

US EPA ARCHIVE DOCUMENT

EEB BRANCH REVIEW

DATE: IN 11/25/80 OUT 1/22/81

FILE OR REG. NO. 464-LAG

PETITION OR EXP. PERMIT NO. 1H5280 & 1F2439

DATE DIV. RECEIVED 11/21/80

DATE OF SUBMISSION 11/3/80

DATE SUBMISSION ACCEPTED

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. R. Mountfort (23)

PRODUCT NAME(S) LONTREL 205 (Evaluate Dowco 290 one of two actives also known as 3,6-Dichloropicolinic Acid or 3,6-Dichloro-2-pyridinecarboxylic acid).

COMPANY NAME Dow Chemical Company

SUBMISSION PURPOSE Proposed registration of formulation

containing new active - Dowco 290 - to be used

on wheat, barley and Oats.

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
117401	3,6-Dichloro-2-pyridinecarboxylic Acid (or 3,6-Dichloropicolinic Acid)	5.2% (0.5 lb/gal)
030010	2,4-Dichlorophenoxyacetic Acid	20.8% (2.0 lbs/gal)
030001		

Pesticide Name(s) Dowco 290 (or 3,6-Dichloropicolinic acid) as the lesser active (5.2%) ingredient of Lontrel 205 herbicide that has as major active 2,4-Dichlorophenoxyacetic Acid also known as 2,4-D.

100.0 Pesticide Label Information

LONTREL* 205 Herbicide

For Selective Control of Broadleaf Weeds in
Spring and Winter Wheat, Barley and Oats
Not Underseeded With a Legume

DANGER: KEEP OUT OF REACH OF CHILDREN (In proper
Read Complete Precautions on Side Panel type size

ACTIVE INGREDIENTS:

2,4-Dichlorophenoxyacetic acid as alkanolamine
salts (of the ethanol and isopropanol series). . . 32.2%

3,6-Dichloro-2-pyridinecarboxylic acid as
alkanolamine salts (of the ethanol and
isopropanol series). 8.5%

INERT INGREDIENTS: 59.3%

Acid Equivalentents:

2,4-Dichlorophenoxyacetic acid 20.8% - 2.0 lb/gal

3,6-Dichloro-2-pyridinecarboxylic acid 5.2% - 0.5 lb/gal

EPA Registration No. 464-

EPA Est. 464-MI-1

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner
inconsistent with its labeling.

LONTREL 205 is recommended for selective control of unwanted
broadleaf weeds in spring and winter wheat, barley and oats
not underseeded with a legume.

For control of phenoxy resistant broadleaf weeds including Canada thistle, wild buckwheat, ladythumb (smartweed), cudweed, mayweed, scentless chamomile and Russian thistle, apply LONTREL 205 at a rate of 1 1/2 to 2 pt/A. Use the lower dosage when weeds are small (1 to 3 inches tall) or the higher dosage when weeds are more advanced (3 to 6 inches tall) or under dry soil conditions. Where Kochia is a problem, use the 2 pint rate and spray before the weed height exceeds 3 inches. Where Canada thistle is a major problem, apply the 2 pint rate when the thistles are 3 to 6 inches tall.

For control of other broadleaf weeds including lambsquarters, pigweed, mustard, ragweed, pennycress, and sunflower, apply LONTREL 205 at a rate 1 to 1 1/2 pt/A. Use the lower dosage when weeds are small (1 to 3 inches tall) or the higher dosage when weeds are more advanced (3 to 6 inches tall) or under dry soil conditions.

For aerial or ground treatment, use enough total spray volume to provide adequate spray coverage. Apply 1 to 4 gallons per acre by air and 5 to 20 gallons per acre by ground. Spray pressure should not exceed 20 psi. Use a coarse spray to minimize spray drift. Do not apply where spray drift may be a problem due to proximity of susceptible crops or other desirable plants.

Spray after grain begins tillering and before the boot stage (usually 4 to 8 inches tall). Do not apply from boot stage through the milk stage. Apply during warm weather when weeds are young and growing actively. Best results should be obtained when soil moisture is adequate for plant growth and weeds are growing well. NOTE: Do not permit dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 1 week after treatment.

PRECAUTIONARY STATEMENTS

Hazard to Humans and Domestic Animals

DANGER

KEEP OUT OF REACH OF CHILDREN

MAY CAUSES SKIN IRRITATION

Do Not Get in Eyes

Avoid Skin Contact

Wash Well After Handling

Avoid Breathing Spray Mists

In case of contact, immediately flush eyes or skin with plenty of water. Get medical attention if eye irritation persists. Remove contaminated clothing and wash before reuse.

USE PRECAUTIONS

Do not apply LONTREL 205 Herbicide directly to or allow spray drift to come in contact with vegetables, flowers, grapes, tomatoes, potatoes, beans or other desirable crop and ornamental plants.

Do not contaminate irrigation ditches or water used for irrigation or domestic purposes.

AVOID SPRAY DRIFT: Applications should be made only when there is no hazard from spray drift since very small quantities of the spray, which may not be visible, may severely injure susceptible crops during both growing and dormant periods. Use coarse sprays to minimize drift since, under adverse weather conditions, fine spray droplets may drift a mile or more. The spray thickening agent NALCO-Trol¹ may be used with this product to aid in reducing spray drift. If used, follow all use recommendations and precautions on the product label.

^NNALCO-Trol - Trademark of NALCO Chemical Company.

GROUND APPLICATION: With ground equipment, spray drift can be lessened by keeping the spray boom as low as possible; by using no more than 20 pounds spraying pressure with large droplet-producing nozzle tips; by spraying when wind velocity is low; and by stopping all spraying when wind exceeds 6 to 7 miles per hour. Do not apply with hollow cone-type insecticide or other nozzles that produce a fine-droplet spray.

AERIAL APPLICATION: With aircraft, drift can be lessened by applying a coarse spray; by using no more than 20 pounds spray pressure at the nozzles; by using straight-stream nozzles directed straight back; by using a spray boom no longer than 3/4 the wing span of the aircraft; and by spraying only when wind velocity is less than 6 mph.

DO NOT APPLY BY AIRCRAFT WHEN AN AIR TEMPERATURE INVERSION EXISTS. Such a condition is characterized by little or no wind and with lower air temperature near the ground than at higher levels. The use of a smoke device on the aircraft or continuous smoke column at or near site of application will indicate air direction and velocity, and whether a temperature inversion is present, which is shown by layering of the smoke.

Violent windstorms may move soil particles. If this product is on soil particles and they are blown onto susceptible plants, visible symptoms may appear. Serious injury is unlikely. The hazard of movement of this product on dust is reduced if treated fields are irrigated or if rain occurs shortly after application.

Do not use in a greenhouse. Excessive amounts of this herbicide in the soil may temporarily inhibit seed germination or plant growth.

Do not contaminate water areas by nearby cleaning of equipment or disposal of wastes. Apply this product only as specified on this label.

STORAGE AND DISPOSAL

Prohibitions: Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

Pesticide Disposal: Pesticide, spray mixture or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides or buried in a safe place away from water supplies.

Container Disposal: Triple rinse (or equivalent) and offer for recycling, reconditioning or disposal in approved landfill or bury in a safe place.

General: Consult Federal, State or local disposal authorities for approved alternative procedures.

NOTICE: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE, express or implied, extends to the use of this product, contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller and buyer assumes the risk of any such use.

100.1 to 100.5 (see section 100.0 of this Review: Label Information).

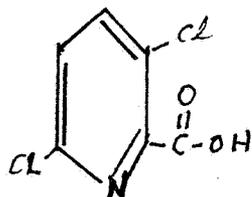
101.0 Physical and Chemical Properties

101.1 Chemical Name

Two chemical names are used for this compound as follows:

- 3,6-dichloropicolinic Acid
- 3,6-Dichloro-2-pyridinecarboxylic Acid

101.2 Structural Formula



101.3 Common Name

Picolinic acid

101.4 Trade Name

Dowco 290 (for picolinic acid).-

101.5 Molecular weight

m. wt. = 192

101.6 and 101.7 Physical Properties

- White crystalline solid
- Melting point = 52 °C
- Vapor pressure = 1.25×10^{-5} mm Hg @ 25°C
- Solubility @ 25°C
 - ° Water = 10-25 g/100 g of solvent
 - ° Acetone = 25 " " " "
 - ° Ethanol = 95 " " " "
 - ° Xylene = 95 " " " "

102.0 Behavior in the Environment (from 4/9/79 EFB review by Herbert L. Manning).

Soil

- Aerobic/Anaerobic Soil Metabolism

The average half-life (1/2t) of Dowco 290 in 10 aerobic soils was 71 days. Eight of the ten values had a 1/2t of under 48 days. The compound degraded more slowly anaerobically than aerobically.

Only 2.5 % of Dowco 290 underwent hydrolytic photolysis in 60 days in buffered distilled water at pH 6.9.

"Carbon activity from water logged samples remained mainly in the aqueous phase throughout the [aerobic soil degradation] experiment, indicating 3,6-dichloropicolinic acid is not readily absorbed in the soil."

Water

Artificial light irradiated buffered distilled water solution for 30 days produced almost no decomposition of the chemical.

102.3 Plants

A carbon 14 labeled Dowco 290 showed very low levels of residual radioactivity in plant samples at harvest. It was concluded that Dowco 290 related residues cannot be detected in crops grown in rotation with Dowco 290 - treated wheat.

102.4 Animals

(from the 2/25/80 RCB review by Edward Zager for Dowco 290, page No.6).

"To summarize, animal metabolism studies show that 3,6-dichloropicolinic acid is rapidly excreted, unchanged via urine and feces. There is evidence of some storage in tissues at higher sustained feeding levels".

- 102.5 Microorganisms
(Not available as of now to EEB)
- 103.0 Toxicological Properties
- 103.1 Rat-Acute oral LD₅₀ = 4300 mg/kg
(C.I. 3390 - 5440)

103.2.0 Minimum Requirements

<u>Type Test</u>	<u>Date of EFB Evaluation</u>	<u>Test Organisms</u>	<u>Results</u>	<u>Grade of Dowco 290</u>
Dierary LC ₅₀	1/19/79 Matheny	Mallard duck	>4,640 ppm	≥ 95.0
Acute Oral LD ₅₀	12/3/80 Yamhure	" "	1,465 mg/kg	96.9%
Dietary LC ₅₀	Matheny 1/19/79	Bobwhite Quail	>4,640 ppm	≥ 95.0
96-h LC ₅₀ Acute	Matheny 1/19/79	Rainbow Trout	105.5 mg/L	≥ 95.0
96-h LC ₅₀ Acute	Matheny 1/19/79	Bluegill sunfish	124.4 mg/L	≥ 95.0
Oral LD ₅₀	Matheny 1/19/79	Honeybee	>100 ug/bee	≥ 95.0
Contact LD ₅₀	"	" "	" "	≥ 95.0
48-h Acute LC ₅₀	12/3/80 Yamhure	<u>Daphnia magna</u>	232 mg/L	96.9%
	"	" "	225 mg/L	"

103.3.0 to 103.3.3 Additonal Terrestrial Laboratory Tests.

None

103.4.0 Additional Aquatic Laboratory Tests

None

103.5.0 Field Tests

None

104.0 Hazard Assessment

The Dow Chemical herbicide Lontrel 205 has two active ingredients: 2,4-D and 3,6-Dichloropicolinic (3,6-D. Known as Dowco 290. The former is EPA-registered, the latter active component is the object of this hazard assessment.

The active ingredient 3,6-D will be used for the control of phenoxy-resistant broadleaf weeds in oats, barley and wheat including wild buckwheat, ladythumb (smartweed) cudweed, Kodia, mayweeds, scentless camomile and Russian Thistle.

The EUP program evaluation for this herbicide was reviewed on 1/19/79 by Raymond W. Matheny of EEB. An expansion to said EUP to include Kansas, Minnesota and Oklahoma was reviewed on 4/3/80 by Richard M. Lee of EEB.

The animal data that has been presented to date by the applicant (section 103.2.0 of this review and previous reviews by Matheny and Lee of EEB) indicate that Dowco 290 is not significantly toxic to animals; however, the applicant's proposed label (section 100.0) shows that non-target endangered or commercially important plants may be at risk should they be contaminated by this herbicide.

Concern for the threat that Dowco 290 presents to the above mentioned non-target species has been ever present in the mind of previous reviewers since both phytotoxicity and exposure exist. This is easily established from the applicant's proposed precautionary labeling (section 100.0) and various documents found in the files of the EFB and the EEB.

A 5/7/79 letter from Ms. Willa Garner (then PM 23 of RD) to Mr. W.M. Stringer of Dow Chemical Co. considers the issue of spray drift in this case so important that out of a total of 8 pages it dedicates 4 pages (pages 3-7) to the discussion of the need to protect non-target species from spray drift.

The 1979 Agricultural statistics of the U.S. Department of Agriculture (pages 1,38, and 43) show, that potentially a total of 31.4 million hectares could be subjected to treatment by Lontrel 205. This is indeed a considerable amount of land. The following is a break down of the above mentioned hectarage:

<u>Crop</u>	<u>Hectares</u>
Wheat	23.0×10^6
Oats	4.7×10^6
Barley	3.7×10^6
<u>Total</u>	31.4×10^6

According to EEB's (Ms. Carol Natella*) literature search the following endangered and threatened plant species occur in the general regions where wheat, barley and oats are grown. The habitat of these species may lie in close proximity to fields in which these crops are grown:

Orcuttia mucronata (Solano grass). California - Solano Co. Vernal lakebed 12 mi south of Dixon.

Zizania texana (Texas wild-rice). Texas - Hays Co. Upper San Marcos River.

Aconitum noveboracense (Northern wild monkshood). New York - Ulster Co., Ohio - Summit Co., Iowa - Allamakee, Clayton, Jackson Cos., Wisconsin - Richland, Sauk, Vernon Cos.

Echinocereus triplochidiatus var. inermis (Spineless hedgehog cactus). Colorado-Montrose, Delta, Mesa, Ouray Cos., Utah-Jan Juan Co. Rugged tablelands.

Solerocactus glaucus (Uinta Basin hookless cactus). Colorado-Delta, Mesa Cos., Utah - Duchesne, Summit Los. Alluvial deposits.

Solerocactus mesae - Verdae (Mesa Verde cactus) Colorado - Montezuma Co., possibly Montrose Co. New Mexico - San Juan Co. Desert grasslands.

Echinocereus triglochidiatus var. arizonicus (Arizona headgehog cactus) Arizona-Gila, Pinal Cos., near boundary.

Echinocactus horizonthalonius var. nicholii (Nichols's Turk's head cactus) Arizona-S.W. Pinal Co, N. Central Pima Co.

Resolved - Res
subsequent
review 11/18/81 (Yamamoto)
plus OES
opinion 10/29/81
Rm

Based on all the above information, we at EEB believe that the use of Dowco 290 in the LONTREL 205 herbicide is likely to produce adverse effects on both non-target commercially important plants and endangered or threatened plant species. This determination requires EPA to initiate consultations with the Office of Endangered Species (OES) of the Department of the Interior (DOI) as required by statute under section 7(a) of the Endangered Species Act of 1973 as Ammended by the Endangered Species Act of 1978 (PL 95-632-Nov. 10, 1978).

* Note: Ms. Natella selected the above species from 45 FR 82482/3 (12/15/81), Table 1. - Also, for your information, we have attached generalized U.S. maps which pinpoint those general areas where wheat, barley and oats are grown. These maps were obtained from the U.S. Department of Agriculture's 1974 census of Agriculture-Bureau of the Census; issued 1977 (see attachments).

EEB must, therefore defer a final risk assessment determination on the question of the proposed use of Dowco 290 until such time as consultations with the OES of DOI have been completed.

Other important facts that add to our concerns for the phytotoxic characteristics of Dowco 290 have to do with its behavior in the Environment (see section 102.0 of this review) in that this material is very soluble in water, does not adsorb to soil and is not readily decomposed.

104.3 Endangered Species Considerations

(see section 104.0 above)

104.4 Adequacy of Toxicity Data

All animal data that has been presented by the applicant have been found adequate. (See section 103.2.0 of this review).

104.5 Additional Data Required

EEB/OES consultations may prove that there is need for additional data.

106.0 RPAR Criteria

Not at present

*Resolved
See OES review
10/22/81
AFM*

107.0 Conclusions

EEB will consult the OES on this matter.

Alvaro A. Yamhure *Alvaro A. Yamhure*
Section 3
Ecological Effects Branch, HED, (TS-769)

David Coppage *David Coppage*
Head Section 3
Ecological Effects Branch, HED, (TS-769)

Clayton Bushong *Clayton Bushong*
Branch Chief
Ecological Effects Branch, HED, (TS-769)
January 21, 1981

JAN 21 1981

- c.c. Jack Edmunson (DOI/OES)
- Matheny, Ray (EPA Coord.)
- Caroll Natella (EPA Botanist)
- EEB file

Validation Sheet

Formulation: Not less than 95% technical

Chemical Name(s): 3,6-Dichloropicolinic Acid
(or 3,6-Dichloro-2-pyridine carboxylic acid as alkanolamine salts - of the Ethanol and isopropanol series)-also known as Dowco 290.

Validator: Alvaro A. Yamhure

Date of Validation: 12/3/80

Test Type: Aquatic Invertebrate
48 hours LC₅₀

Test I.D.: Tests were conducted by Dow Chemical's Environmental Laboratory in Midland, Michigan and were completed on 7/12/80. Tests were identified by Dow Chem. by the No. ES-392.

Citation: Batchelder, T.L. 1980 Toxicity of Dowco 290, a Herbicide, to Freshwater Invertebrate Organisms. Environmental Science Research Laboratory of Dow Chemical Co., Midland, Michigan. Data Volume VI -Fish-Wildlife 11/3/80 (EPA file Numbers 1F2439 and 1H5280).

Environmental Science Research Laboratory of Dow Chemical Co.,

Midland, Michigan. Data Volume VI - Fish & Wildlife 11/3/80 (EPA file numbers 1F2439 and 1H5280).

Validation Category: Acceptable

Results:	<u>Species</u>	<u>Tests Results</u>	<u>Confidence limits</u>
1st. Test	Daphnia magna	232 ppm	214-254 ppm
2nd. Test	" "	225 "	208-245"

Note: See attached copy of EPA computer data validation sheet. Numerical results vary slightly from applicant's.

Validation Sheet

Formulation: Not less than 95% technical

Chemical Name(s): 3,6-Dichloropicolinic Acid (or 3,6-Dichloro-2-pyridine carboxylic acid as alkanolamine salts - of the Ethanol and isopropanol series)-Also known as Dowco 290.

Validator: Alvaro A. Yamhure

Date of Validation: 12/3/80

Test Type: Avian Acute Oral 96 hours LC₅₀

Test I.D.: Wildlife International Ltd. No. WI-660
Finished 1/11/80; Dated 2/5/80.

Citation: Beavers, J.B. 1980. Acute Oral LD₅₀ of Dowco 290 in the Mallard Duck. Wildlife International Ltd.

Validation Category: Acceptable

Results:

<u>Species</u>	<u>Tests Results</u>	<u>Confidence Limits</u>
Mallard duck	1465 ppm	1220-1760 ppm

Note: See attached copy of EPA computer data Validation sheet. Numerical results vary slightly.

9000 DATA 2510
 9001 DATA 2510,1590,1000,631,398
 9002 DATA 10,10,10,10,10
 9003 DATA 9,7,1,0,0
 RUN

*Mallard Duck
 (ACUTE ORAL-96-HLD50)
 Validated 12/3/80*

80/12/03. 09.53.40.
 BASIC PROGRAM S79LC50

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XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
CONC.          NUMBER          NUMBER          PERCENT          BINOMIAL
                EXPOSED         DEAD            DEAD            PROB.(PERCENT)
  2510             10             9             90.             1.07422
  1590             10             7             70.             17.1875
  1000             10             1             10.             1.07422
  631              10             0              0              9.76563E-2
  398              10             0              0              9.76563E-2
  
```

THE BINOMIAL TEST SHOWS THAT 1000 AND 2510 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 1375.68

-----RESULTS CALCULATED USING THE MOVING AVERAGE METHOD
 SPAN G LC50 95 PERCENT CONFIDENCE LIMITS
 3 .166669 1460.22 1181.37 1913.98

-----RESULTS CALCULATED USING THE PROBIT METHOD
 ITERATIONS G H GOODNESS OF FIT PROBABILITY
 6 .260061 1 .809774

SLOPE = 6.79943
 95 PERCENT CONFIDENCE LIMITS = 3.33198 AND 10.2669

LC50 = 1465.06
 95 PERCENT CONFIDENCE LIMITS = 1188.42 AND 1820.44

XX

9000 DATA 6
 9001 DATA 420,320,240,180,135,100
 9002 DATA 30,30,30,30,30,30
 9003 DATA 30,23,15,9,1,0
 RUN

DAPHNIA MAGNA
 48h HCUTE LC50
 VALIDATED 12/3/80

80/12/03. 09.58.11.
 BASIC PROGRAM S79LC50

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*****
CONC.          NUMBER          NUMBER          PERCENT          BINOMIAL
                EXPOSED          DEAD            DEAD            PROB. (PERCENT)
420             30             30             100             9.31323E-8
320             30             23             76.6667        .261144
240             30             15             50             57.2232
180             30             9              30.            2.1387
135             30             1              3.33333       2.88710E-6
100             30             0              0              9.31323E-8
  
```

THE BINOMIAL TEST SHOWS THAT 180 AND 320 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 240.

-----RESULTS CALCULATED USING THE MOVING AVERAGE METHOD
 SPAN G LC50 95 PERCENT CONFIDENCE LIMITS
 5 3.05847E-2 229.244 212.243 249.031

-----RESULTS CALCULATED USING THE PROBIT METHOD
 ITERATIONS G H GOODNESS OF FIT PROBABILITY
 5 5.81079E-2 1 .432424

SLOPE = 7.03021
 95 PERCENT CONFIDENCE LIMITS = 5.33554 AND 8.72488

LC50 = 232.831
 95 PERCENT CONFIDENCE LIMITS = 214.01 AND 253.567
