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

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Isoxaflutole: Review of Phytotoxicity Studies for New Chemical Registration, DP Barcode D240106

FROM: Michael Davy, Agronomist
Environmental Risk Branch II
Environmental Fate and Effects Branch (7505C)

Thru: Elizabeth M. Leovey, Chief
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TO: Joanne Miller, PM-23
Registration Division (H7506)

ERB II has reviewed six studies submitted by Phone-Poulenc Ag Co., Research Triangle, NC. These studies were submitted under DP Barcode D240106 for section 3 registration of Isoxaflutole.

Conclusion

♦ The data from the reviewed studies show that the terminal degradate, RPA 203328, is not phytotoxic.

♦ **However, this does not change EFED's conclusion about the phytotoxicity of isoxaflutole and its intermediate degradate, RPA 202248 at concentrations of 22 ppt or more in water.** EFED continues to have concerns that irrigation water from surface or ground water containing 22 ppt or higher may adversely affect non-target plants.

♦ **RPA 202248 (intermediate degradate) is persistent and potentially mobile under laboratory and field conditions. EFED predicts that RPA 202248 (intermediate degradate) will persist and accumulate in surface water and shallow ground water resources surrounding treated areas.**

♦ **The registrant has shown that phytotoxicity of RPA 202248 (intermediate degradate) is the same as the parent isoxaflutole to non-target terrestrial plants. Predicted concentrations of RPA 202248 (intermediate degradate) are expected to exceed phytotoxic level of concern (22 ppt) by several hundreds of times for non-target terrestrial plants including crops using contaminated irrigation water.**

Review of Submitted Studies

The following is a brief summary of the submitted studies:

Parent Isoxaflutole

- **CITATION:**

Author: D. Teixeira
Title: RPA 201772 - Determination of Effects on Vegetative Vigor of Three Plant Species
Study Completion Date: September 17, 1997
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rhone-Poulenc Ag Company, Research Triangle Park, NC
Laboratory Report ID: 97-9-7076
MRID No.: 443999-05

This study is scientifically sound and fulfills the guideline requirement for a tier II vegetative vigor study with terrestrial plants.

Results Synopsis

Most sensitive monocot: Ryegrass; Most sensitive parameter: Root weight
EC_{25}: 0.0086 lb. ai/A NOEL: 0.0076 lb. ai/A

Most sensitive dicot: Lettuce; Most sensitive parameter: Root weight
EC_{25}: 0.00006 lb. ai/A NOEL: 0.00004 lb. ai/A

This study was requested because the original terrestrial plant study had three plant species that appeared to be sensitive to parent isoxaflutole but there was a high uncertainity as to the sensitivity due conditions of the test. Therefore the three species were retested to determine the EC_{25} value and if these species are more sensitive than the other species tested. These three species were found to be sensitive but not more sensitive than turnip, therefore the most sensitive EC_{25} value (0.00001 lb ai/A) remains the same.

Intermediate Degradate (RPA 202248)

- **CITATION:**

Author: J.R. Hoberg
Title: RPA 202248 Technical - Toxicity to the Freshwater Green Alga, *Selenastrum capricornutum*
Study Completion Date: September 17, 1997
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rhone-Poulenc Ag Company, Research Triangle Park, NC
Laboratory Report ID: 97-9-7073
MRID No.: 443999-08

This study is scientifically sound and fulfills the guideline requirements for an algal toxicity test.

Results Synopsis: EC_{50}: 5.0 ppm ai (95% C.I.: 4.6 - 5.4 ppm ai)
NOEC: 0.08 ppm ai Probit Slope: N/A

This study was requested for the primary degradate as a bridging study for determining phytotoxic impact on algal species. The results show that algal species may be impacted when concentrations reach 5 ppm in water. Since it does not appear likely that concentrations of the primary degradate will reach 5 ppm, it is concluded that algal species may not be impacted from the labeled use of isoxaflutole.

- **CITATION:**

Author: J.R. Hoberg
Title: RPA 202248 Technical - Toxicity to Duckweed, *Lemna gibba*
Study Completion Date: September 16, 1997
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rhone-Poulenc Ag Company, Research Triangle Park, NC
Laboratory Report ID: 97-9-7066
MRID No.: 443999-09

This study is scientifically sound and fulfills the guideline requirements for an aquatic plant toxicity test.

Results Synopsis: EC_{50}: 0.075 ppm ai (95% C.I.: 0.065 - 0.088 ppm ai)
Probit Slope: N/A NOEC: 0.009 ppm ai

This study was requested for the primary degradate to estimate phytotoxic impact on aquatic plant species. The results show that aquatic vascular plant species may be impacted at a concentration of 0.075 ppm. Since it does not appear likely that concentrations of the primary degradate will go up to 0.075 ppm in water, it is concluded that aquatic plant species may not be impacted from the labeled use of isoxaflutole.

Terminal Degradate (RPA 203328)

- **CITATION:**

Author: D. Teixeira
Title: RPA 203328 - Determination of Effects on Vegetative Vigor of Ten Plant Species
Study Completion Date: September 19, 1997
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rhone-Poulenc Ag Company, Research Triangle Park, NC
Laboratory Report ID: 97-9-7082
MRID No.: 443999-06

This study is scientifically sound and fulfills the guideline requirements for a Tier I vegetative vigor study with terrestrial plants. None of the parameters measured were affected by 25% or more for all ten test species when treated at the maximum label rate of 0.14 lb. ai/A (0.13 lb. ai/A measured rate).

- **CITATION:**

Author: D. Teixeira
Title: RPA 203328 - Determination of Effects on Seedling Emergence of Ten Plant Species
Study Completion Date: September 18, 1997
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rhone-Poulenc Ag Company, Research Triangle Park, NC
Laboratory Report ID: 97-9-7068
MRID No.: 443999-07
DP Barcode: D240106

This study is scientifically sound and fulfills the guideline requirements for a Tier I seedling emergence study with terrestrial plants. None of the parameters measured were affected by 25% or more for all ten test species when treated at the maximum label rate of 0.14 lb. ai/A.

- **CITATION:**

Author: J.R. Hoberg
Title: RPA 203328 Technical - Toxicity to Duckweed, *Lemna gibba*
Study Completion Date: September 17, 1997
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rhone-Poulenc Ag Company, Research Triangle Park, NC
Laboratory Report ID: 97-9-7067
MRID No.: 443999-10

This study is scientifically sound and fulfills the guideline requirements for an aquatic plant toxicity test. RPA 203328 did not adversely affect the growth of *L. gibba* by 25% or more at a concentration of 9.8 ppm ai (equivalent to ten times the maximum application rate).

These studies were requested to determine if the terminal degradate may be phytotoxic to plant species. The results of the studies indicate that the terminal degradate may not adversely impact non-target plants from the labeled use of isoxaflutole.

If you have any questions, please do not hesitate to contact Mike Davy at 305-7081.