

US EPA ARCHIVE DOCUMENT

4. DATA EVALUATION RECORD

(1) CHEMICAL: Alachlor (formulation = 48% w/v).

(3) CITATION: Eisenbeis, S. J.; Lynch, D. L.; and Hampel, A. E. (1981) The Ames Mutagen Assay Tested Against Herbicides and Herbicide Combinations. Soil Science 131(1):44-47.

(3) REVIEWED BY:

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(5) STUDY TYPE: Mutagenicity.

(6) ACCESSION NO.: 248053

(7) MRID NO.: N/A

(8) PROTOCOL:

1. Alachlor (Lasso) and combinations listed below (by trade names) served as the test compound.

Amiben + Lasso
Banvel + Lasso
Dyanap + Lasso
Furloe + Lasso
Lasso + Atrazine
Lasso + Bladex
Lorox + Lasso
Modown + Lasso
Paraquat + Atrazine + Lasso
Paraquat + Lorox + Lasso
Premerge + Lasso
Sencor + Lasso

2. Strains Used: Salmonella typhimurium strains TA1535, TA1537, TA1538, TA98, and TA100 were used.
3. Suspected mutagens (herbicides), positive controls, and controls containing solvent were added as crystals or microdrops (10 ul) to the hardened top agar surface. The herbicide concentrations used were those recommended in the Illinois Agronomy Handbook (1978) and the Thirtieth Illinois Custom Spray Operators Training School Manual (1978). Herbicides were tested at full strength in a diluted water mixture approximating a tank mix delivering 15 gal/acre of recommended herbicide concentrations.
4. Procedure: 0.1 ml of a 14-hour culture of tester strain, and 0.5 ml of S-9 mix (if utilized) were added to the top agar, mixed, and poured over the surface of the bottom agar plate. Suspected mutagens and controls were added as crystals or microdrops (10 ul) to the hardened top agar surface. All suspected mutagens and controls were tested against all five tester strains, both with and without S-9 mix. The metabolic activation system (S-9 mix), was derived from male rats induced with a single i.p. injection of a polychlorinated biphenyl mixture, Aroclor 1254.
5. Positive Control: N-methyl-N-nitro-N-nitrosoguanidine, 9-amino-acridine, aflatoxin B1, and 2-aminofluorene were used as positive controls. Concentrations and solvent used were not reported.

(9) RESULTS

The mutagenicity tests with Lasso and its mixtures with other herbicides was not not increased over the background, at either full strength or as an aqueous solution. This was true for all five tester strains: TA1535, 1537, 1538, 98, and 100, with and without metabolic activation. The report stated that differences in revertant colonies per plate was never significantly different from the background spontaneous rate per plate: 20(TA1535), 7(TA1537), 25(TA1538), 160(TA100), and 40(TA98). This reviewer was not able to confirm this statement as detailed data were not reported in this manuscript.

Positive controls confirmed the sensitivity of the tester strains (all reversion rates were greater than 2000 revertants per plate). Average number of revertants in the control (negative) fell within the expected limits set by Ames et al., (1975). Slightly higher reversion rates were obtained when S-9 mix was used.

(10) CONCLUSION

Based on the information presented in this study, it appears that Alachlor (Lasso) is nonmutagenic in this test system. However, without appropriate tables from which the numbers of replicates, number of revertants, etc. can be evaluated, the conclusions presented can not be properly evaluated nor statistically verified. The results from this study do not provide an adequate basis for judging the mutagenicity of Alachlor by itself or in combination with other herbicides because of the following reasons:

1. Supportive data on the results of the mutagenicity tests were not presented. Only summary observations and conclusions were presented. Statistical analyses, if any, were not reported.
2. The solubility of the compound and its mixtures in the solvent (water) was not reported.

(11) CORE CLASSIFICATION/EVALUATION: Inconclusive.

This study was classified as inconclusive based on the fact that it is a summary, and adequate quantitative data were not submitted for review. Hence, the Toxicology Branch classify this study as unacceptable.

Shal Mahfouz
(Tox. Br.)

REFERENCES

Ames, B.M., J. McCann, and E. Yamasaki, 1975. Methods for detecting carcinogens and mutagens with the Salmonella mammalian microsome mutagenicity test. Mut.Res. 31:347-364.

Illinois Cooperative Extension Service, 1978. Illinois agronomy handbook, 1977-78. Urbana, pp. 1-72.

Illinois Cooperative Extension Service, 1978. Thirtieth Illinois custom spray operators training school manual.