

NATIONAL PESTICIDE SURVEY
FUTURE ANALYSES AND RESEARCH

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The Phase II analysis identified several topics and issues that the Agency could undertake to evaluate further. Issues are presented in four major categories (A) Survey Design and Analysis, (B) Laboratory Methods, (C) Data Collection and Field Assessments, and (D) Statistical Analysis.

(A) Survey Design and Analysis:

1. NPS stratification variables did not perform as anticipated. Several research areas could provide useful guidance for States and Regions. Development is required of better collection methods, databases, and ground water sensitivity measures would provide better data on pesticide use and sensitivity.
2. Develop guidance for future state surveys of this type on survey design, including tradeoffs between stratification, precision requirements, and analytic methods.
3. Analyze aggregated databases such as RFF and NFERC/TVA with respect to questionnaire items that were designed to obtain essentially the same information. Correlations can be reviewed between aggregated data and questionnaire data and between aggregated data and manufacturers' data.
4. Evaluate FRDS as a frame for future studies, and obtain additional information pertaining to Community Water Systems, including data on populations, mixing of water from different sources, and grouping of wells.

(B) Laboratory Methods:

1. Review NPS chromatograms (primary and secondary, and particularly Methods 1 and 3) to try to model the data differently
 - i. Perform evaluation of chromatograms for all NPS primary and secondary columns to assess the full concentration distribution for analytes that were detected at any level.
 - ii. Perform evaluation of chromatograms for spiked samples to characterize the precision associated with analyte concentrations at various levels.
2. Prepare statistical guidance for EPA laboratories for reporting data without MRLs.

C) Data Collection and Field Assessments:

1. Resample NPS sites where pesticide detections occurred and characterize recharge areas.
2. Carry out site-specific soil profiles at NPS sites where pesticide detections occurred.

- 3 Carry out time-series analysis for a select number of wells to examine annual and seasonal effects.

(D) Statistical Methods.

1. Develop statistical methods, including Bayesian methods, for combining the information contained in other state surveys and the Pesticides in Ground Water Database
2. Develop diagnostic statistics for methods of logistic regression analysis of survey data (i.e., SUDAAN needs to be substantially improved to be useful).
3. Analyze effects of Survey weights:
 - i. Compare weighted results using Taylor linearization (SUDAAN) to resampling techniques (WESVAR)
 - ii. Develop Bayesian methods for analyzing the Survey data