

## PROTOCOL FOR ETHYL PARATHION

### I. OBJECTIVES

1. To determine peak concentrations of ethyl parathion in air for use in risk assessment models, and to determine if these peaks are correlated with applications occurring in the area. Also, the Fosberg dispersion model will be assessed for utility in the AB 1807 air sampling process.
2. To determine the number of replicate air samplers needed to accurately estimate concentrations of ethyl parathion at a given location and time.
3. To examine concentrations of ethyl parathion in air collected over short time intervals to assess acute exposure levels.

### II. PERSONNEL

The overall supervision of the sampling program, experimental design and statistical analysis of results will be conducted by Lisa Ross. Miriam Peterson will be responsible for assessment of the Fosberg model and meteorological data collection. Randall Segawa will coordinate field sampling and procedures concerning the chemistry laboratory. Ted Younglove and Tom Mischke will be consulted on statistical analyses and sampling techniques, respectively.

ALL QUESTIONS CONCERNING THIS STUDY SHOULD BE DIRECTED TO MARY BROWN AT (916) 324-8916, ATSS 454-8916.

### III. STUDY DESIGN

1. Four sites will be located in areas of expected high ethyl parathion concentration, and four sites in areas of expected low concentration (as

pre-determined by the Fosberg model), near rural communities and/or urban centers in Imperial County. Air samples will be collected with low volume air samplers run for a 24-h period on each of 10 days at each site during September-October, 1986. On the days that air samples are taken, corresponding ethyl parathion use data and distance from applications to air samplers will be recorded. In addition, meteorological data (wind speed, direction, temperature, and relative humidity) will be collected at as many sites as possible. These data will be used in two ways:

- a) to make a correlation matrix relating ethyl parathion use, distance from application to sampler, and meteorological data with ethyl parathion concentration; and
  - b) to determine the utility of the Fosberg model at locating sites for air sampling.
2. Five low-volume air samplers, about 3-m apart, at each of 2 sites will be set up to determine if one air sampler per site gives an adequate reflection of the concentrations of ethyl parathion in air at any given time or place. From these samples we can estimate sample size from the range of concentrations found at the 2 sites. Samplers will run for a 24-h interval for 4 days.
3. To assess acute exposure levels we will compare three 8-h samples with a single 24-h sample (in replicates of three). This will be done for a total of 3 days at one location where parathion concentrations are known to be relatively high. Also, samples will be taken to assess the conversion of parathion to paraoxon on resin during a 24-h and an 8-h interval.

Preliminary sampling will be done to determine the 8-h time interval that yields the highest ethyl parathion concentrations using a Miran infra-red analyzer. Based on this information, the 8-h intervals will be established for objective #3. Also, a test of the amount of conversion of ethyl parathion to paraoxon on air sampling resin during an 8 and a 24-h interval will be conducted using three replicates for each interval.

	<u>Number of Samples</u>
Objective 1.	160 <sup>0</sup> 30
2.	40
3.	36
Paraoxon conversion	<u>6</u>
	162
	242

#### IV. STUDY TIMETABLE

Determine field site arrangements	July 1986
Air sampling completed	Oct. 1986
Chemical analysis completed	March 1987
Draft report	May 1987

6/11/86