NuStar; CASRN 85509-19-9

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 NuStar

File First On-Line 09/26/1988

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	09/26/1988
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 — NuStar
CASRN — 85509-19-9
Primary Synonym — DPX-H6573
Last Revised — 09/26/1988

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
Liver cell enlargement **1-Year Dog Feeding** **Study du Pont, 1985**	NOEL: 5 ppm (0.2 mg/kg/day) LEL: 20 ppm (0.7 mg/kg/day)	300	1	7E-4 mg/kg/day

*Conversion Factors -- actual doses estimated from animal body weights and food consumption data provided

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

E.I. du Pont de Nemours and Company. 1985. MRID No. 40042113. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Nustar was administered in the diet at 0, 5, 20, or 75 ppm (0, 0.2, 0.7, or 2.5 mg/kg bw/day) to 5 dogs/sex/dose for 1 year. Hypertrophy of the centrilobular hepatocytes was noted in both sexes at the mid- and high-dose levels. Changes observed only at the high dose were consistent with hepatotoxicity and inflammation. In males these included: increased WBC counts due to increased neutrophils, monocytes and eosinophils; increased alkaline phosphatase and decreased cholesterol and total protein; and hepatocytic vacuolation. Increased liver weight and centrilobular inflammation of the liver occurred in both males and females. Thus, the NOEL and LEL for systemic toxicity are 5 ppm (0.2 mg/kg/day) and 20 ppm (0.7 mg/kg/day), respectively.

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

UF — The UF of 100 allows for uncertainty in the extrapolation of dose levels from laboratory animals to humans (10A) and uncertainty in the threshold for sensitive humans (10H), and uncertainty because of the lack of an adequate reproductive study (3D).

MF — None

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

Data Considered for Establishing the RfD:

1) 1-Year Feeding - dog: Principal study - see previous description; core grade minimum (E.I. du Pont de Nemours & Co., Inc., 1985a)

2) 2-Year Feeding (oncogenic) - rat: No increase in neoplastic lesions at any dose; Systemic NOEL=0.46 mg/kg/day; Systemic LEL=2.3 mg/kg/day (hepatic changes in females at 1 year, including increased relative liver weight and hepatocellular hypertrophy); core grade minimum (E.I. du Pont de Nemours & Co., Inc., 1986a)

3) 2-Generation Reproduction - rat: Parental NOEL=3.5 mg/kg/day; Parental LEL=19 mg/kg/day (decreased body weight and body weight gain in F1 males during the 90 day feeding study); Reproductive NOEL and LEL could not be determined; Developmental NOEL=0.85 mg/kg/day (hydronephrosis noted at weaning of F2b pups - only trial examined); core grade supplementary (E.I. du Pont de Nemours & Co., Inc., 1986b)

4) Teratology - rat: Maternal NOEL=10 mg/kg/day; Maternal LEL=100 mg/kg/day (increased mortality after day 23 of gestation, prolonged gestation, decreased food consumption and weight gain, increased relative and absolute liver weight); Developmental NOEL (pre and post natal)=2 mg/kg/day; Developmental LEL=10 mg/kg/day (increased incidence of small renal papilla, distended ureter, dilated renal pelvis, decreased pup survival); core grade minimum (E.I. du Pont de Nemours & Co., Inc., 1985b)

5) Teratology - rabbit: Maternal NOEL=12 mg/kg/day; Maternal LEL=35 mg/kg/day (decreased food consumption and final body weight were observed at one dose only); Developmental NOEL=12 mg/kg/day; Developmental LEL=35 mg/kg/day (increased resorptions and abortions, and decreased fetal weight); core grade minimum (E.I. du Pont de Nemours & Co., Inc., 1985c)

Other Data Reviewed:

1) 2-Year Feeding (oncogenic) - mouse: Systemic NOEL=3.4 mg/kg/day; Systemic LEL=27 mg/kg/day (increased absolute and relative liver weight and increased hepatocellular fatty change in male and females); core grade supplementary (E.I. du Pont de Nemours & Co., Inc., 1985d)

2) 90-Day Feeding - rat: NOEL=125 ppm (6.25 mg/kg/day); LEL=375 ppm (18.75 mg/kg/day) (bladder hyperplasia, elevated cholesterol); core grade minimum (E.I. du Pont de Nemours & Co., Inc., 1983a)

3) 90-Day Feeding - dog: NOEL=25 ppm (0.625 mg/kg/day); LEL=125 ppm (3.13 mg/kg/day) (bladder hyperplasia, elevated alanine aminotransferase/serum glutamate pyruvate transaminase, uric acid, decreased total protein Ca albumen, cholesterol, increased liver weight); core grade minimum (E.I. du Pont de Nemours & Co., Inc., 1983b)

Data Gap(s): Rat Reproduction Study

I.A.5. Confidence in the Oral RfD

Study — High
Database — Medium
RfD — Medium

The critical study is of good quality and is given a high confidence rating. Additional studies, except for the reproduction study, are also of good quality. The reproduction study is inadequate to completely assess the reproductive toxicity of nustar. Therefore, 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

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

Other EPA Documentation — Pesticide Registration Files

Agency Work Group Review — 01/21/1988

Verification Date — 01/21/1988

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 NuStar 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 — NuStar
CASRN — 85509-19-9
Primary Synonym — DPX-H6573

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — NuStar
CASRN — 85509-19-9
Primary Synonym — DPX-H6573

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 — NuStar
CASRN — 85509-19-9
Primary Synonym — DPX-H6573

VI.A. Oral RfD References

E.I. du Pont de Nemours & Company, Inc. 1983a. MRID No. 00161400. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1983b. MRID No. 00161168. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1985a. MRID No. 40042113. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1985b. MRID No. 00154928. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1985c. MRID No. 00154929. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1985d. MRID No. 40042114. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1986a. MRID No. 00161175, 40042112, 40640701, 40640702. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1986b. MRID No. 00161175, 40042112, 40640701, 40640702. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — NuStar
CASRN — 85509-19-9
Primary Synonym — DPX-H6573

Date	Section	Description
09/26/1988	I.A.	Oral RfD summary on-line
10/28/2003	I.A.6	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — NuStar
CASRN — 85509-19-9
Primary Synonym — DPX-H6573
Last Revised — 09/26/1988

- 85509-19-9
- Bis(4-fluorophenyl)methyl(1H-1,2,4-triazol-1-ylmethyl)silane
- Caswell No. 419K
- DPX 6573
- DPX-H6573
- EPA Pesticide Chemical Code 128835
- NuStar
- 1H-1,2,4-Triazole, 1-((bis(4-fluorophenyl)methylsilyl)methyl)-