

n-Heptane; CASRN 142-82-5

Human health assessment information on a chemical substance is included in the IRIS database only after a comprehensive review of toxicity data, as outlined in the [IRIS assessment development process](#). Sections I (Health Hazard Assessments for Noncarcinogenic Effects) and II (Carcinogenicity Assessment for Lifetime Exposure) present the conclusions that were reached during the assessment development process. Supporting information and explanations of the methods used to derive the values given in IRIS are provided in the [guidance documents located on the IRIS website](#).

STATUS OF DATA FOR n-Heptane

File First On-Line 01/01/1993

| Category (section) | Assessment Available? | Last Revised |
|---|-----------------------|--------------|
| Oral RfD (I.A.) | not evaluated | |
| Inhalation RfC (I.B.) | not evaluated | |
| Carcinogenicity Assessment (II.) | yes | 01/01/1993 |

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

I.A. Reference Dose for Chronic Oral Exposure (RfD)

Substance Name — n-Heptane
CASRN — 142-82-5

Not available at this time.

I.B. Reference Concentration for Chronic Inhalation Exposure (RfC)

Substance Name — n-Heptane
CASRN — 142-82-5

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — n-Heptane

CASRN — 142-82-5

Last Revised — 01/01/1993

Section II provides information on three aspects of the carcinogenic assessment for the substance in question; the weight-of-evidence judgment of the likelihood that the substance is a human carcinogen, and quantitative estimates of risk from oral exposure and from inhalation exposure. The quantitative risk estimates are presented in three ways. The slope factor is the result of application of a low-dose extrapolation procedure and is presented as the risk per (mg/kg)/day. The unit risk is the quantitative estimate in terms of either risk per ug/L drinking water or risk per ug/cu.m air breathed. The third form in which risk is presented is a drinking water or air concentration providing cancer risks of 1 in 10,000, 1 in 100,000 or 1 in 1,000,000. The rationale and methods used to develop the carcinogenicity information in IRIS are described in The Risk Assessment Guidelines of 1986 (EPA/600/8-87/045) and in the IRIS Background Document. IRIS summaries developed since the publication of EPA's more recent Proposed Guidelines for Carcinogen Risk Assessment also utilize those Guidelines where indicated (Federal Register 61(79):17960-18011, April 23, 1996). Users are referred to Section I of this IRIS file for information on long-term toxic effects other than carcinogenicity.

II.A. Evidence for Human Carcinogenicity

II.A.1. Weight-of-Evidence Characterization

Classification — D; not classifiable as to human carcinogenicity.

Basis — No human data and no animal data available.

II.A.2. Human Carcinogenicity Data

None.

II.A.3. Animal Carcinogenicity Data

None.

II.A.4. Supporting Data for Carcinogenicity

Brooks et al. (1988) reported that n-heptane gave negative results in several genotoxicity assays. No increases in reverse mutations were observed in *Salmonella typhimurium* strains TA1535, TA1537, TA1538, TA98, and TA100 and *Escherichia coli* strains WP2 and WP2 uvr A exposed to n-heptane at concentrations of up to 250 ug/mL in a pre-incubation assay. Assays were performed with and without rat liver S9 preparations. n-Heptane (up to 5 mg/mL) did not induce gene conversion in *Saccharomyces cerevisiae* JD1 either in the presence or absence of rat liver S9 preparation. No increase was observed in chromosome aberrations in the rat liver epithelial cell line RL4 when exposed to n-heptane at concentrations up to 10 ug/mL.

II.B. Quantitative Estimate of Carcinogenic Risk from Oral Exposure

None.

II.C. Quantitative Estimate of Carcinogenic Risk from Inhalation Exposure

None.

II.D. EPA Documentation, Review, and Contacts (Carcinogenicity Assessment)

II.D.1. EPA Documentation

Source Document — U.S. EPA, 1989

The 1989 Health and Environmental Effects Document for n-Heptane has received full review from the Office of Health and Environmental Assessment and from the Office of Pesticides and Toxic Substances.

II.D.2. EPA Review (Carcinogenicity Assessment)

Agency Work Group Review — 07/25/1991

Verification Date — 07/25/1991

Screening-Level Literature Review Findings — A screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the cancer assessment for n-

Heptane conducted in September 2002 did not identify any critical new studies. IRIS users who know of important new studies may provide that information to the IRIS Hotline at hotline.iris@epa.gov or (202)566-1676.

II.D.3. EPA Contacts (Carcinogenicity Assessment)

Please contact the IRIS Hotline for all questions concerning this assessment or IRIS, in general, at (202)566-1676 (phone), (202)566-1749 (FAX) or hotline.iris@epa.gov (internet address).

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — n-Heptane
CASRN — 142-82-5

VI.A. Oral RfD References

None

VI.B. Inhalation RfD References

None

VI.C. Carcinogenicity Assessment References

Brooks, T.M., A.L. Meyer and D.W. Hutson. 1988. The genetic toxicology of some hydrocarbon and oxygenated solvents. *Mutagenesis*. 3(3): 227-232.

U.S. EPA. 1989. Health and Environmental Effects Document for n-Heptane. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Solid Waste and Emergency Response, Washington, DC.

VII. Revision History

Substance Name — n-Heptane
CASRN — 142-82-5

| Date | Section | Description |
|------------|---------|--|
| 01/01/1993 | II. | Carcinogenicity assessment on-line |
| 12/03/2002 | II.D.2. | Screening-Level Literature Review Findings message has been added. |

VIII. Synonyms

Substance Name — n-Heptane
CASRN — 142-82-5
Last Revised — 01/01/1993

- 142-82-5
- Heptane
- AI3-28784
- Eptani [Italian]
- Heptan [Polish]
- Heptanen [Dutch]
- Heptyl hydride
- HSDB 90
- n-Heptane
- Skellysolve C