EEB REVIEW

DATE: IN 6-9-88  OUT 9-7-88

FILE OR REG. NO. 524-EUP-AO

PETITION OR EXP. NO.

DATE OF SUBMISSION 5-16-88

DATE RECEIVED BY HED 6-08-88

RD REQUESTED COMPLETION DATE 9-05-88

EEB ESTIMATED COMPLETION DATE 9-05-88

RD ACTION CODE/TYPE OF REVIEW

TYPE PRODUCT(S) Herbicide

DATA ACCESSION NO(S) 406386-20, -21, -22, -23, -24, -25, -26

PRODUCT MANAGER, NO. R. Mountfort (23)

PRODUCT NAME(S) MON-15151 herbicide

COMPANY NAME Monsanto Company

SUBMISSION PURPOSE Proposed EUP for use on turf grass

(new chemical).

SHAUGHNESSEY NO. CHEMICAL % A.I.


Submission Purpose and Label Information

Submission Purpose and Pesticide Use

The registrant (Monsanto Co.) has applied for an Experimental Use Permit (EUP) to conduct field evaluation of the performance and safety of MON-15151 herbicide on fine and coarse turf grasses under commercial and residential conditions.

Formulation Information

ACTIVE INGREDIENT:
3,5-Pyridinedicarbothioic acid, 2-(difluoromethyl)
-4-(2-methylpropyl)-6-(trifluoromethyl)S,S-dimethyl ester ....................... 12.7%
INERT INGREDIENT: .................. 87.3%
100.0%

Contains 120 grams per liter or 1 pound per U.S. gallon of the active ingredient.

Application Methods, Directions, Rates

1. States, Amounts and Acreage

The program is planned for a two-year period with acreage of no more than 4000 A. per year. The maximum number of pounds of a.i. and the maximum acreage to be treated per year for each state are listed as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Lbs of a.i. per year</th>
<th>Minimum</th>
<th>Expected</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>10</td>
<td>7</td>
<td>13</td>
<td>40</td>
</tr>
<tr>
<td>California</td>
<td>60</td>
<td>40</td>
<td>80</td>
<td>240</td>
</tr>
<tr>
<td>Delaware</td>
<td>25</td>
<td>17</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Florida</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
<tr>
<td>Georgia</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
<tr>
<td>Illinois</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
<tr>
<td>Indiana</td>
<td>25</td>
<td>17</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Kentucky</td>
<td>25</td>
<td>17</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Maryland</td>
<td>60</td>
<td>40</td>
<td>80</td>
<td>240</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>25</td>
<td>17</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Michigan</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
<tr>
<td>Missouri</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
<tr>
<td>New Jersey</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
<tr>
<td>New York</td>
<td>55</td>
<td>37</td>
<td>73</td>
<td>220</td>
</tr>
<tr>
<td>North Carolina</td>
<td>25</td>
<td>17</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Ohio</td>
<td>70</td>
<td>47</td>
<td>93</td>
<td>280</td>
</tr>
</tbody>
</table>
Pennsylvania 70 47 93 280
Texas 70 47 93 280
Virginia 25 17 33 100
Washington 10 7 13 40
Wisconsin 25 17 33 100

\[ \begin{array}{cccc}
\text{Total} & 1000 & 670 & 1333 & 4000 \\
\text{pound} & & & & \\
\text{acres} & & & & \\
\text{acres} & & & & \\
\text{acres} & & & & \\
\end{array} \]

\[ \text{a.i.} \]

2. Direction for application

The Mon-15151 will be applied in spray solutions of water or fluid fertilizer using standard professional turfgrass spray application equipment at three different timings; i.e., preemergent (spring), postemergent (spring-summer), and post- and preemergent (fall). The application rate will range from 0.25 to 1.5 pounds a.i. per acre. Most of the experiments will be conducted in small plots of less than 2 acres. However, approximately 30\% of the material will be tested in larger fields by professional lawn care companies.

100.4 Target Organisms

The target pests will be a broad range of annual grass and broadleaf weeds which commonly occur in turfgrass. Some of the specific target weeds are barnyard grass, bittercress, annual bluegrass, chickweed sp., smooth crabgrass, large crabgrass, crowsfootgrass, foxtail goosegrass, henbit, kikuyugrass, parsley-piert, common purslane, smutgrass, prostrate spurge, and spotted spurge.

100.5 Precautionary Labeling

Environmental Hazards:

This pesticide is toxic to fish. Do not apply directly to water or wetland. Do not contaminate water when disposing of equipment washwaters.

101 Hazard Assessment

101.1 Discussion

A maximum proposed application rate is 6 quarts of product per acre (or 1.5 pounds a.i. per acre). The maximum number of applications per season will be three. The expected total acreage for EUP is 1333 acres with a maximum of no more than 4000 acres per year. Directly following a single application of 1.5
lb. a.i./A the maximum expected residues on vegetation and 6 feet of water body (i.e., direct application) are as follows:

<table>
<thead>
<tr>
<th>Surface</th>
<th>Residues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short rangegrass</td>
<td>359.4 ppm</td>
</tr>
<tr>
<td>Long rangegrass</td>
<td>164.4 ppm</td>
</tr>
<tr>
<td>Leaves, leafy crops</td>
<td>188.0 ppm</td>
</tr>
<tr>
<td>Forage, small insects</td>
<td>88.1 ppm</td>
</tr>
<tr>
<td>Seeds, large insects</td>
<td>19.0 ppm</td>
</tr>
<tr>
<td>Fruit</td>
<td>9.5 ppm</td>
</tr>
<tr>
<td>Top 6 feet of water</td>
<td>91.5 ppb*</td>
</tr>
<tr>
<td>Soil surface</td>
<td>33.3 ppm</td>
</tr>
</tbody>
</table>

*or 18.3 ppb as result of runoff (see attached calculation sheet).

101.2 Likelihood of Adverse Effects to Non-target Organisms

Based on the available data MON-15151 is nontoxic to birds (2250 mg/Kg). It is also practically nontoxic to mallard ducks and bobwhite quails on dietary basis (LC50 >5620 ppm in both sp.). It is highly toxic to freshwater fishes (LC50's are 0.46 ppm and 0.47 ppm for rainbow trout and bluegill sunfish, respectively), but only slightly toxic to aquatic invertebrates (Daphnia LC50 = 17 ppm). Therefore, the proposed use of MON-15151 on turf is not expected to result in increased exposure or hazard to fish or wildlife (i.e., exposure level < 1/10 LC50 for birds and < 1/20 LC50 for aquatic sp.). However, it has extremely long half-life in the environment (Half-lives for both hydrolysis and aerobic biolysis are > 1 year, per personal communication with Dr. Alan Reiter of EAB, 9/1/’88) and there are possible long-term chronic effects due to its stability in water and soil.

101.3 Endangered Species

The geographic areas that will be treated by the program is areas where a substantial amount of cool or warm season turf is professionally maintained. These areas also tend to parallel the major metropolitan areas with the highest usage of professional lawn care service. Therefore, this proposed use is not expected to increase exposure or risk to endangered species due to its use patterns and limited acreage involved.

101.4 Adequacy of Toxicity Data

Six basic studies and honeybees acute contact toxicity studies were submitted and are acceptable to support registration except the aquatic invertebrate study.
Therefore, for a full registration 48-h daphnia LC50 study must be reconducted.

101.5 Adequacy of Labeling

Precautionary labeling submitted is adequate.

102 Classification

General

103 Conclusions

The Ecological Effects Branch has completed a risk assessment for an Experimental Use Permit (Section 5) for MON-15151 on turfs. Based upon the available data, EEB concludes that the proposed EUP provides for minimal acute hazards to nontarget organisms.

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MON-15151 EEC CALCULATION SHEET

I. For un-incorporated ground application

A. Runoff

\[
1.5 \text{ lb(s)} \times 0.02 \times 10 (\text{A}) = 0.3 \text{ lb(s)}
\]

(2\% runoff) (from 10 A (tot.runoff) drainage basin)

EEC of 1 lb a.i. direct application to 1 A. pond 6-foot deep = 61 ppb

Therefore, EEC = 61 ppb \times 0.3 (lb) = 18.3 ppb

II. For incorporated ground application

A. Runoff

\[
\text{lb(s)} \div \text{(cm)} \times 0.0 \times 10 (\text{A}) = \text{lb(s)}
\]

(depth of (\% runoff) (10 A (tot.runoff)) incorporation) d.basin)

Therefore, EEC = 61 ppb \times ___ (lbs) = ______ ppb

III. For aerial application (or mist blower)

A. Runoff

\[
1.5 \text{ lb(s)} \times 0.6 \times 0.02 \times 10 (\text{A}) = 0.18 \text{ lb(s)}
\]

(appl. (2\% (10 A. (tot.runoff)) efficiency) runoff) d.basin)

B. Drift

\[
1.5 \text{ lb(s)} \times 0.05 = 0.075 \text{ lb(s)} \text{ (tot. drift)}
\]

(5 \% drift)

Tot. loading = 0.18 \text{ lb(s)} + 0.075 \text{ lb(s)} = 0.255 \text{ lb(s)}

(tot. runoff) (tot. drift)

Therefore, EEC = 61 ppb \times 0.255 (lbs) = 15.6 ppb