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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Memorandum

TO: David Severn, Chief
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SUBJECT: Request for Terbufos Monitoring/Additional Modeling

The Environmental Fate Branch has presented EEB (12/10/82) with the results of modeling using both a runoff model (SWRRB) and the Exposure Analysis Modeling System (EXAMS) to estimate expected aquatic concentrations of terbufos under a corn use pattern at the maximum application rate (2.4 oz a.i./1000' row with a 20" row width, or 3.92 lb a.i./acre) with one repeat application. A comparison of these results with residue levels of concern to EEB, for fish and aquatic invertebrates, indicates a potential for substantial hazard.

The lowest fish LC_{50} value is 0.77 ppb (bluegill sunfish) and the lowest aquatic invertebrate LC_{50} is 0.31 ppb (D. magna). Modeled residues dissolved in the water column exceed Restricted Use criteria ($\geq$ 1/10-1/2 LC_{50}), RPAR criteria (> 1/2 LC_{50}), and Endangered Species criteria ($\geq$ 1/10 LC_{10} or $\geq$1/20 LC_{50}), for 38-56 days out of 56 days modeled following initial pesticide runoff. At their peak, these residues are approximately 10X the above fish LC_{50}.

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Because of the potential for hazard indicated by EFB's initial modeling effort, EEB requests that field monitoring of actual residues be tentatively required by EFB as part of the Terbufos Registration Standard. EEB also understands that additional modeling of expected aquatic residues will be conducted for other application rates, in response to our original request for modeling and subsequent discussions with EFB staff. Repeat applications do not appear to be typical for terbufos (Hanthorn, et. al. 1982. 1980 pesticide use on field corn in the major producing states, ERS/USDA, Washington, DC). The maximum application rate for control of corn rootworm (the principal pest for which terbufos is used) is 1.2 oz a.i./1000' row, and 36" is an average row spacing (EPA Qualitative Use Assessment for Terbufos, 1982). Therefore, one application at this net rate (1.09 lb a.i./acre) should be modeled. Modeling at least one additional net rate between this low one (relative to other label-permitted net rates) and the one initially modeled would provide us with a range of potential exposure and enable an improved hazard assessment. If results of this further modeling indicate that the above residue levels of concern will not be exceeded under more typical use patterns, field monitoring may not be needed.

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