Washington program monitors enzyme in pesticide handlers

NURSE MURF

By HELEN MURPHY

SINCE 2004, Washington state has been monitoring the blood of pesticide handlers for signs of overexposure to organophosphate or carbamate pesticides.

These pesticides inhibit the enzyme cholinesterase, or ChE, which serves as the "off switch" for nerve transmission. Diminished cholinesterase in the body leads to overstimulation of vital organs, the secretory glands and nervous system, which leads to symptoms such as dizziness, blurred vision, excessive sweating, vomiting, tremors and loss of balance. With a simple blood test that measures the amount of ChE available to the nervous system, employees can be warned that they have been overexposed before symptoms of poisoning occur. Likewise, this test warns employers that measures to protect their employees are inadequate.

The monitoring rule adopted in December 2003 mandates that employers record the hours employees handle toxicity Class I and II organophosphates or carbamates, and provide blood testing if an employee reaches 30 hours within a 30-day period.

All handlers willing to participate must first have a baseline test under conditions of nonexposure (no contact with these pesticides in the previous month), which establishes their personal "normal level."

Subsequent testing when the 30-hour and 30-day threshold is reached is compared to the baseline. If there is 20% less cholinesterase from the baseline measurement, it prompts an investigation of the work site to determine and correct any sources of pesticide exposure. If the cholinesterase is 30% to 40% diminished, the worker is temporarily removed from pesticide handling activities until his or her levels return to normal.

Program participation from inception to present

	2004	2005	2006	2007
Participating employers	380	316	244	226
Baseline tests	2,630	2,263	1,889	1,857
At least 1 periodic test	580	611	471	386
Total periodic tests	911	970	692	532

SOURCE: WASHINGTON STATE DEPARTMENT OF LABOR AND INDUSTRY. CHOLINESTERASE MONITORING OF PESTICIDE HANDLERS IN AGRICULTURE: 2007 FINAL REPORT

On average, 292 employers participated annually. About 11% of handlers declined to participate each year. The greatest amount of testing was in the first year. Since then 41% fewer employers and 29% fewer handlers joined the program (see table above).

To avoid testing, owners started applying the ChE-inhibiting pesticides themselves, eliminated their use, or converted to organic or Integrated Pest Management. Others limited the number of exposure hours by hiring additional pesticide applicators, restricted handling hours to less than 30 or increased spray rate per acre.

Facts and figures

The highest number of cholinesterase depressions (199 handlers) was seen in 2004; similarly, handlers during that year had more hours of exposure within a month. The rule changed in 2005 — the threshold for testing fell from 50 to 30 — and less depression was seen in 2005 and 2006 (in 59 and 57 handlers respectively).

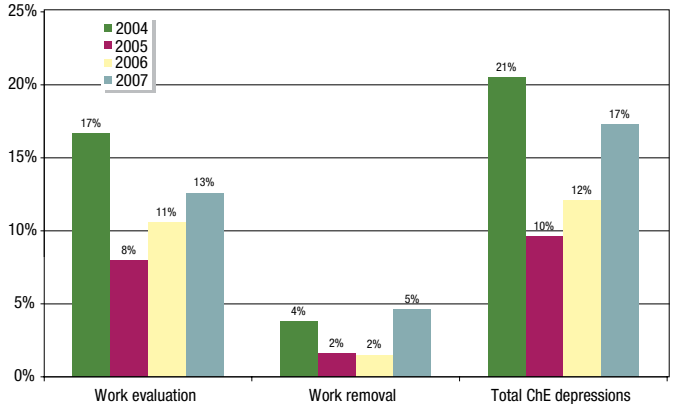
A few more handlers (67) last year had depressions, but the laboratory running the samples changed, possibly accounting for some variation from previous years (see graph below).

The Labor and Industry Department evaluated most workplaces where a depression occurred; all but a few were using air-blast sprayers. Many other potential exposure sources were identified such as inadequate use and maintenance of personal protective equipment, exposed cotton gloves or ball caps worn underneath PPE, or failure to wash hands. But without comparing the practices of handlers who did not have a ChE depression, we cannot know which problems are causative. Since 2005, the Pacific Northwest Agriculture Health and Safety Center has been interviewing handlers about their exposures before their ChE status is known.

The experiences of those with and without a depression will be compared to see if any particular factor stands out. Only then will we have insight why some handler's blood test indicates overexposure.

Murphy, outreach and education director at the University of Washington Pacific Northwest Agricultural Health and Safety Center, may be reached by phone at 206-616-5906 or by e-mail at hmurf@u.washington.edu.

Cholinesterase monitoring results 2004-07



Adapted from: Washington State Department of Labor and Industry. Cholinesterase Monitoring of Pesticide Handlers in Agriculture: 2007 Final Report

NewsWatch Briefs

MSU lab helps keep Montanans safe from biological invaders

The Schutter Diagnostic Lab at Montana State University, Bozeman, recently received a five-year grant for roughly $40,000 per year from USDA, largely because the lab provides an early-warning system of biological invaders. "What has been put in place is the ability to detect early, to diagnose correctly and then to communicate information to those with the authority to respond," says Jim Stack, the director of the Great Plains Plant Disease Diagnostic Network.

Idaho net ag income up 78%

Idaho agriculture's 2007 cash receipts are estimated at $5.6 billion by the College of Agricultural and Life Sciences economists. Nearly every crop and livestock market came up a winner, led by Idaho's booming dairy industry. Most important for Idaho farmers and ranchers is that net farm income is up 78% ($1.5 billion) in 2007.

Shugart has winning photo

From cattle grazing in the early-morning light to a team of horses plowing a field, the winning pictures from the 10th annual "Colorado ... It's Agricultural" Photography Contest showcased the spirit of Colorado agriculture. The grand-prize winner was Russ Shugart of Parker, Colo. His entry was titled "While the Sun Is Shining." The winning photo depicts a freshly cut hay field with Mount Princeton in the background.

Pesticide handlers checked for enzyme

NURSE MURF

By HELEN MURPHY

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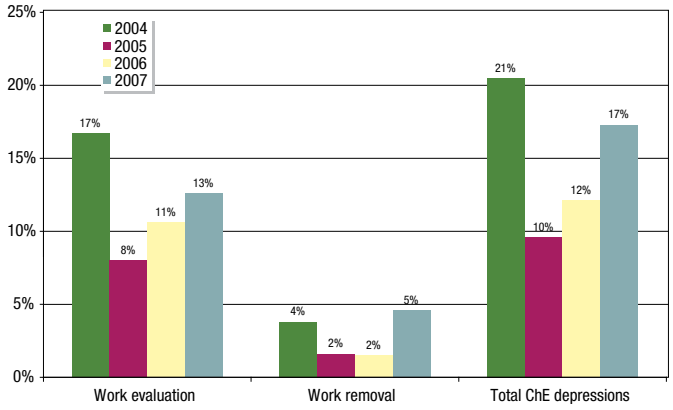

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Record U.S. ag exports expected this year

By **PARR ROSSON** and **SHIDA HENNEBERRY**

AGRICULTURAL exports from the United States are forecast to set a new record of $83.5 billion in fiscal year 2008, 6% above last year, which was the fourth straight record year for export sales.

A weaker dollar, stronger economic growth in China and other foreign markets, and tight supplies for some products are expected to stimulate outgoing U.S. port activity. While the dollar has declined 17% in real terms since 2004, the drop is expected to slow in 2008, with some analysts even predicting a slight rebound.

U.S. ag imports are also expected to set a record at $75 billion. The U.S. agricultural trade surplus is forecast to reach $8.5 billion, well below the record $27.3 billion set in 1996.

Export gains are expected for most major commodity groups. Leading the way are shipments of dairy, grains, oilseeds and cotton. Recovering exports of beef, along with major gains in horticultural exports, also is welcome news.

Lower crop prospects in Argentina and Canada, coupled with strong global demand, is expected to fuel grain and oilseed exports. Cotton exports will be driven by strong demand in China and reduced foreign production growth in the near term.

Beef exports are forecast to reach $2.2 billion, 63% of levels before the outbreak of bovine spongiform encephalopathy, with some recovery expected in Japan and South Korea. Larger exports of processed fruits and vegetables are largely responsible for increases in horticultural exports.

Clouding the bright export picture, however, is the tripling of global biofuels output, which has raised concerns about higher food prices, lower exports and impacts on the global food system.

Still, about 80% of the forecast export gains are attributed to stronger trade prospects with China, Canada and Mexico. China is expected to surpass the European Union as the fourth-largest U.S. export market, with U.S. export sales of $8.4 billion. Exports to Canada are forecast to reach $13.6 billion, while sales to Mexico reach $13.2 billion, both representing new records for these markets. Other important growth markets include Central America, the Caribbean, South Korea, Indonesia and Thailand.

About two-thirds of all U.S. agricultural imports are represented by tropical products and sugar. Major import growth is expected for fruits, coffee, wine and beer.

A weaker dollar, coupled with slower demand growth, is expected to limit import gains during 2008 to 6% growth overall when compared 2007.

Grain and feed imports are expected to rise by $600 million, while horticultural imports will reach $35 billion, followed by $15.2 billion for sugar. Beef imports are forecast to increase 3% to $3.5 billion, while pork is down slightly to $2.6 billion and dairy is holding steady.

Factors that could alter these export forecasts include a rebounding U.S. dollar, declining economic growth here and abroad, higher energy costs, and animal or plant disease outbreaks and subsequent trade disruptions.

If energy prices continue to rise, it is likely that U.S. agricultural exports, such as beef and horticulture, could be adversely affected as foreign consumers limit their purchases of more costly higher-valued foods. Bulk commodity exports would likely not fall as much.

U.S. import growth could also be limited by higher energy costs and a continuing weak dollar as foreign products increase in cost to U.S. consumers. Success in world trade negotiations would improve the overall export outlook longer term, but will not be a major factor in 2008. Trade agreements, such as CAFTA-DR, will provide some boost to U.S. exports in the near term as tariffs are lowered and incomes rise in participating countries.

Rosson is with Texas A&M's Cooperative Extension Service, and Henneberry is with Oklahoma State University's Department of Agricultural Economics.