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

12/15/82

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

TO: Krystyna K. Locke, Ph.D.
Toxicology Branch
Hazard Evaluation Division (TS-769)

SUBJECT: Mutagenicity Test Requirements for Acephate.

TOX Chem. No. 2A

The following mutation tests have been performed on acephate:

| Assay | Reference | Results Without Metabolic Activation | Results With Metabolic Activation | Classification of Data |
|---|---|---|---|---|
| 1. Gene Mutation Reverse Mutation Plate Assay in Microorganisms: | | | | |
| Salmonella typhimurium strains TA 1535, TA 1537, TA 1538 TA 98 | (1) | - | - | Acceptable |
| S. typhimurium TA 100 | (1) | + (weak) | + (weak) | Acceptable |
| Escherichia coli WP 2 | (1) | + (weak) | + (weak) | Acceptable |
| Saccharomyces cerevisiae D7 | (2) | - | + | Acceptable |
| 2. DNA Repair Assays in Microorganisms and Cells in Culture: | | | | |
| E. coli W3110/P3478 | (1) | - | - | Not Acceptable |
| Bacillus subtilis H17/M45 | (1) | - | - | Not Acceptable |
| Sacch. cerevisiae mitotic crossing over and gene conversion | (2) | + | + | Acceptable |
| Unscheduled DNA Synthesis in cultured WI-28 human fibroblasts | (1) | + (weak) | - | Acceptable |

cont.

| Assay | Reference | Results Without Metabolic Activation | Results With Metabolic Activation | Classification of Data |
|---|---|---|---|---|
| 3. Chromosomal Effects: | | | | |
| Sister Chromatid Exchange in Cultured CHO cells | (3) | + | + | Acceptable |
| Micronucleus test in mice | (4) | N/A | - | Supplementary |

These test show that acephate can cause gene mutations (in microorganisms) and can induce DNA repair. The sister chromatid exchange assay results are of some concern since, without activation, the response induced by acephate was greater than the positive control.

A gene mutation assay should be performed in mammalian cells in culture and a chromosome aberration analysis should be performed in a mammalian system, either in culture or in the whole animal.

Further testing may be required based on the results of these tests. The registrants are encouraged to discuss the testing requirements, protocols, and results with Toxicology Branch scientists.

William R. Schneider

William R. Schneider, Ph.D.
Toxicology Branch
Hazard Evaluation Division (TS-769)

Attachment
(References)

OPP:HED:TOX:W.SCHNEIDER:sb 12/15/82 X73710 Rm 816 #m20

## REFERENCES


(1) Simmon, V. F., SRI Project LSU-3493; EPA Contract 68-01-2458; 1979.

(2) Mortelmans, K. E., et al., SRI Product LSU-7558-20; EPA Contract 68-02-2947; 1980.

(3) Evans, E. L. and A. D. Mitchell; SRI Project LSU-7558; EPA Contract 68-02-2947; 1980.

(4) Kirkhart, B.; SRI Project LSU-7558-19; EPA Contract 68-02-2947; 1980.