

Pentachloronitrobenzene (PCNB); CASRN 82-68-8

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 PCNB

File First On-Line 09/30/1987

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	09/30/1987
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	not evaluated	

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

Substance Name — Pentachloronitrobenzene (PCNB)

CASRN — 82-68-8

Last Revised — 09/30/1987

The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cellular necrosis. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Please refer to the Background Document for an elaboration of these concepts. RfDs can also be derived for the noncarcinogenic health effects of substances that are also carcinogens. Therefore, it is essential to refer to other sources of

information concerning the carcinogenicity of this substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file.

I.A.1. Oral RfD Summary

Critical Effect	Experimental Doses*	UF	MF	RfD
Liver toxicity	NOEL: 30 ppm (0.75 mg/kg/day)	300	1	3E-3 mg/kg/day
2-Year Dog Feeding Study	LEL: 180 ppm (4.5 mg/kg/day)			
Olin Mathieson Corp., 1968a				

*Conversion Factors -- 1 ppm = 0.025 mg/kg/day (assumed dog food consumption)

I.A.2. Principal and Supporting Studies (Oral RfD)

Olin Mathieson Chemical Corporation. 1968a. MRID No. 00001667, 00083328, 00114201; HED Doc. No. 005188. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

A 2-year feeding study with dogs (four males and four females/group) given diets containing 0, 30, 180, or 1080 ppm indicated that PCNB (1.4% hexachlorobenzene) caused liver weight increases, increased liver-to-body weight ratios, elevated serum alkaline phosphatase levels, and microscopically observed cholestatic hepatosis with secondary bile nephrosis at 1080 ppm (the highest dose tested). An interim sacrifice at 1 year occurred with one dog/sex/group; the remaining animals were sacrificed at 2 years. The cholestatic changes were observed in all animals given diets containing 180 and 1080 ppm PCNB, and one of three male dogs in the 30 ppm dose group exhibited the microscopic changes (no female dogs were affected). The authors noted that these histopathologic changes were moderate in the 1080 ppm group and minimal in the 180 ppm group. Based on these results, 30 ppm was the NOEL and 180 ppm was the LEL in dogs.

I.A.3. Uncertainty and Modifying Factors (Oral RfD)

UF — An uncertainty factor of 100 was used to account for the inter- and intraspecies differences. An additional UF of 3 was used since the database for chronic toxicity is incomplete.

MF — None

I.A.4. Additional Studies/Comments (Oral RfD)

Data Considered for Establishing the RfD:

- 1) 2-Year Feeding - dog: Principal study - see previous description; core grade minimum
- 2) 3-Generation Reproduction - rat: NOEL=500 ppm (25 mg/kg/day) (highest level tested); LEL=none; core grade minimum (Olin Mathieson Corp., 1968b)
- 3) 3-Month feeding - mouse: NOEL=1250 ppm (187.5 mg/kg/day) for males and 2500 ppm (375 mg/kg/day) for females; core grade minimum (NTP, 1986)

Data Gap(s): Chronic Rat Feeding Study; Rat Teratology; Rabbit Teratology

I.A.5. Confidence in the Oral RfD

Study — Medium

Database — Medium

RfD — Medium

The principal study appears to be of fair quality and is given a medium confidence rating. Because of the lack of a complete database on chronic toxicity, the database is given a medium confidence rating. Medium confidence in the RfD follows.

I.A.6. EPA Documentation and Review of the Oral RfD

Pesticide Registration Standard, July 1986

Pesticide Registration Files

Agency Work Group Review — 05/20/1985, 08/19/1986, 04/15/1987

Verification Date — 04/15/1987

Screening-Level Literature Review Findings — A screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the RfD for pentachloronitrobenzene (PCNB) conducted in August 2003 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.

I.A.7. EPA Contacts (Oral RfD)

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).

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

Substance Name — Pentachloronitrobenzene (PCNB)
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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Pentachloronitrobenzene (PCNB)
CASRN — 82-68-8

Not available at this time.

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — Pentachloronitrobenzene (PCNB)
CASRN — 82-68-8

VI.A. Oral RfD References

NTP (National Toxicology Program). 1986. Technical Report on the Toxicology and Carcinogenesis Studies of Pentachloronitrobenzene in B6C3F1 Mice (feed studies). Report No. NIH 86-2581.

Olin Mathieson Chemical Corporation. 1968a. MRID No. 00001667, 00083328, 00114201; HED Doc. No. 005188. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Olin Mathieson Chemical Corporation. 1968b. MRID No. 00001666; HED Doc. No. 000654. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

VI.B. Inhalation RfD References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Pentachloronitrobenzene (PCNB)

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Date	Section	Description
10/28/2003	I.A.6	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Pentachloronitrobenzene (PCNB)

CASRN — 82-68-8

Last Revised — 09/30/1987

- 82-68-8
- AVICOL
- BATRILEX
- BOTRILEX
- BRASSICOL
- EARTHCIDE
- FARTOX
- FOLOSAN
- FOMAC
- FUNGICLOR
- GC 3944-3-4
- KOBU
- KOBUTOL
- KP 2
- NCI-C00419
- OLPISAN
- PCNB
- PENTACHLORNITROBENZOL
- Pentachloronitrobenzene

- PENTAGEN
- PKhNB
- QUINTOCENE
- QUINTOZEN
- QUINTOZENE
- RCRA WASTE NUMBER U185
- SANICLOR 30
- TERRACHLOR
- TERRACLOR
- TERRAFUN
- TILCAREX
- TRI-PCNB
- UN 1282