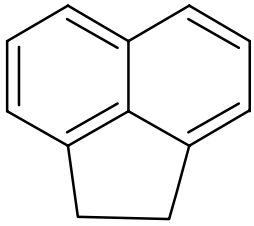
INITIAL TARGETED ASSESSMENT PROFILE

CAS No.	83-32-9
Chemical Name	1,2-Dihydroacenaphthylene
Structural Formula	

SUMMARY CONCLUSIONS OF THE TARGETED ASSESSMENT

NOTE: The present assessment is targeted to address only the following endpoint(s): [Human Health: acute toxicity, repeated dose toxicity and mutagenicity]. It cannot be considered as a full SIDS Initial Assessment. Nevertheless, the conclusions for the endpoints addressed have been agreed by OECD member countries and may be used for hazard and risk assessment. Results on other endpoints may be relevant for hazard and risk assessment but have not been addressed in the assessment.

As the following results demonstrate, 1,2-dihydroacenaphthylene was designated as a Type II monitoring chemical substance under the Japanese Chemical Substances Control Law; such chemical substances may have potential of long- term toxicity for human health, and their production volume should be monitored.

Rationale for targeting the assessment

Under the Japanese Chemical Substances Control Law, hazard assessment of existing chemical substances has been conducted. If a chemical substance is evaluated as "not biodegradable (persistent)" and "not highly bioaccumulative", at least a 28-day repeated dose toxicity study and two *in vitro* mutagenicity studies are required as screening studies for hazard evaluation regarding human health. If a chemical is evaluated as having potential of long- term toxicity for human health, the chemical is classified as a Type II Monitoring Chemical Substance. If not, the chemical is of low priority for further action. Type II Monitoring Chemical Substances undergo risk-based management; at first, annual production volumes of those substances are monitored.

1,2-Dihydroacenaphthylene was evaluated as "not biodegradable (persistent)" and "moderately bioaccumulative" by METI (Ministry of Economy, Trade and Industry). Biodegradation and bioaccumulation are not part of the targeted assessment and therefore not presented in this ITAP. The initial hazard assessment of 1,2-dihydroacenaphthylene was conducted in order to determine whether the chemical is classified as a Type II monitoring chemical substance in Japan.

This assessment document was originally based on the material from the chemical assessment council of MHLW (Ministry of Health, Labour and Welfare), and we reassessed the toxicological profile and re-established NOAELs for the OECD HPV chemical programme.

Physical-chemical properties (neither assessed, nor part of the targeted assessment, provided for information only)

1,2-Dihydroacenaphthylene is a white to yellow powder with a relative density of 1.189 g/cm^3, a melting point of 95 °C, a boiling point of 279 °C and a vapour pressure of 0.36 Pa at 20 °C. A measured octanol-water partition coefficient (log K_{ow}) is 3.92, and water solubility is 3.8 mg/L at 25 °C.

Human Health

The oral LD_{50} value in rats for 1,2-dihydroacenaphthylene was greater than 2000 mg/kg bw in both sexes (OECD TG 401). 1,2-Dihydroacenaphthylene administered orally caused no effects at a dose of 2000 mg/kg bw in rats.

In a repeated dose oral toxicity study in rats following standard guideline for 28-Day Repeated Dose Toxicity Test in Mammalian Species in compliance with GLP, the substance was administered via gavage at 0 (vehicle control: 0.5% CMC), 12, 60, 300 mg/kg bw/day for 28 days. Neither death nor clinical sign was observed in both sexes. Serum phospholipid was increased in 60 mg/kg bw/day females and both sexes given 300 mg/kg bw/day. In the 300 mg/kg bw/day group, there were also increases in total cholesterol in both sexes and in total bilirubin in males. In the histopathological examination, centrilobular hypertrophy of the hepatocytes was found in the liver in both sexes of the 300 mg/kg bw/day group, and erosion of glandular stomach was observed in female given 60 or 300 mg/kg bw/day. Based on these results, the NOAEL of repeated dose oral toxicity was considered to be 12 mg/kg bw/day in both sexes.

Bacterial reverse mutation assay of 1,2 -dihydroacenaphthylene was conducted using four *Salmonella typhimurium* strains, TA98, TA100, TA1535 and TA1537, and an *Escherichia coli* WP2 uvrA (OECD TG 471 and 472). In *Salmonella typhimurium* TA1537, the number of revertants was slightly increased in the absence of metabolic activation, but dose-dependency was not found. This finding was not observed in an additional study using TA1537 and TA97 obtained from another source. There was no increase in the number of revertants in the TA1537 strain under the presence of metabolic activation and in the other strain with and without the metabolic activation. In an *in vitro* chromosome aberration test using CHL/IU cells (OECD TG 473), structural chromosomal aberrations were dose-dependently induced at the cytotoxic doses in the short-term treatment with an exogenous metabolic activation system. Therefore, 1,2-dihydroacenaphthylene is considered to be genotoxic *in vitro* although the toxicological significance is equivocal due to the lack of data at non-cytotoxic doses under this test condition.

Agreed hazard conclusions

The chemical possesses properties indicating a hazard for human health endpoints targeted in this assessment (repeated dose toxicity and genotoxicity *in vitro*).

Available Exposure information (not part of the targeted assessment, provided for use information only)

In Japan, 1,2-dihydroacenaphthylene is mainly used as an intermediate in dyes, and as a raw materials in synthetic resins, pesticides or disinfectants.