



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

8/25/1998

MEMORANDUM

SUBJECT: Isoxaflutole: Review of Rebuttal to Phytotoxicity Risk Assessment
(Including Maps), DP Barcode D246665

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

Thru: Elizabeth M. Leovey, Chief *Betsy G. 8-25-98*
Environmental Risk Branch II
Environmental Fate and Effects Branch (7505C)

TO: Joanne Miller, PM-23
Registration Division (H7506)

EFED has reviewed the registrant's maps and the rebuttal for EFED's phytotoxicity concerns of isoxaflutole. The rebuttal and maps were submitted under DP Barcode D246665 for section 3 registration of isoxaflutole.

EFED makes the following response to the registrant:

A) The registrant has suggested that the turnip species should not be the most sensitive species used in the risk assessment, but that the cabbage should be the most sensitive species. EFED has replied to this rebuttal in a memo to the Registration Division (RD), dated on 7/21/98, Barcode D246666. EFED continues to maintain that the turnip species is currently the most sensitive species tested with isoxaflutole.

B) The registrant has stated in the rebuttal that the primary metabolite RPA 202248 is less phytotoxic than the parent isoxaflutole. EFED continues to maintain that RPA 202248 is equivalent in phytotoxicity to the parent because of the following reasons:

- 1) Registrants' 6/6/97 memo to RD has indicated that RPA 202248 is equivalent to the parent isoxaflutole in phytotoxicity. Therefore, non-target plant testing was not required for RPA 202248.
- 2) In several meetings with OPP, the registrant has continued to say that RPA 202248 is equivalent to the parent isoxaflutole.

3) The parent isoxaflutole breaks down to RPA 202248 very rapidly and yet there is season long weed control from RPA 202248 in the soil.

C) Maps were provided by the registrant. These maps show the distribution of irrigated tested crop species in the corn growing areas of the U.S. The maps compared the growing areas of the tested crop species with the corn growing areas to illustrate that crop phytotoxicity is localized.

The tested crop species are used as a surrogate for the many thousands of non-target terrestrial plant species known in North America (which are not depicted in the maps). If each species is tested to represent only that particular species, then several thousands of species would need to be tested. This is an unfeasible method of coming up with data to provide a risk assessment to non-target terrestrial plants. Therefore, because of this uncertainty, the most sensitive species with the most sensitive parameter is used to represent the thousands of untested non-target terrestrial plant species. EFED has concerns about potential adverse effects to tested non-target crops, non-tested crops, and other non-target non-crop species. These map comparisons are of little value because they do not illustrate the non-target plant species that the tested crop species are designed to be a surrogate for.

D) The registrant has indicated that the risks to non-target plants are extremely conservative and are lower with the reduced application rate of 0.14 lb ai/A. EFED has redone the RQs based on the application rate of 0.14 lb ai/A for parent isoxaflutole and RPA 202248. The runoff in the original EFED science chapter is based on the parent isoxaflutole alone being in the runoff. EFED plant exposure policy says that if the solubility of the chemical is ≤ 1 ppm, >1 ppm to <10 ppm, and ≥ 100 ppm; the runoff would be 1%, 2%, and 5%, respectively. The solubility of parent isoxaflutole and RPA 202248 are 3.5 ppm and 300 ppm, respectively. The EFED science chapter provided 1% runoff for parent isoxaflutole with the rate of application at 0.1875 lb ai/A. The runoff for RPA 202248 was not calculated at that time. The RQs below take into account the lower application rate of 0.14 lb ai/A.

For parent isoxaflutole (using 1% runoff factor):

- a) Runoff to adjacent acreage (one acre to one acre), RQ = 3
 $(0.14 \text{ lb ai/A} \times 1\% \text{ runoff} \times 1 \text{ acre}) \div 0.00047 \text{ lb ai/A (seedling emergence EC25)}$
- b) Channelized runoff to one acre from 10 acre, RQ = 30
 $(0.14 \text{ lb ai/A} \times 1\% \text{ runoff} \times 10 \text{ acre}) \div 0.00047 \text{ lb ai/A}$

For RPA 202248 (using 5% runoff for solubility that exceeds 100 ppm):

- a) Runoff to adjacent acreage (one acre to one acre), RQ = 15
 $(0.14 \text{ lb ai/A} \times 5\% \text{ runoff} \times 1 \text{ acre}) \div 0.00047 \text{ lb ai/A (seedling emergence EC25)}$
- b) Channelized runoff to one acre from 10 acre, RQ = 159
 $(0.14 \text{ lb ai/A} \times 5\% \text{ runoff} \times 10 \text{ acre}) \div 0.00047 \text{ lb ai/A}$

During a runoff scenario, the parent isoxaflutole and RPA 202248 are both in solution. The amount or percentage of each would depend on the amount of time elapsed between application and the runoff event and the environmental conditions during that interval. Thus, you may have concentrations of both phytotoxic chemicals in the solution that would exceed the RQ for emerging non-target terrestrial plants from 3 to 15 times in one-acre to one-acre scenario and from 30 to 159 times in a one-acre to ten-acre scenario. Runoff studies on other chemicals can find up to 10% runoff or more under certain conditions. The RQ exceedances may be greater if $\geq 10\%$ runoff occur. *The RQs (8.5 and 46.8) cited in the original science chapter may not be as conservative as the registrant indicates in their rebuttal.* **To measure the parent isoxaflutole and RPA 202248 concentrations, it becomes important to have runoff studies using the Balance™ end-product in order aid in resolving these uncertainties.**

For parent isoxaflutole and RPA 202248 spray drift from ground application: $RQ = 140$.
 $(0.14 \text{ lb ai/A} \times 1\%) \div 0.00001 \text{ lb ai/A (vegetative vigor EC25)}$

Preliminary data from the Spray Drift Task suggest that the assumption of 1% of the application rate for drift from ground application is reasonable. *With the lower application rate, parent isoxaflutole still provides the largest risk quotient for non-target terrestrial plants from ground application spray drift than the sulfonylurea herbicides and picloram which were compared in the EFED science chapter.*

E) The registrant has indicated that isoxaflutole is comparable to other herbicides. Isoxaflutole is currently the most phytotoxic herbicide tested and moves rapidly to surface and groundwater. The phytotoxic degradate, RPA 202248, is predicted to accumulate in closed system water bodies over time. As mentioned above, *even with the lower application rate, parent isoxaflutole still provides the largest risk quotient for non-target terrestrial plants from ground application spray drift than the sulfonylurea herbicides and picloram which were compared in the EFED science chapter.*