COMPLETED PROJECT REPORT

Project Title: Mouse lymphoma mutagenesis assay

Research Agency: National Wildlife Research Center

Principal Investigator: C. Bigger

Budget: $9,540

Background:

This study was conducted to satisfy a request by the U. S. Environmental Protection Agency to provide data on the mutagenic potential of zinc phosphide. These data are required to maintain registration of the zinc phosphide baits in California.

Objectives:

The purpose of this study was to evaluate the mutagenic potential of zinc phosphide or its metabolites using the L5178Y TK +/- Mouse Lymphoma Mutagenesis Assay.

Summary:

The Zinc Phosphide Consortium's test article zinc phosphide (technical) was tested in the L5178Y TK +/- Mouse Lymphoma Mutagenesis Assay in the absence and presence of Aroclor induced rat liver S9. The non-activated cultures selected for cloning were treated with doses of 80 to 8.0 ug/ml and exhibited total growths from 3 % TO 92 %. The S9 activated cultures selected for cloning were treated with doses of 80 to 8.0 ug/ml which produced from 2 % to 111 % total growths.

Three of the non-activated cultures that were cloned, with total growths of 10 % or greater, exhibited mutant frequencies which were at least twice the mean mutant frequency of the solvent controls. A dose-dependent response was noted in the treated cultures. Three of the S9 activated cultures, with total growths of 10 % or greater, that were cloned exhibited mutant frequencies which were at least twice the mean mutant frequency of the solvent controls. A dose-dependent response was noted in the treated cultures. For both the non-activated cultures and the S9 activated cultures, the TFT colonies for the three highest doses, with total growths of 10 % or greater, and for the solvent control cultures were sized according to diameter over a range from 0.2 to 1.1 mm. The data on colony size distributions showed an increase in the frequency of small colonies when the treated cultures were compared to the solvent control cultures. This increase is consistent with damage to multiple loci on chromosome 11 in addition to loss of the TK locus.
The results indicate that, under the conditions of these mutagenicity tests, test article zinc

phosphide (technical) was positive in both the absence and presence of exogenous metabolic activation.