

US EPA ARCHIVE DOCUMENT

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SHAUGNESSY NO.

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REVISED \_\_\_\_\_

EEB CHEMICAL PROFILE

DPX-F6025

100 Fish and Wildlife Toxicology

100.1 Minimum Requirements

100.1.1 Avian Acute Oral LD<sub>50</sub>

<u>Species</u>	<u>Test Material</u>	<u>Results</u>	<u>Category</u>	<u>Reference</u>
Mallard duck	96% a.i.	>2,510 mg/kg	Core	Acc. #072016

100.1.2 Avian Dietary LC<sub>50</sub>

<u>Species</u>	<u>Test Material</u>	<u>Results</u>	<u>Category</u>	<u>Reference</u>
Bobwhite quail	96% a.i.	>5,620 ppm	Core	Acc. #072016
Mallard duck	96% a.i.	>5,620 ppm	Core	Acc. #072016

101.1.3 Fish Acute LC<sub>50</sub>

<u>Species</u>	<u>Test Material</u>	<u>Results</u>	<u>Category</u>	<u>Reference</u>
Rainbow Trout	96% a.i.	>12.0 ppm	Core	Acc. #072016
Bluegill	96% a.i.	>10.0 ppm	Core	Acc. #073110
Sunfish				

100.1.4 Aquatic Invertebrate LC<sub>50</sub>

<u>Species</u>	<u>Test Material</u>	<u>Results</u>	<u>Category</u>	<u>Reference</u>
<u>Daphnia magna</u>	96% a.i.	>10.0 ppm	Core	Acc. #073110

100.2 Additional Terrestrial Laboratory Test

Nontarget Insects

Data submitted by the registrant indicate that DPA-F6025 is relatively nontoxic to honeybees (LD<sub>50</sub> >12.5 ug/bee).

100.3 Additional Aquatic Laboratory Tests

None

100.4 Field Tests

None

101 General Toxicology

Mammalian toxicology studies were reported as follows:

Human and Domestic Animal Safety

<u>STUDY</u>	<u>HASKELL LAB REPORT NO.</u>	<u>TEST MATERIAL</u>	<u>RESULTS</u>
Oral LD <sub>50</sub> Test (Rat)	HLR 311-83	75DF	>5000 mg/kg (male & female)
Dermal LD <sub>50</sub> Test (Rabbits)	HLO 283-83	75DF	>2000 mg/kg
Primary Eye Irritation	HLO 272-83	75DF	Mild Irritant
Skin Irritation Test	HLO 282-83	75DF	Not a skin irritant.
Dermal Irritation and Sensitization	HLO 354-83	75DF	Not an irritant or sensitizer.
Ames Test	HLR 459-82	Tech.	Not mutagenic.
Chinese Hamster Ovary Cell Assay	HLR 270-83	Tech.	Not mutagenic.
Unscheduled DNA Synthesis	HLR 208-83	Tech.	Not mutagenic.
<u>In Vivo</u> Bone Marrow Chromosome Study	HLO 340-83	Tech.	Not mutagenic.

Study	Report No.	NOEL <sub>1</sub>		Theoretical Maximum Intake mg/kg/day	Margin of Safety <sup>2</sup>
		ppm	mg/kg/day		
Rat subchronic	HLR-306-83	100	7.5	1.15 x 10 <sup>-5</sup>	6.5 x 10 <sup>5</sup>
Dog subchronic	HLO-463-83	100	2.5	1.15 x 10 <sup>-5</sup>	2.2 x 10 <sup>5</sup>
Mouse subchronic	HLR-337-83	25	3.75	1.15 x 10 <sup>-5</sup>	3.3 x 10 <sup>5</sup>
Rat reproduction (1 generation)	HLR-306-83	2,500	187.5	1.15 x 10 <sup>-5</sup>	1.6 x 10 <sup>7</sup>
Rat reproduction (1 generation)	HLR-357-84	250	18.75	1.15 x 10 <sup>-5</sup>	1.6 x 10 <sup>6</sup>
Rat 1 year Feeding	HLR-357-84	250	18.75	1.15 x 10 <sup>-5</sup>	1.6 x 10 <sup>6</sup>
Rat Teratology	HLR-336-83	-	30	1.15 x 10 <sup>-5</sup>	2.6 x 10 <sup>6</sup>

<sup>1</sup> Parts per million converted to mg/kg/day assuming the following conversions

Species	ppm	equals	mg/kg/day
Mouse	1	equals	0.150
Rat	1	equals	0.075
Dog	1	equals	0.025

<sup>2</sup> Margin of Safety -

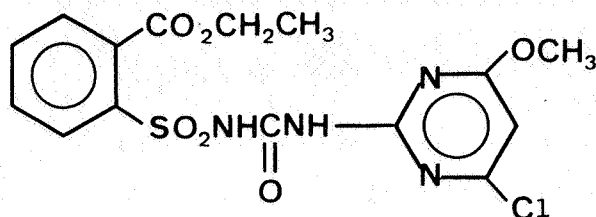
NOEL divided by Theoretical Maximum Intake

102 Physical and Chemical Properties

102.1 Chemical Name

2-((((4-Chloro-6-methoxypyrimidine-2-yl) amino carbonyl)) aminosulfonyl))-benzoic acid, ethyl ester.

102.2 Structural Formula



102.3 Common Name

DPX-F6025

102.4 Trade Name

DuPont Classic Herbicide

102.5 Molecular Weight

414.8

102.6 Physical State

Solid, off-white to pale yellow

102.7.1 Solubility

Technical

o Solubility in various organic solvents 25°C:

	<u>g/100 ml</u>
Acetone	7.05
Acetonitrile	3.10
Benzene	0.815
Ethyl Acetate	2.36
Ethyl Alcohol	0.392
n-Hexane	0.006
Methyl Alcohol	0.740
Methylene Chloride	15.3
Xylenes	0.283

o Solubility in water at controlled pH:

<u>pH</u>	<u>Solubility (mg/liter)</u>
1.3	1.5
1.9	1.5
2.5	1.5
4.2	4.1
5.0	9.0
5.8	99
6.5	450
7.0	1200

Formulated Product

Not given

102.7.2 Octanol/Water Partition Coefficient

$K_{ow} = 1.3$

102.7.3 Soil Adsorption Coefficient

DPX-F6025 is poorly adsorbed ( $K_a = 0.2-0.4$ ) on sandy loam soils and weakly adsorbed ( $K_a = 3-7$ ) on silt loam soils. The ease of desorption was inversely proportional to the percent organic content of the soils.

102.7.4 Vapor Pressure

At 25°C =  $1.5 \times 10^{-5}$  mmHg

103 Behavior in the Environment (Except from E.I.  
du Pont Report Acc. #073110)

103.1 Soil

Soil Photolysis Behavior of <sup>14</sup>C-DPX-F6025  
(Report No. AMR-192-84)

No significant difference was noted in the degradation rates of DPX-F6025 between exposed and dark samples, indicating that photolysis is not an important degradative pathway.

On both a silty loam and a sandy loam soil, half of the applied DPX-F6025 applied at 1.43 oz. active ingredient/acre (5.7 times the maximum recommended rate of 0.25 oz. a.i./acre) degraded or was unextractable within 3-4 weeks. The primary extractable degradation products are ethyl 2-(aminosulfonyl)benzoate, 4-chloro-6-methoxy-2-pyrimidinamine and saccharin.

Aerobic Soil Metabolism of <sup>14</sup>C-DPX-F6025  
(Report No. AMR-138-83, Revision 2, 9/18/84)

A silt loam and a sandy loam soil were treated with DPX-F6025 (separate experiments for <sup>14</sup>C label in the phenyl or pyrimidine portion of the molecule) at rates equivalent to 1.4 oz. a.i./acre (5.7 times the maximum recommended rate of 0.25 oz. a.i./acre). The soils were incubated for a year. The average half-life for the parent compound was ca. 7.5 weeks. The major degradation products were ethyl 2-(aminosulfonyl)benzoate and 4-chloro-6-methoxy-2-pyrimidinamine, which are also the hydrolysis products. This suggests that the major degradative pathway for DPX-F6025 in soils is via hydrolysis.

103.2 Water

Hydrolysis of <sup>14</sup>C-DPX-F6025  
(Report No. AMR-122-83)

Little, if any, hydrolysis of DPX-F6025 occurs at pH 7 or pH 9. At pH 5, the half-life is approximately 16 to 21 days. The hydrolysis products at pH 5 are:

- 1) ethyl 2-(aminosulfonyl)benzoate, and
- 2) 4-chloro-6-methoxy-2-pyrimidinamine

### 103.3 Plant

#### Crop Rotation Study with $^{14}\text{C}$ -DPX-F6025 in the Greenhouse (Report No. AMR-268-84)

A sandy loam soil was treated with [ $^{14}\text{C}$ -phenyl]-DPX-F6025 at a rate of 0.6 oz. a.i./acre (2.4 times the maximum recommended rate of 0.25 oz. a.i./acre) and aged for 120 days in the greenhouse. Barley, beets, cotton and peanuts were then planted and grown to maturity.

The level of total  $^{14}\text{C}$  in the soil at harvest was 2-4 ppb. The level of total  $^{14}\text{C}$  in the mature crops was 1-8 ppb and in the mature foliage was 3-25 ppb. The level of total methylene chloride extractable  $^{14}\text{C}$  (DPX-F6025 is methylene chloride extractable) is <5 ppb in all of the samples.

Because of the low levels of activity present in the crops or foliage and because of the difficulty in identifying the residues at these low levels, no efforts were made to identify or characterize these residues other than to determine whether or not they were methylene chloride extractable.

The major residue present in the soil at crop maturity (ca. 80%) is a demethylated DPX-F6025 derivative. Only 5-8% of the radioactivity was the parent DPX-F6025.

### 103.4 Animal

The octanol/water partition coefficient would indicate that bioaccumulation is not a problem. No additional information is available at this time.

### 103.5 Estimated Environmental Concentration (EEC)

The following maximum estimated environmental concentrations of DPX-F6025 in water, soil and on plants were derived using the methods of Hoerger and Kanaga (1972) and Kanaga (1973). These estimates assume the use of the maximum application rate of active ingredient would be:

(.0625 lb formulated product/acre) (.25 active ingredient/lb formulated product) = .01562 lb active ingredient/acre

Estimates of residues in water assume the direct application of product to a 6-inch acre-layer pond.



<u>Environment</u>	<u>Maximum Expected Residues</u>
Soil (.1 in)	.44 ppm
Water* (.5 ft acre-layer)	7.35 ppb

The maximum expected environmental concentration of DPX-F6025 does not approach the aquatic LC50 values for fish or invertebrates.

104            Uses and Special Concerns

February 7, 1985. This submission is for registration of the product on soybeans.