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Atrazine/Review # 36/2-11-81/8 pages

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

#63

Date: February 11, 1981

Subject: EPA File Symbol: 7969-LU
LADDOK: Caswell # 50901 63

From: Deloris F. Graham 2/19/81
FHB/TSS E 2/20/81

To: Robert Taylor
Product Manager (25)

Applicant: BASF Wyandotte Corporation
Agricultural Chemical Division
100 Cherry Hill Road
Parsippany, New Jersey

Active Ingredients:

| | |
|---|---|
| Sodium salt of bentazon (3-Isopropyl-1H-2,1), 3-benzothiadiazin-4(3H)-one,2,2-dioxide | 21.8% |
| Atrazine (2-chloro-4-ethylamino-6-isopropylamino-s-triazine | 20.0% |
| Inert Ingredients | 58.2% |

Background: Submitted Acute Oral, Acute Dermal, Acute Inhalation, Eye Irritation and Skin Irritation studies. These studies were conducted by BASF. These data are under accession number 244920. Method of support not indicated.

Recommendations:

(1) FAB/TSS finds these studies acceptable to support the conditional registration of this product. However, for future submissions please note:

a. In the Acute Oral Study, LD50 and 95% confidence limits must be submitted individually for males and females.

b. In the Acute Dermal Study, irritation scores must be reported individually for each animal.

c. In the Acute Inhalation Study, chamber temperature and humidity must be reported.

d. In the Eye Irritation Study, 9 animals (6 animals with treated unwashed eyes and 3 animals with treated washed eyes) must be used.

e. In the Dermal Irritation Study, 4 skin sites (2 abraded and 2 intact) must be used.

3. As determined by the Eye Irritation Study, the appropriate signal word is DANGER.

Label:

1. The signal word DANGER must appear on center front panel.

2. The preferred placement of the statement "Keep Out of Reach of Children" is on the center front panel preceeding the signal word.

3. The precautionary statements must be revised to read:

"Corrosive, causes eye damage and skin irritation. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful if swallowed."

"If in Eyes, immediately flush eyes with plenty of water. Get medical attention. If on Skin, immediately flush skin with plenty of water. Get medical attention if irritation persists."

4. The statement "Keep out of lakes, ponds or streams" must be revised to read "Do not apply directly to lakes, ponds or streams."

5. The Environmental Hazard statements preceeding the Storage and Disposal statements must be deleted.

6. Please see enclosed copy of labeling procedures and formats.

Review:

1. The Acute Oral Toxicity Study: BASF, December 13, 1979.

Procedure: 6 groups, each consisting of 5M and 5F Sprague-Dawley rats received one of the following doses: 1000, 1470, 2150, 3160, 3830 and 5000 mg/kg of the test material. Observations were made daily for 14 days. Necropsies were performed on all animals.

Results: At 3160 mg/kg, 3/10 animals died; at 3830 mg/kg, 9/10 animals died and at 5000 mg/kg, 10/10 animals died. Symptoms observed included dyspnea, apathy, abnormal position, staggering, trembling, twitching, spastic gait, piloerection, erythema, cyanosis, exsuccosis, salivation, lacrimation, poor general condition. Necropsy of animals which died during study revealed acute dilatation of the atria; acute congestive hyperemia of the heart; clay-colored periphery involving about half of the area of the acunus of the liver; hemorrhagic ulcerations in the glandular stomach, content mixed with blood in intestines. Sacrificed animals showed no abnormalities at necropsy. LD50 for males and females was 3341 mg/kg with ✓ confidence limits between 2959-3639 mg/kg.

Study Classification: Core Minimum Data. Must submit LD50 and confidence limits individually for males and females.

Toxicity Category: III - CAUTION

2. Acute Dermal Toxicity Study: BASF; November 8, 1979.

Procedure: 2 groups, each consisting of 5M and 5F Sprague-Dawley rats received one of the following doses: 2000 and 5000 mg/kg at shavened skin sites. The treated skin sites were placed under occlusive wrap for a 24-hour exposure period. Observations were made at 1, 24 and 48 hours and 7 and 14 days. Necropsies were performed on all animals.

Results: No mortalities. Symptoms observed included irregular respiration and apathy. At 24 hours after exposure there were signs of primary irritation which had completely subsided after 7 days. No abnormalities observed at necropsy. LD50 was greater than 5000 mg/kg.

Study Classification: Core Minimum Data Irritation scores must be reported individually for each animal.

Toxicity Category: III-CAUTION

3. Acute Inhalation Toxicity: BASF; February 2, 1980;

Procedure: The vessel containing the test substance was connected to a two-component or a Rhema atomizer, which was additionally supplied with filtered compressed air. When the Pari nebulizer was used, the condensate from the walls was collected and led back into the inhalation system. The nominal concentration was determined gravimetrically. A pressure slightly above atmosphere pressure was maintained in the inhalation system by means of an exhaust air system. The animals were exposed for 6 hours.

Ten male and ten female Sprague-Dawley rats were used for each of the following exposure concentrations; 25.6, 29.5 and 12 mg/l nominal concentrations. The analytical concentrations were 6.09, 3.12 and 1.68 mg/l respectively.

Results: At 25.6 mg/l, 1/10 M died and at 29.5 mg/l, 1/10 F died. Symptoms observed included lid closure, redden nose, head conglutinated by substance, ruffled fur, dyspnea, tremors, staggering gait with stretched legs, crouching posture, aggressiveness, alopecia. Necropsy revealed reddish brown liver; yellowish-brown marbleization of liver; clay-colored periphery involving about half of the area of the acinus of the liver. The $LC_{50}$ was determined to be greater than 6.1 mg/l.

Study Classification: Core Minimum Data. Chamber temperature and relative humidity must be reported.

Toxicity Category: III - CAUTION

4. Eye Irritation Study: BASF, November 8, 1979.

Procedure: 6F white rabbits received a 0.1 ml dose of the test material in one eye. Observations were made at 24, 48 and 72 hours and 8 and 16 days.

Results: At 24 hours, 6/6 animals had corneal opacity (6/6 = 20); 1/6 iris irritation (1/6 = 5); 6/6 conjunctive redness (6/6 = 2); swelling (6/6 = 2) and discharge (6/6 = 2). Corneal opacity and conjunctive irritation persisted for 16 days.

Study Classification: Core Minimum Data.

Toxicity Category: I - DANGER

5. Dermal Irritation Study: BASF; November 8, 1979.

Procedure: 3M and 3F rabbits were exposed to a 0.5 ml dose of the test material at intact and abraded skin sites under occlusive wrap for a 24 hour evposure period.

Results: At 24 hours, well defined erythema and edema at abraded and intact skin sites on all animals. At day 8, slight erythema and severe eschar formation. Primary irritation index was 3.8.

Study Classification: Core Minimum Data. 4 skin sites (2 abraded and 2 intact) must be used.

Toxicity Category: III - CAUTION

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December 15, 1980

4 Pages

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BASF

# Laddok™

)STEMERGENCE FLOWABLE HERBICIDE

:tive Ingredients:
Sodium salt of bentazon*(3-Isopropyl-1H-2,1,
)-benzothiadiazin-4(3H)-one, 2,2-dioxide)...21.8%
itrazine*(2-chloro-4-ethylamino-6-
Isopropylamino-s-triazine).....20.0%

ert Ingredients.....58.2%
Equivalent to 1.66 pounds per gallon each
ctive ingredient.

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## AUTION

EP OUT OF REACH OF CHILDREN
rmful if swallowed. Avoid contact with
es or skin. In case of contact, immediately
ush eyes or skin with plenty of water. Get
dical attention if irritation persists.

VIRONMENTAL HAZARDS
ep out of lakes, ponds, or streams. Do not
ntaminate water by cleaning of equipment or
sposal of wastes.

AKE WELL BEFORE USING

T CONTENTS
½ Gallons

SF Wyandotte Corp.
rsippany, N.J. 07054

LABEL

ART 03

TIONS FOR USE

violation of Federal law to use this ct in a manner inconsistent with its ng.

**Ground equipment:** Use a min[illegible]m of 20 gals. of water per broadcast acre and a mini[illegible]n of 40 psi pressure. When crop and weed foliage is dense use up to 50 gals. of water and up to 80 psi pressure. Use standard high pressure pesticide hollow cone or flat fan nozzles spaced 20 inches apart. Do not use flood nozzles.

(measured at the boom – not at the pump or in the line).

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**Air equipment:** Use a minimum of 5 gals. of water per acre and a maximum of 40 psi pressure. Use only diaphragm-type nozzles producing cone or fan spray patterns.

## ral Information

dok selective herbicide is intended for the post-jence control of a broad spectrum of broadleaf weeds.

LADOOK DOES NOT CONTROL

SES. Laddok is effective mainly through con-ction, therefore, weeds must be thoroughly covered spray. Large crop-and-weed-leaf canopies shelter er weeds and prevent adequate spray coverage.

Corn is tolerant to Laddok at all stages of h, but very slight leaf speckling may occur. Corn s generally outgrow this condition within 10 days.

*Always add oil concentrate* according to the on entitled "Mixing and Application".

## ing of Applications

y Laddok early post-emergence when weeds mall and actively growing and before weeds reach naximum size listed in the LADOOK APPLICA-I RATE TABLE FOR CORN. Such applications gen-correspond to the corn growth stages of one to five s.

application to weeds produces the most beneficial t on weed control, allows use of the lower rate (depending eed species), and makes it easier to obtain thorough coverage. Delay in application which permits weeds xceed the maximum size stated will result in inade-e control.

ot cultivate within 5 days before or after Laddok appli-n in the following states: AZ, CA, CO, CT, ., IN, IA, KS, KY, ME, MA, MI, MN, MO, MT, NB, NH, NJ, NY, ND, OH, OR, PA, RI, SD, UT, VT, WA, WI, WY. A cultivation 5 or more days after application may be nec-ry if all weeds are not controlled or if a second flush of ds occurs.

## er Volume and Spray Pressure

y recommended rates of Laddok as follows:

## Aerial Application–Special Directions

To obtain uniform coverage and to avoid drift hazards, the following application equipment and practices should be used:

**Nozzle height:** maximum of 10 feet above crop.

**Nozzle orientation:** nozzles must be oriented so as to discharge straight back with the air stream (opposite the direction of travel of the aircraft) or at some angle between straight back and straight down.

Nozzles must not be located further out than three fourths the distance from the center of the aircraft to the end of the wing or rotor.

**Water volume and spray pressure:** see above-Air equipment.

Do not apply Laddok by aircraft when wind is blowing at a velocity of 5 mph or greater. Coarse sprays (larger droplets) are less likely to drift.

PART 02

PART 03

## Environmental Hazards

Keep out of lakes, streams, or ponds. Do not contaminate water by cleaning of equipment or disposal of wastes.

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Do not apply when weather conditions favor drift from target area.

## Storage And Disposal

Do not allow product to freeze.

Do not contaminate water, food or feed by storage or disposal. Open dumping prohibited. Do not reuse empty container.

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.

Triple rinse container and dispose of in an incinerator or landfill approved for pesticide containers, or bury in a safe place.

Consult federal, state or local disposal authorities for approved alternative procedures such as limited open burning.

## Conditions of Sale And Warranty

The Directions for Use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF WYANDOTTE CORPORATION ("BWC") or the Seller. All such risks shall be assumed by the Buyer.

BWC warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the inherent risks referred to above. BWC MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. In no case shall BWC or the Seller be liable for consequential, special or indirect damages resulting from the use or handling of this product. BWC and the Seller offer this product, and the Buyer and user accept it, subject to the foregoing Conditions of Sale and Warranty which may be varied only by agreement in writing signed by a duly authorized representative of BWC.

Basagran® trademark of BASF AG

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PART 02

REF:

PART 03

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...y Laddok by air within 200 feet of orr
sensitive non-target crops such as cotton, su
...nflowers or okra.

must follow the most restrictive use cautions to
hazards, including those found in this labeling
s applicable state and local regulations and
s.

## and Application

...oncentrate must be added to the spray tank
ll conditions. Use a non-phytotoxic oil con-
commonly referred to as oil concentrate) con-
blend of 80% paraffin base petroleum oil and
ance exempt surfactant.

...d application use oil concentrate at the max-
... of 1 quart/acre. For air application use oil con-
...t the maximum rate of 1 pint/acre. In California,
...dditional information under the APPLICATION RATE
...R CODE. Fill tank of a thoroughly clean sprayer
...-thirds full with clean water. Start agitation and
...ldok, allow to mix thoroughly. Add oil concen-
remaining volume of water. Maintain constant
during application.

Avoid allowing the mixture to stand over-
...ays clean sprayer thoroughly immediately after
...shing the system with water and a strong de-
...Do not allow cleaning water to contaminate any
...r ponds.

**Areas:** In irrigated areas, it may be necessary to
...rior to Laddok treatment to ensure weeds
...ng actively. Weeds growing under drought condi-
...ally are not satisfactorily controlled.

## ...tions and Limitations

...se Laddok when crop is under stress from pro-
...old, wet weather, poor fertility, or other factors or
...op is wet and succulent from recent rainfall as
...ry may occur.

...m producers should consult the seed corn com-
...garding tolerance of seed production inbred lines
...ok.

...nake more than one application of Laddok per

...graze treated area or feed treated forage to live-
21 days following application.

Do not apply Laddok if crop shows injury (leaf phytotoxicity and or ...nt stunting) produced by any other prior herbicide applications, because this injury may be enhanced and or prolonged.

Do not apply Laddok during prolonged periods of drought or during unseasonably cold weather, as unsatisfactory weed control may result.

Rainfall or overhead irrigation soon after application (within 8 hours) may nullify the effectiveness of Laddok.

Do not mix or apply Laddok with any other pesticide or with fertilizer except as specifically recommended on this labeling.

**Application Rate Table for Corn**

| Weeds Controlled | Application Rates for Weed Growth Stages: 2 2/5 pts / A* Leaf Stage | 2 2/5 pts / A* Max. Height | 3 9/10 pts / A* Leaf Stage | 3 9/10 pts / A* Max. Height |
|---|---|---|---|---|
| Cocklebur *(Xanthium pensylvanicum)* | 2-6** | 4" | 6-10 | 8" |
| Common Lambsquarters† *(Chenopodium album)* | 4-8 | 2" | 8-12 | 4" |
| Common Ragweed *(Ambrosia artemisiifolia)* | up to 4 | 2" | 4-6 | 3" |
| Giant Ragweed *(Ambrosia trifida)* | up to 4 | 4" | 4-6 | 6" |
| Jimsonweed *(Datura stramonium)* | up to 6 | 4" | 6-10 | 8" |
| Ladysthumb *(Polygonum persicaria)* | up to 6 | 4" | 6-10 | 8" |
| Penna. Smartweed *(Polygonum pensylvanicum)* | up to 6 | 4" | 6-10 | 8" |
| Redroot Pigweed *(Amaranthus retroflexus)* | 4-8 | 2" | 8-12 | 4" |
| Velvetleaf *(Abutilon theophrasti)* | up to 4 | 2" | 4-6 | 5" |
| Venice Mallow *(Hibiscus trionum)* | up to 6 | 2" | 6-10 | 4" |
| Wild Buckwheat *(Polygonum convolvulus)* | up to 4 | 3" | 4-6 | 5" |
| Wild Mustard *(Brassica kaber)* | up to 6 | 4" | 6-10 | 8" |
| Wild Sunflower *(Helianthus annuus)* | up to 4 | 4" | 4-6 | 8" |
| Beggarticks *(Bidens frondosa)* | Not Recommended | | up to 6 | 6" |
| Bristly Starbur *(Acanthospermum hispidum)* | Not Recommended | | up to 4 | 2" |
| Dayflower *(Commelina spp.)* | Not Recommended | | up to 6 | 4" |
| Prickly Sida or Teaweed *(Sida spinosa)* | Not Recommended | | up to 6 | 3" |
| Spurred Anoda *(Anoda cristata)* | Not Recommended | | up to 6 | 3" |

*Always add oil concentrate according to the Mixing and Application section above. In California, add non-phytotoxic oil (containing emulsifier) to the Laddok water spray solution for application by ground equipment at the rate of ½ gallon per acre in coastal valleys and 1 gallon per acre in central valleys. Add non-phytotoxic oil to the spray solution for application by air equipment at the rate of 1% by volume (1 gallon per 100 gallons spray solution). The oil should have an unsulphonated residue rating of 90% or above.

**Do not treat earlier than leaf stage shown and do not count cotyledon leaves.

†Control may be partial or inconsistent.

For the control of:
Annual Morningglories *(Ipomoea* spp. and *Jacquemontia tamnifolia)*, Canada Thistle *(Cirsium arvense)*, Yellow Nutsedge *(Cyperus esculentus)*

Refer to Basagran® Herbicide Label