

PROTOCOL FOR STUDY OF
1,2-DICHLOROPROPANE AND ETHYLENE DIBROMIDE
IN SOIL PROFILES

I. Objective

- A. To examine the relationship between soil characteristics and the presence or absence of 1,2-dichloropropane(1,2-d) and ethylene dibromide (EDB) in specific soil profiles.
- B. To use this relationship as the basis of an attempt to explain why soil characteristics may or may not facilitate 1,2-d and EDB movement in specific soil profiles.

II. Personnel

This project will be conducted by EHAP personnel under the overall supervision of Don Weaver. All inquiries regarding the progress and/or results of any facet of this program should be directed to Don Weaver in Sacramento ((916) 322-3295 or ATSS 492-2395).

Tom Mischke - Responsible for selection of sampling methodology, field storage and transport of collected samples, and liaison to CDFA Chemistry Laboratory Services. Questions concerning all aspects of the chemical analysis of collected samples should be directed to him ((916) 322-2395 or ATSS 492-2395).

Scott Simpson and Dave Duncan - Responsible for field sampling, establishing sample locations, and liaison with county officials, growers, and other state agencies. Questions concerning these aspects of the study should be directed to them at U.C. Riverside ((714) 787-4684 or ATSS 651-4684).

III. Study Design

A total of six fields will be sampled, four for EDB and two for 1,2-D. The sampling site for each compound will include two fields located near wells known to be contaminated (based on well sampling study by Dept. of Water Resources Control Board, Dept. of Health Services or by Dept. of Food and Agriculture) and two fields located near uncontaminated wells. One core will be drilled from each field. Each core will be divided into 6 inch samples for individual analysis. Data will be analyzed by stepwise linear regression, discriminate analysis, principal component analysis and linear regression on the principal component analysis loadings.

IV. Study Timetable

It is now Sept 20!
Soil coring will take place during the month of
September 1983, requiring about one week for
completion.

V. Site Selection

Individual field site selections will be based on similarities of agricultural history, (ie crop, irrigation practices) and use of 1,2-D or EDB,

VI. Soil Sampling

A split barrel sampler containing three 6" stainless steel core tubes will be used to collect the soil cores. Continuous soil sampling will proceed from the surface to a maximum of 50 feet in depth or to ground water, if it is reached first (100 6" samples). The tubes will be removed from the sampler and capped with aluminum foil. Plastic caps will be used to secure the foil seal. Samples will be immediately weighed and then frozen on dry ice (-70 C) for transport to the EHAP laboratory in Riverside.

VII. Soil Characteristics

Soil samples will be analyzed for particle size distribution,, organic matter content, pH, soil moisture, and clay type (also cation exchange capacity dependant on an acceptable method for determination).

VIII. Water Sampling

If groundwater is encountered, two water samples will be collected for each core using a basket-like device attached to the split barrel sampler and 1/2 mil. teflon film. Each sample will be transferred to 1 qt. jars with foil lined lids. The wells previously tested and adjacent to the drilling sites will be re-sampled during the drilling operation. Two 1 liter samples will be collected from each well. All samples will be transported on wet ice (4 C) to the CDFA Chemistry Laboratory in Sacramento.

IX. Chemical Analysis

Sample analysis for 1,2-D and EDB in soil and water samples will be performed by the CDFA Chemistry Laboratory in Sacramento. Clay type will be determined in the Geology laboratory at UCR.

X. Sample Handling-Soil

Cores will be divided into three subsamples at the EHAP laboratory in Riverside. This will be accomplished by pressing the frozen soil cores through a dividing plate on a hydraulic press. Each sub-sample will then be repackaged, one for chemical analysis at CDFA lab in Sacramento (foil wrapped and sealed in glass jar), and two for soil characterization (sealed glass jar). Samples for chemical analysis will remain frozen (-70 C) during transport to Sacramento.