

## 13. Testing School Cafeteria Food for Pesticide Residues

- Objectives:
- To perform direct testing of school cafeteria food for pesticide residues.
  - To understand the limits and difficulties of comprehensive pesticide residue testing, and federal and state food residue testing programs.

### Activities:

- Design and conduct an experiment testing your school's cafeteria food for pesticide residues. 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, too. Record all sampling procedures and test results. Write up a brief summary analyzing results.
- Compare your results with those the U.S. Food and Drug Administration (FDA) collects in its sampling program for the particular food items tested. You may want to contact the FDA or, if possible, visit one of its laboratories to learn about the procedures and limitations of tests used in government pesticide residue programs. Ask how many samples of particular foods 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. Your state Department of Agriculture also tests food for pesticide residues and may be a source of additional information. You might even be able to convince the state or federal government laboratories to collect samples of your cafeteria food for quantitative residue testing to compare with your results.
- Consider publicizing the results of your residue testing and/or what you have learned about federal and state testing programs.



### 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 pesticides on foods, as organic solvents may be necessary to extract such residues. Highly acidic (pH < 3) or basic (pH > 8) 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).

### Food and Drug Administration Labs:

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| <input type="checkbox"/> Food and Drug Administration<br>22201 23rd Dr. SE<br>Bothell, WA 98021<br>(206) 483-4953 (Public Affairs) | <input type="checkbox"/> Food and Drug Administration<br>1521 W. Pico Blvd.<br>Los Angeles, CA 90015<br>(213) 252-7593 (Lab Director) |
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Also see pesticide food residue data publications listed in Project 12: Food Safety.