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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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SUBJECT Review of Pesticide Runoff Monitoring Protocols for Amaze (Oftanol)

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TO Harry Craven, Section Head, Ecological Effects Branch, HED (TS-769)

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Mobay submitted, for EEB's approval, a protocol for a run-off monitoring study on Amaze (Oftanol). The Ecological Effects Branch discussed the contents of this protocol in depth with Charles Smith, soil scientist the Environmental Research Lab., Athens, Georgia, and the following recommendations were agreed upon:

First of all, a one year study is a very limited time frame to collect data on the runoff of a particular chemical for evaluation relative to its potenital to runoff. In particular, unusual weather conditions do occur (extremely dry or extremely wet) that influence the behavior of the chemical as well as the amount of collected data required to conduct a valid environmental assessment of the compound.

The description of the experimental runoff monitoring procedures is very brief and does not include sufficient detail to enable a complete evaluation of its value for monitoring the behavior of the compound. One major weakness of the proposed study is apparent, however--the size of the plot. A plot 2 ft x 12 ft (24 ft2) is too small to adequately assess the runoff characteristics of the compound because of spatial variability problems. Also, the data to be obtained will possibly be used to extrapolate to areas several orders of magnitude larger. A minimum plot size is one acre, but 3 to 5 acres or larger provide a much better base for a technical evaluation of the compound. Therefore, this study should not be conducted until an approved site is selected and a more indepth monitoring plant is prepared and accepted. I believe the following criticisms and/or questions relative to the experimental approach are also important.

Watering the turf for optimum plant growth by the overhead spray system can influence the behavior of the compound, i.e., leaching, degradation, etc. Also, this may force the chemical to move into the soil profile because its transport route is mainly with the water fraction (partition coefficient of 63).

Steel drums should not be used to collect runoff water unless they are teflon lined because the chemical may sorb to the wall of the container.

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309

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Pan evaporation data collected 75 miles away would not be acceptable because the data would not be representative of the area surrounding the plot.

How long can the runoff samples be held frozen prior to analysis without affecting sample integrity? Based on our experience with field runoff studies, highest priority is placed first on analyzing runoff samples. Soil core samples can be frozen for later analysis, provided appropriate procedures are taken to check sample integrity.

The difference between Oftanol 5G and Oftanol 2E is not apparent. I assume the chemical will be applied once in the spring. The nubmer and time of application should be discussed in the monitoring protocol.

Data must be obtained on:

1. Pesticide Application

   A. Method of application must be documented. Record data, time of application, and incorporation depth if applied prior to establishing sod.

   B. The application rate can be determined easily by randomly placing filter discs (Whatman No. 42) on the surface of the soil or turf prior to application. Remove the filter pads immediately for analysis for the amount of residue reaching the target area.

2. Pesticide Runoff Sampling--continue collecting runoff samples for a period of eight (8) weeks or through at least one half-life based on the soil residue analysis. Analyses must include determining the concentration of pesticide in both water and sediment, total water, and sediment mass.

3. Maximum pesticide solubility in water.

4. Soil pesticide residue sampling--representative soil samples will need to be taken at depths of 0-1, 1-7.5, 7.5-15, 15-30 cm to determine persistence in the soil. Samples must be taken at the following intervals: (1) prior to application, (2) weekly for a period of eight weeks or through at least one half-life, (3) one month later, and (4) end of a one year period.

5. Soil Characterization

   - Soil profile description--depth to impermeable layer
   - bulk density
   - organic matter content
   - moisture holding capacity--soil moisture retention curve
   - infiltration rate--either obtain at site or by consulting local agronomist.

6. Hourly rainfall records

If there is any questions concerning these recommendation, Mobay should contact EEB or Charles Smith (404) 546-3565 Environmental Research Lab. Athens. Georgia.