Pesticide (ah choo) may cause allergy

When growers want to eliminate such pests as fruit flies, mosquitoes and boll weevils, they often turn to malathion, an insecticide generally considered safe for use around people and animals.

But after hearing reports that some California residents had developed rashes and allergy symptoms following aerial spraying of malathion, scientist Kathleen Rodgers of the University of Southern California in Los Angeles searched the medical literature and found scant research on how malathion affects the immune system. She decided to study the question.

Her results, reported with Dolph Ellefson in the January AGENTS AND ACTIONS, suggest the reports may be true. Rodgers discovered that low doses of malathion can cause a response akin to an allergic reaction in mice.

In her study, Rodgers fed laboratory mice doses of malathion ranging from 0.25 to 900 milligrams per kilogram (mg/kg). In mice, a dose of 700 mg/kg is considered toxic – that is, it will produce noticeable effects on the nervous system.

After administering malathion, Rodgers collected immune cells from each animal's gut and discovered that at levels as low as 1 mg/kg these cells had released histamines, signaling that an allergic reaction had taken place

But Rodgers found that malathion affects the immune system differently than a hay fever irritant like pollen. Antibodies respond to pollen by attaching to an immune cell; this coupling releases histamines and other chemicals that trigger allergy symptoms. Malathion, on the other hand, acts directly on the immune cells to release histamine, Rodgers noted.

The effects of the pesticide are probably not life-threatening or likely to persist beyond a few days in healthy humans or animals, she speculates. Although Rodgers is not sure how the chemical would affect people with immune problems, she plans to study the question in the future.

Sick buildings get breath of fresh air

Each year thousands of office workers become ill from exposure to copy machines, furniture, cigarette smoke and even the air freshener found inside poorly ventilated buildings. These common items release dangerous toxins that, if left to accumulate, cause sick building syndrome – a phenomenon responsible for nausea, headaches and rashes among workers.

Engineers recommend solving the problem by pumping more air into a building to dilute the toxins. But some property owners argue that this solution may increase their expenses while doing little to affect pollutant levels.

To resolve the conflict, Charlene W. Bayer and Christopher C. Downing of the Georgia Institute of Technology in Atlanta measured a new, 28-story office building for three common indoor pollutants – carbon dioxide, volatile organic compounds (VOCs) and formaldehyde. High levels of carbon dioxide can make building occupants lethargic; the other two pollutants can cause allergic reactions. The researchers found that pumping four times more fresh air into a building caused a significant drop in these pollutants: VOCs dropped 40 percent, carbon dioxide 27 percent and formaldehyde 24 percent.

Normally, this increase in airflow would dramatically hike energy costs. But because the study building was equipped with a total energy recovery system, a device that reclaims energy from vented air for use in conditioning incoming air, the team found energy costs for the structure did not increase.