UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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SUBJECT: Rereview of Prowl Data

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Per request from the Director (see memo dated August 4, 1980 from McGrath to Bushong), EFB has rereviewed the Prowl data related to leaching and runoff to determine if there should be a change in EFB conclusions or recommendations.

Our rereview indicates no change is warranted in any of the previous evaluations of the Prowl data.

We reiterate, below, our conclusions in the areas of concern for pendimethalin, the active ingredient in Prowl.

> hydrolysis - stable at pH's 5, 7 and 9 at 25 °C
> laboratory leaching of parent compound - does not leach [1]
> aged laboratory leaching - residues do not leach
> runoff - runoff of Prowl was not shown. Currently, there is no environmental fate data requirement for runoff and there are no guidelines to evaluate a runoff study).
> water solubility - about 0.5 ppm (Note that this is in contrast to the EEB evaluation of pendimethalin dated May 15, 1980 which states in section 104.2 that the ai has a relatively high solubility in water).

The hydrolysis, leaching and aged leaching studies are valid and sound and satisfy their respective data requirements.

However, since pendimethalin is strongly adsorbed on soil organic matter and clay[2], pendimethalin residues may be laterally mobile via eroding soil particles to which they have become adsorbed. The runoff study reviewed by EFB showed no runoff of pendimethalin in the runoff water or on sediment in the runoff water, but the study did not simulate environmental conditions. In actual rainfall, raindrop velocity upon impact to the soil surface is 30 feet per second (20 miles per hour)[3], whereas artifical rain falling a distance of 1 foot will have a velocity of 8 feet per second upon impact. Greater raindrop impact velocities will cause greater dislodging and lateral moving (eroding) of soil particles.

It is concluded that pendimethalin residues in soil will move only if the soil particles to which they are adsorbed move. If EEB wants to know the extent of pendimethalin runoff they could request a study under actual use conditions, imposed as a condition of registration, where the downfield or basin area of a Prowl treated field (which preferably drains into a body of water) would be monitored for pendimethalin residues for 6-9 months after application or longer.

References

1 In addition to rereviewing the leaching data, the Prowl data was entered into the Ada, Oklahoma computer leaching model. The model showed no leaching to occur beyond 11 cm at 365 days.

2 Herbicide Handbook of the Weed Society of America, 4th Edition, 1979, page 337.

3 Soils - An Introduction to Soils and Plant Growth, 2nd Edition, Donahue, Roy L., page 235.

cc: Dr. Peter McGrath
James Akerman, RD