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

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Risk to Endangered Fish from Proposed use of
Acetochlor on Corn based on Measured Residues

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TO: Frank Sanders, Chief
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The Acetochlor Registration Partnership has submitted aquatic residue monitoring data on Alachlor as surrogate data for Acetochlor. The EFGB has not concurred that Alachlor surface water monitoring data is quantitatively acceptable as surrogate data for Acetochlor risk assessment. However, EFGB does concur that the two compounds appear to have somewhat comparable fate characteristics, and, with similar uses could therefore be expected to have somewhat comparable concentrations in the environment. Notwithstanding the similarities, EFGWB concludes that the variation between concentrations of acetochlor and alachlor could differ by as much as an order of magnitude. Therefore, the EEB will not use the residues from alachlor monitoring to determine potential exposure to endangered fish.

However, since the two chemicals behave similarly in the environment it may be useful to compare the results of monitoring with alachlor with modeled estimates for acetochlor. The conclusion is that the monitoring results with alachlor are lower than the refined acetochlor EEC based on modeling; but not substantially lower.

The estimated maximum acetochlor concentration in a farm pond was 71 ppb (use rate 2.34 lb ai/acre). This is compared with an average maximum monitored alachlor concentration of 57 ppb (use rate 4 lb ai/acre) in 5 midwestern river basins. This 57 ppb was then adjusted to accommodate a different (lower) use rate, with a



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resulting equivalent concentration of 34 ppb. The similarity of the two concentrations, given the differing habitats, lends support to the modeled value and supports the conclusion that endangered fish may be affected from the use of acetochlor on corn.

RISK CRITERIA

The endangered fish risk criteria for acute effects is 1/20 the lowest fish 96-hour LC50. The lowest fish LC50 for acetochlor is 380 ppb.

$$380 \text{ ppb} / 20 = 19 \text{ ppb}$$

This value is normally compared to the immediate maximum expected concentrations generated from modeling. In this case, the immediate maximum expected value based on modeling was 71 ppb.

MEASURED CONCENTRATIONS

According to our information, the monitoring data submitted on alachlor was based on a 9-year monitoring study of 52 sites in 5 basins. The monitoring was conducted throughout much of each year, beginning immediately after treatment. To be consistent with assessment with other pesticides, the endangered fish acute risk criteria value will be compared with the average immediate maximum concentration from the monitoring study.

The following immediate maximum values were reported for alachlor in a February 4, 1994 report from the ARP to R. Taylor and F. Sanders:

54.9 ppb
23.4 ppb
36.6 ppb
18.4 ppb
64.9 ppb

According to the February 4, 1994 report, these had not been corrected for recovery, which was 70%.

Corrected values are:

78.4 ppb
33.4 ppb
52.3 ppb
26.3 ppb
92.7 ppb

The average concentration for these corrected values is: 56.6 ppb

The use rate for acetochlor is 2.34 lb ai/acre compared to a use rate of 4 lb ai/acre for alachlor. Therefore, this value may reasonably be reduced by approximately 60%.

$$56.6 \text{ ppb} \times 0.6 = 34.0 \text{ ppb}$$

This average maximum value exceeds the endangered fish acute risk criteria of 19 ppb by a factor of 1.8. If alachlor is not considered to be an acceptable surrogate for acetochlor, and the modeling results for acetochlor (71 ppb) are used for the risk assessment, the risk criterium is exceeded by a factor of 3.7. Therefore, either way, the EEB concludes that endangered fish in corn growing areas may be affected by the proposed use of acetochlor. Risk reduction measures to avoid exposure to endangered fish have been previously provided, see review dated 1-25-94.

If you have questions, please contact Mike Davy or Dan Rieder.