

MUTAGENICITY OF PESTICIDES

SUMMARY AND CONCLUSIONS

Among the plethora of new chemicals in our increasingly complex environment, a number are already known to be mutagenic, *ie.*, capable of producing genetic damage. When genetic damage occurs, the burden of hereditary defects in future generations is increased.

One potential genetic hazard comes from pesticides. Although we can point to no pesticide now in wide use that has been demonstrated to be mutagenic, the overwhelming majority have, however, not been adequately tested, although appropriate methodologies are now available.

We define mutations as any inherited alteration in the genetic material. Such alterations in exposed individuals may lead to cancer and to teratological effects. Our main concern, however, is for their descendants; for such changes lead to a wide range of abnormalities, mental retardation, physical and mental disease, and all the other inherited weaknesses and debilities to which man is susceptible. Since these effects will occur in future generations and may be apparent only many generations removed, by the time the effect is noticed, the damage is already irreversible. It is therefore urgent that any mutagenic chemicals to which the population is exposed be promptly identified.

There are now about 400 substances that, in various forms and combinations, are currently used as pesticides. It is feasible to test all of these in the near future for mutagenicity in systems that are simple and precise and yet relevant to man.

For these and other reasons detailed in the report, we recommend that:

a. All currently used pesticides be tested in the near future in four systems (as indicated on p. 602). Pesticides should be tested at concentrations substantially higher than those to which the human population is likely to be exposed. Test procedures should reflect routes of human exposure. Apart from the obvious route of ingestion, particular and critical attention should be directed to the inadequately appreciated route of inhalation, especially for pesticide aerosols and for vaporizing pesticide strips which are widely used domestically.

b. Pesticides found to be inactive in all these tests may be regarded as safe; unless other evidence of mutagenicity appears. Use of mutagenic pesticides must be rigorously restricted or banned unless