4-Aminopyridine; CASRN 504-24-5

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 4-Aminopyridine

File First On-Line 12/01/1989

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	not evaluated	
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	yes	12/01/1989

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

Substance Name — 4-Aminopyridine
CASRN — 504-24-5

Not available at this time.

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

Substance Name — 4-Aminopyridine
CASRN — 504-24-5

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — 4-Aminopyridine
CASRN — 504-24-5
Last Revised — 12/01/1989

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. No data were available to assess the carcinogenic potential of 4- aminopyridine.

II.A.4. Supporting Data for Carcinogenicity

4-Aminopyridine was negative in reverse mutation assays in Salmonella typhimurium (Ogawa et al., 1986; Wakabayashi et al., 1982). Ogawa et al. (1986) tested the mutagenicity of 4-aminopyridine in S. typhimurium strains TA98, TA100, TA1537 and TA2637; 4-aminopyridine was not mutagenic both alone and in the presence of cobalt (II) chloride (study data not reported). [Cobalt (II) chloride was found to enhance the mutagenicity of other heteroaromatic compounds (i.e., 9-aminoacridine, 4-aminoquinoline and harman) in Salmonella.] In the Wakabayashi et al. (1982) study, 4-aminopyridine at concentrations of up to 2 mg/plate in the presence or the absence of S9 hepatic homogenates or in the presence of norharman, a tryptophan pyrolysate (200 ug/plate), was not mutagenic for S. typhimurium strains TA98 and TA100.

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 4-aminopyridine has received OHEA review.

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

Agency Work Group Review — 05/30/1989, 07/25/1991

Verification Date — 05/30/1989

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 4-Aminopyridine 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 — 4-Aminopyridine
CASRN — 504-24-5

VI.A. Oral RfD References

None

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

Ogawa, H.I., K. Sakata, T. Inouye et al. 1986. Combined mutagenicity of cobalt(II) salt and heteroaromatic compounds in Salmonella typhimurium. Mutat. Res. 172(2): 97-104.

U.S. EPA. 1989. Health and Environmental Effects Document for 4- Aminopyridine. 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.

Wakabayashi, K., T. Yahagi, M. Nagao and T. Sugimura. 1982. Comutagenic effect of norharman with aminopyridine derivatives. Mutat. Res. 105(4): 205- 210.

VII. Revision History

Substance Name — 4-Aminopyridine
CASRN — 504-24-5

Date	Section	Description
12/01/1989	II.	Carcinogen summary on-line
12/03/2002	II.D.2.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — 4-Aminopyridine
CASRN — 504-24-5
Last Revised — 12/01/1989

- 504-24-6
- 4-AMINOPYRIDINE
- GAMMA-AMINOPYRIDINE
- P-AMINOPYRIDINE
- P-AMINOPYRIDINE
- 4-AP
- AVITROL

- AVITROL 200
- 4-PYRIDINAMINE
- PYRIDINE, 4-AMINO-
- 4-PYRIDYLAMINE
- RCRA WASTE NUMBER P008
- UN 2671
- VMI 10-3