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SHAUGHNESSEY NO.

1
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 3/14/83 OUT 4/6/83

FILE OR REG. NO. 352-EUP-RRR

PETITION OR EXP. PERMIT NO. _____

DATE OF SUBMISSION 2/14/83

DATE RECEIVED BY HED 3/11/83

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RD ACTION CODE/TYPE OF REVIEW 710/EUP

TYPE PRODUCT(S): I, D, (H,) F, N, R, S Herbicide

DATA ACCESSION NO (S). _____

PRODUCT MANAGER NO. R. Taylor (25)

PRODUCT NAME(S) DPX-T6376

COMPANY NAME Dupont

SUBMISSION PURPOSE Proposed EUP for use on cereal grains

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
_____	_____	_____
_____	_____	_____

Environmental Safety Review

Fish and Wildlife

100.0 Pesticidal Use - Dupont is requesting an EUP for a new herbicide, DPX-T6376, for control of undesirable plants in small grains.

100.4. Proposed EUP

100.4.1 Objective - The stated purpose of the proposed experimental program "is to acquire information on DPX-T6376 to support an application for a full registration in the six distinct, small graingrowing regions."

100.4.2 Duration/Date/Amount Shipped

Dupont is requesting a total of 750 lbs of DPX-T6376 Weed Killer (60% a.i.) for use over a three year period beginning in August, 1983. The proposal calls for the use of 125 lbs in 1983, 250 lbs in 1984, and 375 lbs in 1985 on acreage not to exceed 5,000, 10,000, and 15,000 acres respectively.

100.4.3 Application Procedures

The proposed label for this EUP indicates that DPX T6376 may be applied any time the ground is not frozen. It can be used either for pre-emergence or post-emergence control of weeds using either air or ground equipment. Application rates range from 1/10 oz/A to 4/5 oz/A (formulation) depending on timing, weed species and duration of control desired.

100.4.4 Target Pest

The following common names of weeds are listed on the label:

- Common Chickweed
- Field Pennycress
- Shepherd spurse
- Dog fennel
- Fiddleneck (tarweed)
- Henbit
- Lumbs quarters
- Prickley lettuce
- Tumsy Mustard
- Tumble Mustard
- Wild Mustard
- Annual Ryegrass
- Flixweed
- Kochia
- Pennsylvania Smartweed.
- Russian Thistle
- Wild Buckwheat

100.4.5 Geographical Site Features

DPX-T6376 is proposed for use on wheat, barley and fallow field in the following states at the amount and acres indicated:

State	Amount (oz)	Acres
WA	65	2,600
OR	36	1,440
ID	30	1,200
UT	3.0	120
Ca	9.0	360
Az	2.5	100
MT	75.	3,000
ND	150	6,000
SD	75	3,000
WY	6	240
MO	2.5	100
MN	2.0	80
KY	2.0	80
IN	2.0	80
IA	2.0	80
IL	2.5	100
AL	4.0	160
GA	5.0	200
NC	4.0	160
SC	2.5	100
PE	2.0	80
VA	2.0	80
MP	2.0	80
WI	2.0	80
MI	3.0	120
OH	4.0	160
CO	20	800
NE	25	1,000
KS	90	3,600
OK	60	2,400
TX	50	2,000
NM	2	80
AR	2	80
LA	2	80
MS	2	80
TN	2	80

100.4.6 Test Program Description/Features

Dupont proposes testing DPX-T6376 in the above listed states at the rates and schedules on the proposed temporary label (attached). Plot size will vary with the length of the field width of the sprayer, and size and flexibility of harvesting equipment, but the proposal states that, in general, plots will be larger than one acre but less than 100 acres. They go on to say replicates will vary according to availability of land suitable for large scale research testing. Tests are requested for three years to permit testing in at least three non-fallow crop cycles and two fallow cycles.

101.0 Chemical and Physical Properties

The following information was taken directly from the Technical data sheet on DPX-T6376. A review of these data was not available for incorporation into this review.

101.1 Chemical Name

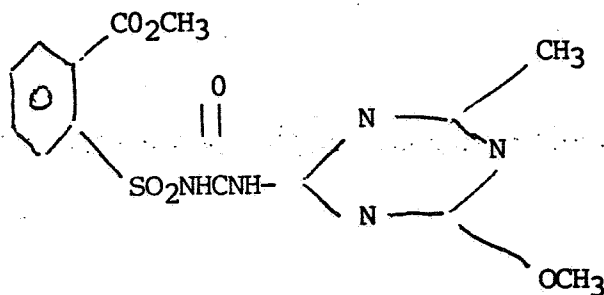
Methyl 2-[[[(4-methoxy-6-methyl 1,3,5-triazin-2-yl) amino]-carbonyl] amino]sulfonyl] benzoate

101.2 Common Name

DPX-T6376

H-14,028

101.3 Structural Formula



101.4 Molecular Weight

381.40

101.5 Physical State

Color - Technical - white to pale yellow; 60 DF formulation - off-white solid

Odor - technical - faint, sweet ester-like; 60 DF formulation - odorless

101.6 Solubility

In distilled H₂O at 25°C: 109 mg/l. In 0.05 sodium phosphate buffer at 25°C as a function of pH:

buffer pH	final pH	mg/l
7	6.1	9500
6	5.4	1750
5	4.6	270

In organic solvents a 20°C

Solvent	mg/l
n-hexane	0.79
methylene chloride	121,000
acetone	36,000
methanol	7,300

Octanol/Water Partition Coefficient (K_{OW}): 0.018

102.0 Behavior in the Environment

Again the review of the data which addresses this aspect of the chemical was not available for this review. The following information related to this topic was presented on the technical fact Sheet on DPX-T6376.

Hydrolysis: Half-life in Hours

	pH2	pH5	pH7	pH9
25°C	15	800	stable	stable
45°C	2	50	800	260

103.0 Toxicological Properties

Mammal

Study	Test material	Results
LD50-Rat*	Technical	
male		>5000 mg/kg
female		>5000 mg/kg

Study	Test materials	Results
LD ₅₀ Rat* male female	70DF	>5000 mg/kg >5000 mg/kg
Acute Dermal* LD ₅₀ -Rabbit	Technical	>2000 mg/kg
Acute Inhalation* LC ₅₀ -4hr. Rat	Technical	>5.0 mg/l
Rat-90-Day* dietary	0,100,1000 & 7500 ppm	NOEL 1000
<u>Fish</u>		
LC ₅₀ (96hr) Rainbow trout	Technical	>150 ppm core
LC ₅₀ (96 hr) Bluegill sunfish	Technical	> 150 ppm core
<u>Invertebrates</u>		
LC ₅₀ (48 hr) <u>Daphnia Magna</u>	Technical	> 150 ppm core
<u>Birds</u>		
LD ₅₀ (oral) Mallard	Technical	>2510 mg/kg core
LC ₅₀ (8 Day Dietary) Mallard	Technical	>5620 ppm core
LC ₅₀ (8 Day Dietary) Bobwhite quail	Technical	>5620 ppm core

*Studies not reviewed

104.0 Hazard Assessment

104.1 Discussion

DPX-T6376 does not appear to present an acute hazard to non-target fish or wildlife species. At the highest proposed use rate, 0.03 lb a.i./A, maximum concentrations of DIX-T6376 in a 6-inch body of water if directly applied would be 22 ppb a.i., well below toxicity figures reported from laboratory tests on aquatic species. These tests showed the LC50 for all aquatic species tested to be > 150 ppm. For terrestrial habitat theoretical calculations indicate that maximum expected concentrations on vegetation at the highest proposed application rate range from 0.2 to 7 ppm. Again these values are well below laboratory toxicity figures for indicator species: mallard and bobwhite LC50 >5620 ppm. The same indication is found for mammals, with the LC50 of laboratory rats reported to be greater than 5000 ppm.

Some concern of potential chronic problems are raised due to the indication that DPX-T6376 could be relatively stable in the environment. Hydrolysis tests showed the half-life to range from 2 hours at 45°C, pH₂, to stable at 25°C, pHs of 7 and 9. However, an evaluation of this aspect of DPX-T6376 must be deferred until an environmental fate profile is completed by the Exposure Assessment Branch (EAB).

For the proposed EUP any concern over chronic problems is mitigated due to the relatively small area involved in any one test, <100 acres. Therefore the proposed experimental program should not pose significant hazard to non-target species.

Adequacy of Toxicity Data

All six wildlife and aquatic organism studies required to support registration were submitted with this submission and all were classified core.

Depending on what EAB finds, further tests may be needed to evaluate chronic impacts of DPX-T6376 to non-targets.

107.0

Conclusion

EEB has completed a review of Dupont's proposed EUP to test DPX-T6376 to control weeds in wheat and barley fields and concludes that the proposed EUP does not pose a significant hazard to non-target fish or wildlife species. The data submitted are acceptable to support registration. However, further data may be required depending on the results of environmental fate data submitted for review.

Ed Fite
Wildlife Biologist
Ecological Effects Branch

Ed Fite 4/14/83

Norman Cook
Section Head #2
Ecological Effects Branch

Norman Cook 4.14.83

Clayton Bushong, Chief
Ecological Effects Branch

*Norman Cook for CB
4.14.83*

DATA EVALUATION RECORD

1. CHEMICAL: Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl) amino]carbonyl-amino] sulfonyl]-methyl ester or DPX-T6376
2. FORMULATION: Not stated (see discussion)
3. CITATION: Beavers, J.B. and R. Fink. 1981. Eight-day dietary LC50-Bobwhite Quail H-14,028 Final Report Project No 112-123 (Unpublished study received Feb 14, 1983 under 352-EUP-RRR prepared by Wildlife International, LTD. submitted by E.I. Dupont De Nemours & Company Inc.)
4. REVIEWED BY: Ed Fite
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 3/28/83
6. TEST TYPE: Avian dietary LC50 test
7. REPORTED RESULTS: The acute LC50 of H-14,028 (DPX-T6376) in the Bobwhite quail is estimated to be greater than 5620 ppm.
8. REVIEWER'S CONCLUSIONS: This study satisfies the registration data requirement for an avian dietary LC50 test for an upland game bird.

9. Methods and Materials

A. Procedure:

Species Bobwhite quail (Colinus virginianus)

Age At Initiation Of Study 14 Days

Source Production flock, Wildlife International, Ltd., St. Michaels, Maryland; Blood-tested U. S. Pullorum-Typhoid Clean

From hatching through Day 13 of brooding, all chicks received a water soluble vitamin mix via their water (see attached analysis). Throughout the following eight-day study, the chicks received plain tap water and temperature was maintained at 100°F.

The chicks received no form of antibiotic medication during brooding or throughout the eight-day study.

During brooding and throughout the eight-day study, the basal diet was Wildlife International, Ltd.'s game bird starter ration. Starter ration and water were available ad libitum throughout the study.

The photoperiod throughout brooding and the eight-day study was fourteen hours of light per day.

At 14 days of age, the birds were randomly assigned to the treatment groups outlined below without regard to sex.

<u>Treatment</u>	<u>Pens</u>	<u>Birds/Pen</u>	<u>Dietary Concentration (ppm)</u>
Control	5	10	Basal Diet Only
Lab Standard	5	10	15.9, 25.1, 39.8, 63.1, & 100.0
Experimental	5	10	562, 1000, 1780, 3160, & 5620

The experimental material and dieldrin were dissolved in corn oil in concentrations such that the addition of two parts (by weight) of each solution to 98 parts of the standard game bird starter ration resulted in the logarithmic series of dosage levels outlined above. For the purposes of diet preparation, the experimental material was assumed to be 100 percent active material and the LC50, as reported, is therefore of the experimental material as received.

The birds were exposed to the appropriate dietary concentrations for five days, and then maintained on toxicant-free diet for an additional three-day observation period. The control birds received the basal diet throughout the study.

Body weights were recorded by pen at initiation and termination of the study. Feed consumption was recorded by pen during the five-day exposure period. Feed consumption was measured accurately, but is presented as an estimate due to the unavoidable wastage by the birds.

Symptoms of toxicity and mortality were recorded daily throughout the study.

B. Statistical Analysis

N/A

C. Discussion and Results

Controls - There were three mortalities in the negative control groups during the course of the study. All mortalities were the result of toe and nostril picking, and the negative social interaction associated with these forms of cannibalism may have contributed to the reduction in feed consumption and body weight gain observed in one group. All other birds were normal in appearance and behavior throughout the test period.

Laboratory Standard - There was a 20% mortality rate at both the 25.1 ppm and 39.8 ppm concentration levels, a 70% mortality rate at the 63.1 ppm concentration level, and 100% mortality at the 100 ppm concentration level.

Symptoms of toxicity observed prior to death included lethargy, depression, reduced reaction to external stimuli (sound and movement), wing droop, loss of coordination, lower limb weakness, prostrate posture, and loss of righting reflex. There was a concentration related reduction in both feed consumption and body weight gain of surviving birds.

Experimental Material - H-14,028 (DPX-T6376) did not cause overt symptoms of toxicity or behavioral abnormalities at the concentration levels tested. There were no mortalities at any concentration level tested. There was, however, an increase in feed consumption at the 5620 ppm concentration level.

10. Reviewer's Evaluation

A. Test Procedures

Test protocol used in this study in general followed those recommended in EPA's Pesticide Assessment Guidelines

B. Statistical Analysis

Since no mortalities occurred at any of the concentrations tested statistical analysis of the data is not applicable.

C. Discussion and Results

The only pertinent point not reported for this study was the percent active of the test chemical. Phil Snyder of Dupont was contacted by phone (3/29/83) and he indicated that their records showed that the percent active of the material used in this test was 98. Therefore based on this study the LC50 of DPX-T6376 to 14 day old bobwhite quail is greater than 5620 ppm.

D. Conclusions

- (1) Category: Core

DATA EVALUATION RECORD

1. CHEMICAL: Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-amino]carbonyl]amino]sulfonyl]-, methyl ester or DPX-T6376
2. FORMULATION: Purity: 92.9%
3. CITATION: Hall, C.L., F.X. Phillips, and C.D. Litchfiled 1982. 96-hour LC50 to bluegill sunfish. Report No. 154-82. (Unplished study received Feb. 14, 1983 under 352-EUP-RRR prepared by Haskell Laboratory, submitted by E.I. Du Pont De Nemours & Company Inc.
4. REVIEWED BY: Ed Fite
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 3/23/83
6. TEST TYPE: 96 hour LC50, warm water species
7. REPORTED RESULTS: No mortalities were observed at nominal test concentrations or controls.
8. REVIEWER'S CONCLUSIONS: This study satisfies the registration data requirement for an acute toxicity test for a warmwater fish species.

9. Methods and Materials

- A. Procedure: The test material, as a 300 mg/mL stock solution in dimethylformamide (DMF), was introduced into all-glass exposure vessels and diluted with laboratory supply water to yield the desired test concentrations in 15-liter final volumes. An identical vessel, containing only laboratory supply water, was designated as the control. Another vessel, containing laboratory supply water and a concentration of DMF equivalent to the carrier concentration in the highest test material concentration, was designated as the DMF control.

Ten bluegill sunfish (Lepomis macrochirus) with a 3.6 cm mean standard length and 0.87 g mean wet weight were randomly assigned to each test vessel. Fish were not fed for 48 hours prior to nor during the exposure. The test solutions were not aerated and temperature was maintained at 22.2°C. Photoperiod was maintained at 16-hours light: 8-hours dark. Mortality counts and observations were made every 24 hours during the 96-hour exposure period.

Dissolved oxygen was measured in the control, low, medium and high test concentrations at the beginning of the test and at 48-hour intervals during the 96-hour exposure period. The pH was measured in the control, low, medium and high test concentrations at the beginning and end of exposure. Total alkalinity, hardness (EDTA) and conductivity were measured at the beginning of the test in the control. (see table II).

- B. Statistical Analysis

N/A

- C. Discussion and Results

INT-6376-22 was not acutely toxic to bluegill sunfish under static, unaerated test conditions during a 96-hour exposure at test concentrations of 150 ppm (v/v) and less. Table I presents results.

TABLE I

RESULTS OF A 96-HOUR ACUTE TOXICITY TEST
WITH BLUEGILL SUNFISH EXPOSED TO H-14, 418 (MR 4581-009)

Nominal Test Concentrations (ppm, v/v)	Observed Mortality (%)			
	24 Hr.	48 Hr.	72 Hr.	96 Hr.
150	0	0	0	0
100	0	0	0	0
50	0	0	0	0
25	0	0	0	0
5	0	0	0	0
DMF Control*	0	0	0	0
Control	0	0	0	0

* 7.5 mL of DMF were added directly to control water. This concentration (0.5) mL DMF/L) represents the U.S. Environmental Protection Agency recommended highest concentration for organic carriers in static, acute testing systems.

TABLE II

RESULTS OF PHYSICAL AND CHEMICAL PARAMETERS
MEASURED DURING A 96-HOUR ACUTE TOXICITY TEST
WITH BLUEGILL SUNFISH EXPOSED TO H-14, 418 (MR 4581-009)

Nominal Test Concentrations (v/v)	150 ppm (High)	50 ppm (Medium)	5 ppm (Low)	Control
<u>Dissolved Oxygen (ppm)</u>				
0 Hr.	8.7	8.7	8.7	8.6
48 Hr.	5.8	6.0	6.0	5.3
96 Hr.	4.8	5.1	5.0	5.0
<u>pH</u>				
0 Hr.	7.2	7.5	7.6	7.6
96 Hr.	7.4	7.5	7.5	7.5
<u>Total Alkalinity (mg/L as CaCO₃)</u>				
0 Hr.	-	-	-	105
<u>EDTA Hardness (mg/L as CaCO₃)</u>				
0 Hr.	-	-	-	114
<u>Conductivity (umhos)</u>				
0 Hr.	-	-	-	190

10. Reviewer's Evaluation

A. Test Procedures

Test protocol used in this study in general followed those recommended in EPA's Pesticide Assessment Guidelines.

B. Statistical Analysis

Since no mortalities occurred during this test statistical analysis of the data collected is not necessary.

C. Discussion and Results

Based on this test the LC50 of DPX-T6376 to Bluegill Sunfish is greater than 150 ppm.

D. Conclusions

(1) Category: Core

DATA EVALUATION RECORD

1. CHEMICAL: Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]-carbonyl]amino]sulfonyl]-, methyl ester or DPX-T6376
2. FORMULATION: Purity: 92.9%
3. CITATION: Hall, C.L., F.X. Phillips, and C.D. Litchfield. 1982. 48-hour LC50 to Daphnia magna. Report No. 157-82. (Unpublished study received Feb 14, 1983 under 352-EUP-RRR prepared by Haskell Laboratory, submitted by E.I. DuPont De Nemours & Company Inc.
4. REVIEWED BY: Ed Fite
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 3/23/83
6. TEST TYPE: 48-hour LC50, Freshwater aquatic invertebrate
7. REPORTED RESULTS: No mortalities were observed at nominal test concentrations or controls.
8. REVIEWER'S CONCLUSIONS: This study satisfies the registration data requirement for a freshwater aquatic invertebrate acute toxicity test.

9. Methods and Materials

- A. Procedure: The test material, prepared as a 300 mg/mL stock solution in dimethylformamide (DMF), was diluted with laboratory mass culture water to yield the desired exposure concentrations. After mixing, 200 mL of each concentration were introduced into each of two separate 250-mL glass exposure vessels. Two identical jars, containing only laboratory mass culture water, were designated as controls. Two identical jars, containing laboratory mass culture water and a concentration of DMF equivalent to the carrier concentration in the highest test material concentration, were designated as DMF controls.

Ten daphnids (Daphnia magna) less than 24-hours old were randomly assigned into each vessel. Food was not provided during the test. Test solutions were not aerated and temperature was maintained at 20.2°C. Photoperiod was maintained at 16-hours light:8-hours dark. Mortality counts and observations were made at 24 and 48 hours after the exposure was initiated.

Dissolved oxygen and pH were measured in the control, low, medium and high exposure solutions at the beginning and end of exposure. The total alkalinity, hardness (EDTA) and conductivity were measured at the beginning of the exposure in the control. (see table II).

B. Statistical Analysis

N/A

C. Discussion and Results

INT-6376-22 was not acutely toxic to Daphnia magna under static, unaerated test conditions during a 48-hour exposure at test concentrations of 150 ppm (v/v) and less. Table I presents results.

TABLE I

RESULTS OF A 48-HOUR ACUTE TOXICITY TEST
WITH DAPHNIA MAGNA EXPOSED TO h-14, 418 (MR 4581-009)

Nominal Test Concentrations (ppm, v/v)	Observed Mortality (%)			
	24 Hours		48 Hours	
	A*	B*	A*	B*
150	0	0	0	0
100	0	0	0	0
50	0	0	0	0
25	0	0	0	0
DMF Control**	0	0	0	0
Control	0	0	0	0

* Replicate exposure chambers containing 10 daphnids each.

** The highest concentration used was 0.5 mL DMF/L. This is the highest concentration for organic carriers recommended by the U.S. Environmental Protection Agency for static, acute testing systems.

TABLE II

RESULTS OF PHYSICAL AND CHEMICAL PARAMETERS
 MEASURED DURING A 48-HOUR ACUTE TOXICITY TEST
 WITH DAPHNIA MAGNA EXPOSED TO H-14, 418 (MR 4581-009)

Nominal Test Concentrations (v/v)	150 ppm (High)	50 ppm (Medium)	5 ppm (Low)	Control
<u>Dissolved Oxygen (ppm)</u>				
0 Hr.	8.0	7.9	7.8	7.7
48 Hr.	7.5	7.5	7.5	7.4
<u>pH</u>				
0 Hr.	7.4	7.5	7.8	7.7
48 Hr.	7.9	7.9	7.9	7.8
<u>Total Alkalinity (mg/L as CaCO₃)</u>				
0 Hr.	-	-	-	118
<u>EDTA Hardness (mg/L as CaCO₃)</u>				
0 Hr.	-	-	-	160
<u>Conductivity (umhos)</u>				
0 Hr.	-	-	-	240

10. Reviewer's Evaluation

A. Test Procedures

Test Protocol used in this study in general followed those recommended in EPA's Pesticide Assessment Guidelines.

B. Statistical Analysis

Since no mortalities occurred during this test statistical analysis of the data is not applicable.

C. Discussion and Results

Based on this test the LC50 of DPX-T6376 to Daphnia magna is greater than 150 ppm.

D. Conclusions

(1) Category - Core

DATA EVALUATION RECORD

1. CHEMICAL: Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]-carbonyl]amino]sulfonyl]-, methyl ester or DPX-T6376
2. FORMULATION: Purity: 92.9%
3. CITATION: Hall, C.L., C.F. Muska and, Carol D. Litchfield. 1982. 96-hour LC50 to rainbow trout. Report No. 515-82. (Unpublished study received Feb 14, 1983 under 352-EUP-RRR prepared by Haskell Laboratory, submitted by E.I. DuPont De Nemours & Company Inc.
4. REVIEWED BY: Ed Fite
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 3/23/83
6. TEST TYPE: 96 hour LC50, cold water species
7. REPORTED RESULTS: "No mortalities were observed at nominal test concentrations up to 150 mg/L during the 96-hour exposure period. At the 150 mg/L test concentration, three of the fish showed erratic swimming, rapid breathing and were lying on the bottom of the test container 24 hours after the test was initiated. At 48 hours two of the three fish had completely recovered; the third fish was affected throughout the entire study."
8. REVIEWER'S CONCLUSIONS: This study satisfies the registration data requirement for an acute toxicity test for a coldwater fish species.

9. Methods and Materials

- A. Procedure: The test material, as a 300 mg/mL stock solution in dimethylformamide (DMF), was introduced into all-glass exposure vessels and diluted with laboratory well water to yield the desired test concentrations in 15-liter final volumes. Two identical vessels, one containing only laboratory well water and the other containing laboratory well water supplemented with DMF at a concentration equivalent to that in the high test concentration, served as the controls.

Ten rainbow trout (Salmo gairdneri) with a 2.8 cm mean standard length and 0.17 g mean wet weight were randomly assigned to each test vessel. Fish were not fed for 48 hours prior to nor during the exposure. The test solutions were not aerated and temperature was maintained at 12.2°C. Photoperiod was maintained at 16 hours light: 8 hours dark. Mortality counts and observations were made every 24 hours during the 96-hour exposure period.

Dissolved oxygen was measured in the control, low, medium and high test concentrations at the beginning of the test and at 48-hour intervals during the 96-hour exposure period. The pH was measured in the control, low, medium and high test concentrations at the beginning and end of exposure. Total alkalinity, hardness (EDTA) and conductivity were measured at the beginning of the test in the well water control. (see table II).

- B. Statistical Analysis

N/A

- C. Discussion & Results

INT-6376-22 (DPX-T6376) was not acutely toxic to rainbow trout under static, unaerated test conditions during a 96-hour exposure period at nominal test concentrations up to 150 mg/L. Due to the low water solubility and the limited solubility in carrier solvents of the test material, higher concentrations were not tested so as to comply with a maximum recommended solvent concentration of 0.5 mL/L† for static acute tests. Table I presents results.

TABLE I

RESULTS OF A 96-HOUR ACUTE TOXICITY TEST
WITH RAINBOW TROUT EXPOSED TO H-14, 418 (MR 4581-009) or (DPX-T6376)

Nominal Test Concentrations (mg/L)	Observed Mortality (%)			
	<u>24 Hr.</u>	<u>48 Hr.</u>	<u>72 Hr.</u>	<u>96 Hr.</u>
150	0	0	0	0
100	0	0	0	0
50	0	0	0	0
25	0	0	0	0
5	0	0	0	0
DMF Control*	0	0	0	0
H ₂ O Control	0	0	0	0

* 0.5 mL DMF/L of Haskell Laboratory well water.

TABLE II

RESULTS OF PHYSICAL AND CHEMICAL PARAMETERS
 MEASURED DURING A 96-HOUR ACUTE TOXICITY TEST
 WITH RAINBOW TROUT EXPOSED TO H-14,418 (MR 4581-009) or (DPX-T6376)

Nominal Test Concentrations	150 mg/L (High)	50 mg/L (Medium)	5 mg/L (Low)	H ₂ O Control
<u>Dissolved Oxygen (ppm)</u>				
0 Hr.	9.6	9.5	9.6	9.5
48 Hr.	8.7	8.7	8.8	8.5
96 Hr.	8.4	8.4	8.2	7.8
<u>pH</u>				
0 Hr.	6.9	7.2	7.5	7.5
96 Hr.	7.2	7.3	7.3	7.3
<u>Total Alkalinity (mg/L as CaCO₃)</u>				
0 Hr.	-	-	-	106
<u>EDTA Hardness (mg/L as CaCO₃)</u>				
0 Hr.	-	-	-	110
<u>Conductivity (umhos)</u>				
0 Hr.	-	-	-	160

10. Reviewer's Evaluation

A. Test Procedures

Test protocol used in this study in general followed those recommended in EPA's Pesticide Assessment Guidelines.

B. Statistical Analysis

Since no mortalities occurred at any of the concentrations tested, no statistical analysis is necessary.

C. Discussion and results

Based on this test the LC50 of DPX-T6376 to rainbow trout is greater than 150 ppm.

D. Conclusions

1. Category: Core

DATA EVALUATION RECORD

1. CHEMICAL: Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino] carbonyl]amino] sulfonyl]-methyl ester or DPX-T6376
2. FORMULATION: Not stated (see discussion)
3. CITATION: Beavers, J.B. and R. Fink. 1981. Eight-day dietary LC50-Mallard Duck. H-14.028 Final report. Project No. 112-124 (Unpublished study received Feb 14, 11983 under 352-EUP-RRR prepared by Wildlife International LTD submitted by E.I. DuPont De Nemours & Company Inc.)
4. REVIEWED BY: Ed Fite
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 3/25/83
6. TEST TYPE: Avian dietary LC50 test
7. REPORTED RESULTS: The acute LC50 of H-14,028 (DPX-T6376) in the Mallard duck is estimated to be greater than 5620 ppm.
8. REVIEWER'S CONCLUSIONS: This study satisfies the registration data requirement for an Avian Dietary LC50 Test for a wild waterfowl, species.

9. Methods and Materials

A. Procedure:

Species Mallard duck (Anas platyrhynchos)

Age At Initiation Of Study 14 Days

Source Production flock, Wildlife International, Ltd., St. Michaels, Maryland 21663; Blood-tested U.S. Pullorum-Typhoid Clean.

At 14 days of age, the birds were randomly assigned to the treatment groups outlined below without regard to sex.

<u>Treatment</u>	<u>Pens</u>	<u>Birds/Pen</u>	<u>Dietary Concentration (ppm)</u>
Control	5	10	Basal Diet Only
Lab Standard	5	10	72, 100, 139, 193, & 269
Experimental	5	10	562, 1000, 1780, 3160, & 5620

The experimental material and dieldrin were dissolved in corn oil in concentrations such that the addition of two parts (by weight) of each solution to 98 parts of the standard game bird starter ration resulted in the logarithmic series of dosage levels outlined above. For the purposes of diet preparation, the experimental material was assumed to be 100 percent active material and the LC50, as reported, is therefore of the experimental material as received.

The birds were exposed to the appropriate dietary concentrations for five days, and then maintained on basal diet only for an additional three-day observation period. The control birds received the basal diet throughout the study. Temperature was maintained at 75°F throughout the study.

Body weights were recorded by pen at initiation and termination of the study. Feed consumption was recorded by pen during the five-day exposure period. Feed consumption was measured accurately, but is presented as an estimate due to the unavoidable wastage by the birds.

Symptoms of toxicity and mortality were recorded daily throughout the study.

B. Statistical Analysis

N/A

C. Discussion and Results

Controls - There were no mortalities in the negative control group. All birds were apparently normal in both appearance and behavior throughout the test period.

Laboratory Standard - There was a 20% mortality rate at the 100 ppm concentration level, a 40% mortality rate at the 139 ppm concentration level, a 50% mortality rate at the 193 ppm concentration level, and 100% mortality at the 269 ppm concentration level.

At the 72 ppm concentration level, lower limb weakness was the only overt symptom of toxicity observed. Symptoms of toxicity observed prior to death at all other concentration levels included lethargy, depression, reduced reaction to external stimuli (sound and movement) and lower limb weakness. One bird at the 193 ppm concentration level was observed in frank convulsions prior to death. There was a concentration related reduction in feed consumption and body weight gain of surviving birds at the 139 ppm and 193 ppm concentration levels, and a marked reduction in feed consumption at the 269 ppm concentration level.

Experimental Material - There were no mortalities at any concentration level tested. Some lower limb weakness was observed at the 1000 ppm concentration through 5620 ppm concentration level on Day 5, but at all other times all birds were apparently normal in both appearance and behavior. There was no effect on either body weight gain or feed consumption at any concentration level tested.

10. Reviewer's Evaluation

A. Test Procedures

Test protocol used in this study in general followed those recommended in EPA's Pesticide Assessment Guidelines

B. Statistical Analysis

Since no mortalities occurred at any of the concentrations tested for the test chemical, statistical analysis of the data is not applicable.

C. Discussion and Results

The only pertinent point not reported for this study was the percent active of the test chemical. Phil Snyder of Dupont was contacted by phone (3/29/83) and he indicated that their records showed that the percent active of the material used in this test was 98. Therefore, based on this study the LC50 of DPX-T6376 to 14 day old mallard ducks is greater than 5620 ppm.

D. Conclusion:

(1) Category: Core

DATA EVALUATION RECORD

1. CHEMICAL: Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl) amino]carbonyl]amino]sulfonyl]-, methyl ester or DPX-T6376.
2. FORMULATION: Not Stated (see Reviewers Evaluation, Discussion and Results)
3. CITATION: Beavers, J.B. and R. Fink. 1981. Acute oral LD50 Mallard Duck H-14-028 Final Report. Project No. 112-125 (Unpublished study recieved Feb 14, 1983 under 352-EUP-RRR prepared by Wildlife International LTD. submitted by E.I. DuPont De Nemours & Company Inc.)
4. REVIEWED BY: Ed Fite
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 3/23/83
6. TEST TYPE: Avian Acute Oral
7. REPORTED RESULTS: The acute oral LD50 of H-14,028 (DPX-T6376) in the Mallard duck is estimated to be greater than 2510 mg/kg.
8. REVIEWER'S CONCLUSIONS: This study satisfies the registration data requirement for an avian acute oral LD50 test.

9. Methods and Materials

A. Procedure:

Species Mallard duck (*Anas platyrhynchos*)
Age At Initiation Of Study 6 Months

Source Production flock, Wildlife International Ltd., Easton, Maryland; Blood-tested U.S. Pullorum-Typhoid Clean

Two weeks prior to initiation of the study, the birds were placed in pens identical to those to be utilized for testing. The birds were allowed to acclimate themselves to the environment under which testing would occur. Any group of birds which exhibited abnormal behavioral patterns or deviated from the norm were not utilized for testing purposes. Grower ration and water were available ad libitum throughout the study.

At the end of the acclimation period, the birds were randomly assigned to the treatment groups outlined, utilizing five birds of each sex per group.

<u>Treatment</u>	<u>Pens</u>	<u>Birds/Pen</u>	<u>Dosage Level (mg/kg)</u>
Controls	1	10	Corn Oil Only
Experimental	5	10	398, 631, 1000, 1590, & 2510

Feed was withheld from the control and test birds for 15 hours prior to oral administration of the experimental material.

The experimental material was ground with a mortar and pestle, suspended in corn oil, and maintained on an electromagnetic stirrer during dosing. The experimental material was intubated directly into the crop via a stainless steel catheter. Each bird was individually weighed and dosed on the basis of milligrams of material per kilograms of body weight. The control birds received a corresponding volume of corn oil only. The ratio of experimental material to diluent was adjusted so that each bird received an approximately constant volume to body weight dose. For the purposes of dosage administration and LD50 calculations, the experimental material was assumed to be 100 percent active material and the LD50, as reported, is therefore of the experimental material as received.

Body weight was recorded individually at initiation, and by pen at 3 days, 7 days, and at termination of the study. Feed consumption was accurately measured, but is presented as an estimate due to the unavoidable wastage by the birds.

Birds were housed indoors in Beacon Battery Finishers (Model No. B754) measuring 72 X 90 X 33 cm. high. Temperature was maintained between 65°F and 75°F, and relative humidity ranged between 30% and 80%. The photoperiod was maintained at 14 hours of light per day through the use of a Paragon time clock.

Symptoms of toxicity and mortality were recorded daily throughout the study.

B. Statistical Analysis

N/A

C. Discussion and Results

Principal Toxic Effects

Controls - There were no mortalities in the negative control group. All birds were normal in appearance and behavior throughout the test period.

Experimental Material - H-14,028 did not cause overt symptoms of toxicity or behavioral abnormalities at the dosage levels tested. There were no mortalities at any dosage level tested. There was, however, a slight loss of body weight for the first three days of the study at the 398 mg/kg, 1000 mg/kg, 1590 mg/kg and 2510 mg/kg dosage levels, and a slight reduction in feed consumption at the 2510 mg/kg dosage level for the first seven days of the study.

Mortality Data

The following values represent the number of dead birds per number of birds tested, cumulative.

10. Reviewer's Evaluation:

A. Test Procedures

Test protocol used in this study in general followed those recommended in EPA's Pesticide Assessment Guidelines.

B. Statistical Analysis

Since no mortalities occurred at any of the concentrations tested statistical analysis of the data is not applicable.