

Hexachlorophene; CASRN 70-30-4

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 Hexachlorophene

File First On-Line 08/22/1988

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	08/22/1988
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 — Hexachlorophene

CASRN — 70-30-4

Last Revised — 08/22/1988

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
Swollen salivary glands, status spongiosis in brain and optic nerve	NOEL: None LEL: 30 ppm (0.75 mg/kg/day)	3000	1	3E-4 mg/kg/day
13-Week Dog Feeding Study				
Nationwide Chemical Corp., 1974				

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

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

Nationwide Chemical Corporation. 1974. MRID No. 00055365. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Beagle dogs (4/sex/dose) were fed hexachlorophene at 30, 60, or 120 ppm (0.75, 1.5, or 3.0 mg/kg/day) in the diet for 13 weeks. The principal effects noted were swollen salivary glands, dry mouth, and status spongiosis in the brain, optic nerve, spinal cord and sciatic nerve at all dose levels tested. A NOEL for this study was not established.

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

UF — An uncertainty factor of 100 was used, 10 each for the inter- and intraspecies differences. An additional UF of 10 was used to account for the lack of an established NOEL. An additional UF of 3 was used to account for subchronic to chronic exposure in the dog, yielding a total UF of 3000.

MF — None

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

The chronic rat study did not reveal any neurotoxicity for this chemical. However, in a 16-week oral feeding study in rats, neurotoxic effects were observed at 5 mg/kg/day when proper staining techniques were used. This was at the same dose level as the highest dose tested in the chronic study. The FDA has banned this chemical based on neurotoxic effects.

Data Considered for Establishing the RfD

- 1) 13-Week Feeding - dog: Principal study - see previous description; core grade minimum
- 2) 36-Day Feeding - pig: NOEL=0.1 mg/kg/day; LEL=0.5 mg/kg/day (mild neurological signs); no core grade (Robinson et al, 1975)
- 3) 24-Month Feeding (oncogenic) - rat: Systemic NOEL=20 ppm (1 mg/kg/day); Systemic LEL=100 ppm [5 mg/kg/day (dose changed from 3 to 5 mg/kg/day at week 37)] (HDT; reduction in body weight in males and some organ weight increases in both sexes); core grade minimum (Kalo Laboratories, Inc., 1980)
- 4) 3-Generation Reproduction - rat: Reproductive NOEL=20 ppm (1 mg/kg/day); Reproductive LEL=60 ppm (3 mg/kg/day) (slight increase in corpora lutea, and slight decrease in mean number of early resorptions); Fetotoxicity NOEL=20 ppm (1 mg/kg/day); Fetotoxicity LEL=60 ppm (3 mg/kg/day) (HDT; decreased number of pups surviving at lactation day 4 of F1a litter; decreased mean pup body weight); core grade minimum (Kalo Laboratories, Inc., 1979a)
- 5) Teratology - rat: Teratogenic NOEL=60 ppm (3 mg/kg/day); LEL=none; (HDT) (20 day cesarean section examination); core grade supplementary (Kalo, Inc., 1979b)

Other Data Reviewed:

- 1) 24-Month Oncogenic - mice: Systemic NOEL=100 ppm (15 mg/kg/day); Systemic LEL=none; core grade minimum (Kalo Laboratories, Inc., 1980)
- 2) 16-Week Feeding - rat: Systemic NOEL=50 ppm (3.7 mg/kg/day); Systemic LEL=100 ppm (5 mg/kg/day) (reduction in body weight, cerebral edema, vacuolization in the white matter in CNS); core grade supplementary (too few animals examined) (Nationwide Chemical Corp., 1973)

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

I.A.5. Confidence in the Oral RfD

Study — Medium

Database — Medium

RfD — Medium

The critical study indicates that the dog is the most sensitive species, therefore, since a NOEL for neurotoxic effects was not established, the study is given a medium confidence rating. The database is lacking a chronic dog study and two teratology studies. The existing teratology study is supplementary, but shows no indication of teratogenicity. Therefore, the data base is given a medium confidence rating. Medium confidence in the RfD follows.

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

Source Document — This assessment is not presented in any existing U.S. EPA document.

Other EPA Documentation — Pesticide Registration Files

Agency Work Group Review — 12/15/1987, 01/21/1988, 02/25/1988

Verification Date — 02/25/1988

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 Hexachlorophene conducted in September 2002 identified one or more significant new studies. IRIS users may request the references for those studies from 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 — Hexachlorophene
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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Hexachlorophene
CASRN — 70-30-4

This substance/agent has not undergone a complete evaluation and determination under US EPA's IRIS program for evidence of human carcinogenic potential.

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — Hexachlorophene
CASRN — 70-30-4

VI.A. Oral RfD References

Kalo Laboratories, Inc. 1980. MRID No. 00050288, 00084394. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Kalo Laboratories, Inc. 1979a. MRID No. 00031671. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Kalo Laboratories, Inc. 1979b. MRID No. 00084722. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Nationwide Chemical Corporation. 1973. MRID No. 00055049. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Nationwide Chemical Corporation. 1974. MRID No. 00055365. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Robinson, G.R., D.J. Wagstaff, J.J. Colaianne and A.G. Ulsamer. 1975. Experimental hexachlorophene intoxication in young swine. Am. J. Vet. Res. 36(11): 1615-1618.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Hexachlorophene
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Date	Section	Description
08/22/1988	I.A.	Oral RfD summary on-line
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Hexachlorophene

CASRN — 70-30-4

Last Revised — 08/22/1988

- 70-30-4
- acigena
- almederm
- AT-17
- AT 7
- B32
- bilevon
- bis(2-hydroxy-3,5,6-trichlorophenyl)methane
- bis-2,3,5-trichloro-6-hydroxyphenylmethan
- bis(3,5,6-trichloro-2-hydroxyphenyl)methane
- cotofilm
- dermadex
- 2,2'-dihydroxy-3,3',5,5',6,6'-hexachlorodiphenylmethane
- 2,2'-dihydroxy-3,5,6,3',5',6'-hexachlorodiphenylmethane
- exofene
- fomac
- fostril
- G-11
- gamophen
- gamophene
- G-eleven
- germa-medica
- G-II
- HCP
- hexabalm
- 2,2',3,3',5,5'-hexachloro-6,6'-dihydroxydiphenylmethane
- hexachlorofen
- hexachlorophane
- hexachlorophen
- Hexachlorophene
- hexafen
- hexide
- hexophene
- hexosan
- isobac 2
- methane, bis(2,3,5-trichloro-6-hydroxyphenyl)

- 2,2'-methylenebis(3,4,6-trichlorophenol)
- nabac
- nabac 25 EC
- NCI-C02653
- neosept V
- phenol, 2,2'-methylenebis(3,4,6-trichloro-
- phisodan
- phisohep
- RCRA waste number U132
- ritosept
- septisol
- septofen
- steral
- steraskin
- surgi-cen
- surgi-cin
- surofene
- tersaseptic
- trichlorophene
- turgex
- UN 2875