely induced by exposure to this chemical not only via direct contact but also via inhalation or ingestion.

In a combined repeat dose and reproductive/developmental screening toxicity test (OECD TG 422) with rats exposed by gavage at doses of 20, 60 and 200 mg/kg/day for 46 days, this chemical showed neither systemic toxicity nor reproductive toxicity even at the highest dose of 200 mg/kg/day. Although a noisy respiratory sound was induced in a few females at 200 mg/kg/day, it is considered to be due to irritation of this chemical to the respiratory tract. In a dose-finding study (14 days), this change led to respiratory difficulty, especially at 1,000 mg/kg/day. In other studies with longer and higher exposure through the diet (approx. 1 g/kg b.w./day, for 20 or 51 weeks), forestomach hyperplasia was induced.

This chemical showed clear negative results in gene mutation tests. However, one chromosomal aberration study indicated structural chromosome aberration and polyploidy with metabolic activation in CHL/IU cells (OECD TG 473) although other studies in rat lymphocytes (OECD TG 473) and in rat liver epithelial-type cells were negative. A micronucleus test *in vivo* (OECD TG 474) showed negative results. The weight of evidence suggests that this chemical is not genotoxic *in vivo*.

There was no sufficient carcinogenicity study and no evidence of carcinogenesis in manufacturing workers, however, a two-stage carcinogenicity study indicated that this chemical has a promoting activity regarding forestomach carcinogenesis (papilloma and squamous carcinoma) in rats treated with N-methyl-N'-nitro-N-nitrosoguanidine (MNNG). Furthermore, since a structurally related chemical, BHA, (2(3)-tert-butyl-methoxylphenol) is a clear carcinogen, it is considered that this chemical might be a non-genotoxic carcinogen.

Environment

p-t-Butylphenol is a stable solid and is readily biodegradable (OECD TG 301). Its measured bioaccumulation factor is 34-120.

The lowest acute and chronic toxicity data were a 48h EC50 (3.4 mg/l) and a 21d NOEC (0.73 mg/l) for *Daphnia magna*. An assessment factor of 100 was chosen to be applied to the chronic toxicity data (NOEC), because only two NOEC values (algae and *Daphnia*) are available. Thus, the PNEC of p-t-butylphenol is 7.3×10^{-3} mg/l in this report. p-t-Butylphenol may have potential chronic toxicity to aquatic organisms, because the NOEC for *Daphnia* is

relatively low and the chemical has a moderate bioaccumulative potential.

Exposure

The production volume of this chemical was ca. 5,000 tonnes/year in 1993 in Japan. This chemical is used as an intermediate for phenol resins and polycarbonate resins. It is also used as a raw material for construction elements and floors in buildings. The potential environmental distribution of p-t-butylphenol obtained from a generic fugacity model (Mackey level III) shows that it will be mainly distributed to water. The main route of human exposure is inhalation with a limited number of workers potentially exposed during sampling and bag or tank filling operations.

RECOMMENDATION

The chemical is currently of low priority for further work.

RATIONALE FOR THE RECOMMENDATION AND NATURE OF FURTHER WORK RECOMMENDED

As the original recommendation was "An i*n vivo* genotoxicity study such as *in vivo* micronucleus test is recommended because *in vitro* chromosomal aberration test indicates clear positive results", an *in vivo* micronucleus test was conducted as post-SIDS work. Based on the negative result, no further work is recommended in the SIDS context.

NOTE

The present SIDS Profile is already an update of the SIDS Profile published by UNEP Chemicals (2002, Volume 8, part I). An *in vivo* micronucleus test was conducted by Japan, and the results are integrated in the conclusions above. Further post-SIDS work is currently on-going in the context of the EU Existing Substances Regulation (Sponsor country: Norway), to further investigate the potential of the substance for endocrine disruption and reproductive toxicity. Once the additional post-SIDS work planned by Norway is available, addenda to the SIDS Dossier and the SIDS Initial Assessment Report will be elaborated and published together with a revised SIDS Profile.