

## Vernam; CASRN 1929-77-7

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 Vernam

**File First On-Line 03/31/1987**

Category (section)	Assessment Available?	Last Revised
<b>Oral RfD (I.A.)</b>	yes	03/31/1987
<b>Inhalation RfC (I.B.)</b>	not evaluated	
<b>Carcinogenicity Assessment (II.)</b>	not evaluated	

\*A comprehensive review of toxicological studies was completed (2004) - please see section I.A.6 for more information.

## I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

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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
<b>Decreased body weight</b>	NOEL: 20ppm (diet) (1 mg/kg/day)	1000	1	1E-3 mg/kg/day
<b>2-Generation Reproduction Rat Study</b>	LEL: 100 ppm (diet) (5 mg/kg/day)			
<b>Stauffer Chemical Co., 1983</b>				

\*Dose Conversion Factors & Assumptions: 1 ppm = 0.05 mg/kg/day (assumed rat food consumption)

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

Stauffer Chemical Company. 1983. MRID No. 00126363, 92193023; HED Doc. No. 005345. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Rats were randomly assigned to one of four treatment groups (consisting of 15 males and 30 females) on the basis of body weight. Vernam was administered in the diet at the following concentrations: 0, 20, 100 or 500 ppm. An LEL of 100 ppm is based on the statistically significant depression in the mean body weight for both parental males and females. The NOEL for reproductive effects is considered to be 500 ppm, since no effects on mating, fertility, gestational or lactational indices were observed. Urinary tract variants were observed at a varied

rate in offsprings; whether this effect is compound- related or due to normal variation is not clear without evaluating historical data on this condition.

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

UF — An uncertainty factor of 1000 was used to account for the inter- and intraspecies differences, and the fact that no data on chronic exposure in rats and dogs are available.

MF — None

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

None.

Data Considered for Establishing the RfD:

- 1) 2-Generation Reproduction - rat: Principal study - see previous description; core grade guideline
- 2) 2-Year Feeding/Oncogenic - mouse: Systemic NOEL=100 mg/kg/day (HDT); core grade minimum (Stauffer Chemical Co., 1979)
- 3) 14-Week Feeding - rat: NOEL=32 mg/kg/day (HDT) (no significant effects); no core grade (Stauffer Chemical Co., 1967a)
- 4) 15-16 Week Feeding - dog: NOEL=1800 ppm (45 mg/kg/day) (HDT) (no significant effects); no core grade (Stauffer Chemical Co., 1967b)
- 5) Teratology - rabbit: Maternal NOEL=200 mg/kg/day; Toxicity NOEL=200 mg/kg/day; core grade supplementary (Stauffer Chemical Co., 1981)

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

### **I.A.5. Confidence in the Oral RfD**

Study — High  
Database — Low  
RfD — Low

The principal study is of good quality and is given a high confidence rating. The database is incomplete; therefore, confidence in the database can be considered low to medium. Confidence in the RfD can also be considered low to medium.

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

Pesticide Registration Files

Agency Work Group Review — 09/02/1986, 09/29/1986

Verification Date — 09/29/1986

A comprehensive review of toxicological studies published prior to 2004 was conducted. No new health effects data were identified that would be directly useful in the revision of the existing RfD for Vernam and a change in the RfD is not warranted at this time.

#### **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](mailto:hotline.iris@epa.gov) (internet address).

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

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Not available at this time.

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## **II. Carcinogenicity Assessment for Lifetime Exposure**

Substance Name — Vernam

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

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**III. [reserved]**

**IV. [reserved]**

**V. [reserved]**

**VI. Bibliography**

Substance Name — Vernam

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**VI.A. Oral RfD References**

Stauffer Chemical Company. 1967a. MRID No. 00088533; HED Doc. No. 000905. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Stauffer Chemical Company. 1967b. MRID No. 00088534; HED Doc. No. 000905. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Stauffer Chemical Company. 1979. MRID No. 00085497, 92193020; HED Doc. No. 000904. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Stauffer Chemical Company. 1981. MRID No. 00076723; HED Doc. No. 005345. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Stauffer Chemical Company. 1983. MRID No. 00126363, 92193023; HED Doc. No. 005345. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

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**VI.B. Inhalation RfC References**

None

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**VI.C. Carcinogenicity Assessment References**

None

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**VII. Revision History**

Substance Name — Vernam  
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Date	Section	Description
10/28/2003	I.A.6	Screening-Level Literature Review Findings message has been added.
09/29/2004	I.A.6	Screening-Level Literature Review Findings message has been removed and replaced by comprehensive literature review conclusions.

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## VIII. Synonyms

Substance Name — Vernam  
CASRN — 1929-77-7  
Last Revised — 03/31/1987

- 1929-77-7
- CARBAMIC ACID, DIPROPYLTHIO-, S-PROPYL ESTER
- DIPROPYLTHIOCARBAMIC ACID S-PROPYL ESTER
- PPTC
- n-PROPYL-DI-n-PROPYLTHIOLCARBAMATE
- PROPYL N,N-DIPROPYLTHIOLCARBAMATE
- R-1607
- S-PROPYL DIPROPYLTHIOCARBAMATE
- Vernam
- VERNOLATE