
14. Testing Surfaces, Soil, and Water for Pesticide Residues

Objectives: • To directly test for the presence or absence of pesticide residues on surfaces, soil and water in or near your school.

Activities:

- Design and conduct** an experiment testing for pesticide residues on surfaces or in soil or water in or near your school. If organophosphate or carbamate pesticides are not used in or near your school, collect samples at another site (e.g., a restaurant, grocery store, park, or other location where you believe pesticides are used.) Identify a testing procedure that you can use (e.g., see Spot Check test kit below.) Be sure to gather replicate and control samples. What pesticides may be present that are not being tested for? What factors may influence the accuracy of the test or cause false positive or negative readings? Be sure to note the limits of detection of the test, too. Record all sampling procedures and test results. Write up a brief summary analyzing results.
- If your initial screening indicates the presence of some pesticide residues, see if you can **locate** a government laboratory (e.g., at the state Department of Agriculture, state environmental agency, or U.S. Environmental Protection Agency) or a private laboratory that would be willing to **analyze** the same samples (or other samples collected from the same sites) quantitatively. In any case, arrange to visit such a lab, if possible, to learn about the procedures and limitations of tests used in pesticide residue testing programs. Ask how many samples are taken and analyzed each year, where they are collected, what residues are tested for, what residues are not tested for, and what the limits of detection are.
- Consider publicizing** the results of your residue testing and/or what you have learned about state testing programs and testing procedures.

Resources:

- Neogen Corporation

620 Leshar Place

Lansing, MI 48912

(800) 234-5333 or (517) 372-9200

Offers AgriScreen Ticket, a kit containing everything needed for simple, 10-minute, do-it-yourself pesticide residue testing of surfaces, lawns, fruits and vegetables, drinking water, and soil. Tests for presence (but not quantitative amount) of carbamate, thiophosphate or organophosphate pesticides. Cost: \$85 for ten tests. Bulk rates (for detector tickets and activator dispensers) are available. Distilled water is needed to process samples. Test does not detect herbicides, organochlorine or synthetic pyrethroid insecticides, among others. Test also may not detect systemic (as opposed to surface) residues of organophosphates or carbamates on foods, as organic solvents may be necessary to extract such residues. Highly acidic or basic foods may result in false positive test results, and highly colored foods may interfere with test readings.

The AgriScreen test reportedly can detect residues as low as 0.1 - 7.0+ ppm, depending on the pesticide. It is based on a patented technique that uses “immobilized” acetylcholinesterase enzyme, an endoxyl acetate color-producing substrate, and a bromine solution that increases the sensitivity of the test for thiophosphate pesticides. More detailed background information about the development of this testing methodology is available from the National Technical Information Service (NTIS).

- NCAP can help you locate private or government testing laboratories. Contact us at PO Box 1393, Eugene, OR, 97440, (541) 344-5044.