40856103

DATA EVALUATION REPORT

1. Chemical: Fenthion 053301
   (malathion and dibrom were also tested, but will not be discussed in this DER)

2. Test Material: Technical fenthion and mosquito control formulations

3. Study Type: Laboratory "multiple stress" acute and larval feeding studies
   Field studies with caged organisms

4. Study Identification: Tucker, John W., 1986, Effects of Organophosphorus Mosquito Adulticides on Hatching Fish Larvae, Other Estuarine Zooplankton, and Juvenile Fish, Unpublished study submitted by Mobay, Report No: 91451, MRID #: 408561-03

5. Review By: Daniel Rieder, Wildlife Biologist Daniel Rieder 10-25-89
   Ecological Effects Branch
   Environmental Fate and Effects Division

6. Approved By: Norman J. Cook, Head, Section 2 _____
   Ecological Effects Branch
   Environmental Fate and Effects Division

7. Conclusion: This study seems to show that ULV treatment with fenthion had no acute effect on fish, see Table 5. However, there were complicating factors including:

   a. Excessive control mortality (100% for common snook and 58% for sheepshead minnows);

   b. No mortality of caged fish exposed to ULV fenthion treatment occurred within 8.5 hours and then 100% mortality at 24 hours. This mortality was attributed to low dissolved oxygen; and

   c. Even though the author reported that fenthion was applied in a normal manner, there was no control of mosquitos, according to response of caged mosquitos.

   The larval feeding studies (laboratory) were troubled with excessive control mortality, therefore reducing their value. Some of the studies seemed to suggest that the baytex thermal fog mixture (mineral oil and diesel oil) made fenthion more toxic. However, the results may also mean that the oils were toxic on their own without fenthion. See Tables 12, 13, and 14.

   The multi-factor tests with copepods suggest that high temperature and high salinity result in mortality plus increasing sensitivity to toxicants (such as fenthion). See Tables 18, 19, 20 and 21.

8. Recommendations: N/A

Dan invalidated These studies

9. Background: This study was provided by Mobay as part of a rationale to support their proposal to substitute residue monitoring for a biological field study.

10. Discussion of Individual Studies: The field studies and laboratory studies will be discussed separately.

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11. Materials and Methods:

NOTE: This is a continuation of the study identified as MRID# 408561-02.

Field Studies

The field studies were performed in northern St. Lucie County, Florida. The treatment area was a ditch, in which two sites (treatment and control) were established 3500 feet apart. Bioassays and water analysis were performed during 7 mosquito control spraying operations. Bioassays were conducted by placing juvenile fish (snook and sheepshead minnows) in buckets with holes drilled for water exchange. These buckets were placed in the water and tied to the dock presumably with their top edges above the water surface. Controls were established by setting container of organisms at the station where no treatment occurred.

Application rate for fenthion was 0.03 lb. ai/acre via truck ULV spray.

Laboratory Studies

See the following pages excerpted from the document for laboratory test methods.

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Page _____ is not included in this copy.

Pages __**4**___ through __**8**__ are not included in this copy.

The material not included contains the following type of information:

_____ Identity of product inert ingredients.

_____ Identity of product impurities.

_____ Description of the product manufacturing process.

__ ___ Description of quality control procedures.

_____ Identity of the source of product ingredients.

_____ Sales or other commercial/financial information.

_____ A draft product label.

_____ The product confidential statement of formula.

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12. Reported Results:

The field study resulted in no mortality to juvenile snook or sheepshead minnow within the first 8.5 hours, but 100% mortality after 24 hours. The DO was very low, thus potentially affecting the survival of the fish.

The laboratory test results are presented in the attached tables (Tables 12, 13, 14, 18, 19, 20, and 21).

13. Study Author's Conclusions: The author concluded that field treatment with fenthion had no acute effect on fish, and that the mortality that occurred was caused by poor water quality (low DO).

Growth of spot larvae was reduced after exposure to 0.9 ppb fenthion in thermal fog mixture. The lowest effective concentration of fenthion (technical) was 90 ppb, which reduced growth of spot larvae.

In multi-factor tests, high temperature and salinity caused an increase in copepod mortality with or without insecticide, but also increased their sensitivity to the fenthion.

14. Reviewer's Discussion:

A. Test Procedure: The EEB finds little problem with the test procedure as described.

B. Statistical Analysis: No independent statistics were performed, since no raw data were provided.

C. Discussion of Results: The field study may show that juvenile fish are not killed by a typical ulv application of fenthion at 0.03 lb. ai/acre. However, the results are confused by several factors including high control mortality, latent mortality in the treatment caused by low DO, and the fact that caged mosquitos were not killed by the treatment.

The laboratory tests showed that:

i. Mixtures of oils (mineral oil and diesel fuel oil) at concentrations of 280 to 1.32 ppm may cause increased mortality to spotted seatrout;

ii. Oils may enhance the toxicity of fenthion; and

iii. Increased temperature and salinity may increase the toxicity of fenthion.

However, the value of these test results are reduced because of mortality in controls.

D. Category of Study: Invalid

Rationale: Excessive control mortality and (in field study) latent mortality that could have been caused by either low DO or exposure to fenthion.

Repairability: N/A

15. Completion of One-Liner: N/A

16. CBI Attachments: The attachments are considered CBI

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