

Adiponitrile; CASRN 111-69-3

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 Adiponitrile

File First On-Line 02/01/1991

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	not evaluated	
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	yes	02/01/1991

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

Substance Name — Adiponitrile
CASRN — 111-69-3

Not available at this time.

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

Substance Name — Adiponitrile
CASRN — 111-69-3

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Adiponitrile

CASRN — 111-69-3

Last Revised — 02/01/1991

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 and no animal cancer data were available. Adiponitrile was negative for mutagenicity in Salmonella with and without activation.

II.A.2. Human Carcinogenicity Data

None.

II.A.3. Animal Carcinogenicity Data

None.

II.A.4. Supporting Data for Carcinogenicity

NIOSH (1978) reported that adiponitrile was negative for mutations in several strains of *Salmonella* at concentrations up to 10,000 ug/plate in the presence and absence of hepatic homogenates.

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, 1987

The 1987 Health and Environmental Effects Document on Adiponitrile has received external peer review and Agency Review.

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

Agency Work Group Review — 11/07/1990

Verification Date — 11/07/1990

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 Adiponitrile 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 — Adiponitrile
CASRN — 111-69-3

VI.A. Oral RfD References

None

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

NIOSH (National Institute for Occupational Safety and Health). 1978. Criteria for a Recommended Standard...Occupational Exposure to Nitriles. U.S. Dept. Health, Education and Welfare, Rockville, MD. NTIS PB 81-225534. p. 166.

U.S. EPA. 1987. Health and Environmental Effects Document for Adiponitrile. 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 — Adiponitrile
CASRN — 111-69-3

Date	Section	Description
02/01/1991	II.	Carcinogenicity assessment on-line
12/03/2002	II.D.2.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Adiponitrile
CASRN — 111-69-3
Last Revised — 02/01/1991

- 111-69-3
- Hexanedinitrile
- ADIPIC ACID DINITRILE
- ADIPIC ACID NITRILE
- Adipodinitrile
- Adiponitrile
- Adiponitrilo [Spanish]
- Hexanedinitrile
- HEXANEDIOIC ACID, DINITRILE
- HSDB 627
- NITRILE ADIPICO [Italian]

- NSC 7617
- Tetramethylene cyanide
- UN 2205
- 1,4-DICYANOBTANE