



# *Pesticide Notes*

A bi-monthly newsletter from the  
**Michigan State University**  
**Pesticide Education Program**



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## Get Cholinesterase Blood Test Now—Before You are Spraying

Howard J. Doss, Agricultural Safety Leader, MSU Agricultural Engineering Department

Farmers/growers working with *organophosphates (OP) and carbamate pesticides* should get a baseline cholinesterase blood test now before handling pesticides. With this test a physician can determine if a summertime illness is the result of exposure to pesticides.

It is important that the test be taken before handling organophosphate and carbamate pesticides to ensure that cholinesterase levels will not be affected by a recent exposure to these chemicals.

### What is cholinesterase?

Cholinesterase is an enzyme that is needed for the proper function of the human body's nervous system. Vertebrates (including humans) and insects (invertebrates) have this same type of enzyme. Pesticides in the organophosphate and carbamate chemical classes are cholinesterase inhibitors, which make them effective in controlling insects and some vertebrate pests. Unfortunately, when people breathe in these pesticides or get them on their skin, they are subjected to the same poisoning effect. Whether or not you get sick depends on how much and how often you are exposed.

### What is the function of cholinesterase in the body?

The nervous system of mammals (including humans) and insects uses electrical signals traveling along nerve cells to carry messages from one part of the body to another. Between nerve cells, there are gaps. To get across the gap, animals change the electrical signal into a chemical signal. The chemical moves across the gap, signaling the next nerve to begin electrical firing. One of these chemicals found in the nervous system of both mammals and insects is acetylcholine. Once the acetylcholine reaches the next nerve, an enzyme called acetylcholinesterase breaks down the remaining chemical, "cleaning" the gap and readying it for the next nerve signal. Organophosphates and carbamates disrupt acetylcholinesterase, causing a build up of acetylcholine in the gap and, thus, continuous firing of the nerves.

Symptoms of mild OP and carbamate exposure include headache, dizziness, nausea, and restlessness. Higher exposure can cause mental confusion, shortness of breath, constricted pupils, and even coma or death.

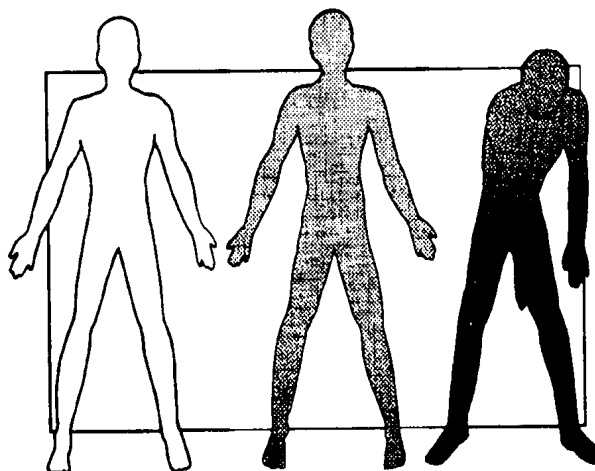
### Why should you have a cholinesterase test now?

For the typical Michigan farmer, all pesticide application equipment has been stored for several months, an indication that the farmer has not been exposed to any pesticides since it was last used. This break from handling pesticides gives the body time to renew any cholinesterase destroyed by previous exposures to organophosphates or carbamates.

During this absence from pesticides, the body's cholinesterase levels return to normal, so a medical physician can determine a baseline level through a blood test. This summer, if you develop symptoms of exposure to an organophosphate or carbamate pesticide, your physician can compare your current cholinesterase levels with baseline levels taken before the spraying season begins with the cholinesterase inhibitor chemicals.

***Cholinesterase levels vary between people. Therefore, you need to have your own baseline value to determine what is normal for you.***

According to Kenneth Rosenman<sup>1</sup>, MD, a Board Certified Internal and Occupational and




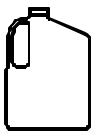
Environmental Medicine specialist for Michigan State University, a baseline reading before the field season and then periodic testing of cholinesterase on the same day after you spray throughout the spray season is useful to determine if your work practices and protective equipment are adequate.

Rosenman points out that a 20 percent decrease of cholinesterase from baseline levels is an indication that a farmer must review his or her work practices to minimize any potential health effects. Symptoms typically don't occur until cholinesterase levels decrease 50 percent from baseline, with severe poisoning occurring at a 90 percent decrease. At a 50 percent decrease from the baseline the applicator or handler should be removed from jobs involving these pesticides until cholinesterase levels recover.

## References

<sup>1</sup>Kenneth Rosenman, M.D., College of Human Medicine, Occupational & Environmental Medicine, 117 West Fee Hall, Michigan State University, East Lansing, MI 48824-1317. Medical personnel and physicians can discuss further information on cholinesterase test levels by calling Dr. Rosenman at 1-800-446-7805.

This publication was reviewed by the MSU Pesticide Education Program Coordinator. This is a minor revision of Safety News, "Get Cholinesterase Test Now," dated 03/1994. This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by the MSU Extension or bias against those not mentioned. MSU is an Affirmative-Action, Equal Opportunity Institution. Extension programs and materials are available to all without regard to race, color, national origin, sex, disability, age or religion.

	<h2 style="text-align: center;">Chemical Update</h2> <p style="text-align: center;">The following information provides registration status of particular pesticides and should not be considered as pesticide recommendations by MSU Extension.</p>	
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## Chemical Update

*Products are listed by trade name with active ingredient name and manufacturer following. Please note that multiple manufacturers may make the same product. A change in the registration, formulation, or label of a product from one manufacturer **may not apply** to the same product made by another manufacturer. If you have any doubts about the status of a pesticide, please read a current label and/or check with the manufacturer directly.*

### Residue Tolerances:

#### Insecticides

- Savey (hexythiazox; Gowan)—residue tolerances established on apples at 0.5 ppm, apple pomace at 0.8 ppm, stone fruit at 1 ppm, hops at 2 ppm, pears at 0.3 ppm, and strawberries at 3 ppm.
- Steward (indoxacarb; DuPont)—residue tolerances established on apples at 1 ppm, apple pomace at 3 ppm, brassica head and stem vegetables at 5 ppm, sweetcorn forage at 10 ppm, sweetcorn kernels at 0.02 ppm, head lettuce at 10 ppm, pears at 0.2 ppm, and fruiting vegetables at 0.5 ppm.

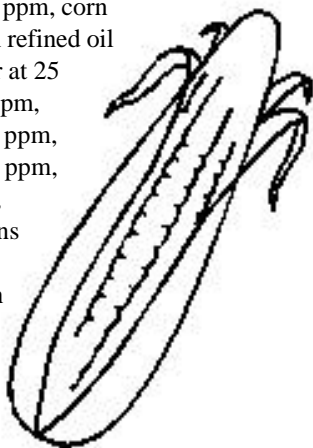
#### Herbicides

- Everest (flucarbazone-sodium; Bayer)—time-limited residue tolerances established on wheat forage at 0.3 ppm, wheat grain at 0.01 ppm, wheat hay at 0.1 ppm and wheat straw at 0.05 ppm (expires 11/01/05).
- Fargo (triallate; Monsanto)—residue tolerances established on sugarbeet pulp at 0.2 ppm, sugarbeet tops at 0.1 ppm, sugarbeets at 0.5 ppm, and barley, lentils, peas, and wheat at 0.05 ppm.
- Pursuit (imazethapyr; BASF)—proposed residue tolerances on rice grain at 0.5 ppm, rice straw at 0.3 ppm, and crayfish at 0.1 ppm. Comments were due by 10/27/00.
- Sempra (halosulfuron-methyl; Gowan/Monsanto)—residue tolerances established on squash and cucumbers at 0.5 ppm as a result of the IR-4 Project.



## Fungicides

- Abound/Quadris (azoxystrobin; Zeneca)—residue tolerances established on barley bran at 0.2 ppm, barley grain at 0.1 ppm, barley hay at 15 ppm, barley straw at 4 ppm, coriander leaves at 30 ppm, corn forage at 12 ppm, corn grain at 0.05 ppm, corn refined oil at 0.3 ppm, corn stover at 25 ppm, popcorn at 0.05 ppm, sweetcorn stover at 12 ppm, sweetcorn forage at 12 ppm, sweetcorn at 0.05 ppm, aspirated grain fractions at 30 ppm, dry bulb onions at 1 ppm, green onions at 7.5 ppm, soybean forage at 25 ppm, soybean hay at 55 ppm, soybean hulls at 1 ppm, soybean seed at 0.5 ppm, leafy vegetables (except brassica) at 30 ppm, leaves of tuber and root vegetables at 50 ppm, root vegetables at 0.5 ppm and tuberous and corm vegetables at 0.03 ppm.
- Acrobat (dimethomorph; American Cyanamid)—residue tolerances established on tomato fruit at 0.5 ppm, tomato paste at 1 ppm, grapes at 3.5 ppm, dried hops at 60 ppm and raisins at 6 ppm.
- Tattoo (propamocarb-hydrochloride; Aventis)—residue tolerances established on potatoes at 0.06 ppm.



## **Label Additions/ Changes:**

### Insecticides

- Cinnacure A 3005 (cinnamaldehyde; Proguard Inc.)—control of aphids and mites added to the label.
- Deltagard GC (deltamethrin; Aventis)—control of azalea caterpillars, California oakworm, casebearers, and firebrats added to the label.

### Herbicides

- Aim (carfentrazone-ethyl; FMC)—use on sweetcorn, sorghum, rice, barley, and oats added to the label.

## **Label Deletions/Cancellations:**

### Insecticides

- Co Ral (coumaphos; Bayer)—requested deletion of use on sheep and goats due to the high cost of reregistration. Unless withdrawn, this will be effective on 3/20/01.
- Ethyl Parathion (Cheminova)—remaining uses on alfalfa, barley, corn, cotton, canola, sorghum,

soybeans, sunflower and wheat will be cancelled as of 10/31/02 under an agreement with EPA.

### Herbicides

- Bensulide (Gowan)—some restrictions include prohibiting all handheld applications except for spot treatment, also large turf area treatments such as parks and recreation areas other than golf courses are prohibited; golf course fairway use is restricted to bentgrass only in certain states and the application is limited to only one in the fall.

## **New Registrations:**

### Herbicides

- Aquaneat (glyphosate; Nu Farm)—a new formulation for aquatic weed control.
- Dimension UltraWSP (dithiopyr; Rohm & Haas)—a new formulation for the turf and ornamental market.
- Engame (glyphosate/AMADS; Entek)—a new formulation for use as a non-selective foliar applied herbicide in non-crop areas and orchard crops.

## **Miscellaneous:**

- **BASF** has made a worldwide agreement with Dow AgroSciences for Dow to market imidazolinone-tolerant Clearfield brand corn.
- **Bonzi** (paclobutrazol; Uniroyal)—use on a number of new bedding plants and woody plant species has been added to the label of this growth regulator.
- **Cedar Chemical Co.** has purchased the thiocarbamate herbicides Sutan, Tillan and Ro-Neet from Zeneca. They will manufacture and sell these products worldwide. Also included in the sale were the EPTC products Eptam and Eradicane, which will be sold outside the U.S., Canada, and the European Union.
- **Novartis** has sold the fungicide Flint (trifloxystrobin) to Bayer for \$760 million. This includes the production site located in Switzerland.

(Source: *Ag. Chem. News*, 11/15/00)





### Status of Organic Foods in Lansing Grocery Stores—2000

Chris DiFonzo

#### MSU Pesticide Education Program

Last year, I published the results of a student class project in Entomology 477, Pesticides in Management Systems (refer to Nov/Dec 1999 issue of *Pesticide Notes*) about organic foods in local supermarkets. The students visited stores to record the size and location of organic food sections, to examine labels on organic foods, and to compare prices of organic versus conventional products. In 1999, six of eleven stores had signs actively promoting organic foods, and four of eleven had separate organic produce sections. Of the dozens of products examined by the students, organic products were more expensive in all but two cases.

This year, students went back to some of the same stores to report on organic promotion, labels, and prices. Below is a summary of their findings.

**Stores visited:** Ten in East Lansing and surrounding areas, including Kroger (4), Meijers (3), Felpausch, L & L, and Goodrich's Shoprite.

**Organic Section:** Nine of the ten stores had a separate organic section, sometimes indicated by a sign, for example, "organically grown," "organic food—brought to you by L & L Food Centers." Four students actually asked multiple clerks for assistance in locating organic foods. Most employees encountered were characterized as "clueless," although a couple did know the location of organic food in the store. In Goodrich's Shoprite near the MSU campus, a student encountered an assistant manager enthusiastic about organic foods. Since this individual is in charge of the dairy and frozen foods sections, he orders many organic items for these parts of the store. The manager also indicated that he was seeing an increase in customer interest and organic sales over the years.

**Organic defined:** No store had a posted definition or description of organic.

**Promotion:** Like conventional products, organic products use clever packaging and sayings to stand out in the marketplace. Students recorded some of the most interesting statements on organic labels:

- Free of pesticides and chemicals.

- Ho Ho Ho Organic
- Quick, delicious, and safe.
- 100% natural, 30% less fat than normal (onion rings).
- Farmed with pride and integrity.
- Tomatoes your grandmother would love.
- Tomatoes true to nature.
- Inspected for wholesomeness. Really good for you.
- Prepared with the same care as you would in your own home.
- The healthiest choice for you and our planet.
- From certified organic farms with no dangerous pesticides or chemicals.
- Organic growers help keep food pure and protect our land and water from harmful substances.
- Inside this can are the richest and sweetest tomatoes you've ever tasted. We're like winemakers, and you're holding our pride and joy.
- Organic farmers don't use chemical pesticides, herbicides, or fertilizers. Buying this will help prevent runoff.
- (Buying this product) protects a way of life for small farmers and helps ensure a safer and healthier Earth for you and your children.
- Mission statement: to creatively integrate healthy, natural, vegetarian foods into the American diet.
- Milk made the natural way with fresh air, clean water, and exercise. After all, cows are mothers too.



- Tastes great, good for you and the environment. Reduces pollution, reduces pesticide use, supports organic growers, conserves natural resources.
- As today's organic farmers feed new life into the soil, chemical farming techniques destroy. Our world and our future are in peril, as chemical pollutants disrupt the natural cycle of life, poisoning our land, our air, and our waterways. We now understand that when topsoil loses its life, it is easily eroded. And if humans continue present chemical agricultural practices, in 50 years there will not be enough topsoil to grow our food.

And my personal favorite, on a package of organic mushrooms—"No fungicides applied."



**Certifying Agencies and Standards:** Several different agencies or standards were cited on labels as certifying organic foods.

- California Certified Organic Farmer (CCOF) seal
- California Organic Food Act / Quality Assurance International
- Oregon Tilth Standards
- Organic Crop Improvement Association (OCIA)
- Organic Farming EC Control System (Italy)
- Texas Organic Standards

One lemonade product was even labeled as "triple certified—grower, facility, product," whatever that means.

**Taste testing:** A few students were so enthused, they compared quality of products, or even purchased and consumed organic items. In the majority of cases, students reported that organic items were comparable in quality and taste to non-organic counterparts. But as you would expect, some items stood out for goodness or badness. An unscientific sampling of the students' sophisticated tastes...

- ECO-bananas ~ did not look as nice as bananas on display at adjacent table because of discoloration on many peels.
- Organic celery ~ pale, didn't look as tasty as the non-organic.
- Organic broccoli ~ smaller heads than non-organic.
- Organic grapefruit ~ extremely high markup

and very poor quality

- Newman's Own Organic Peanut Butter Cups ~ "tastes disgusting!"
- Organic onions ~ larger, looked equally nice as non-organic
- Organic russet potatoes ~ very good, looked better than some non-organic potatoes.
- Health Valley Granola Cereal ~ Very good! The raisins are in an airtight bag, separate from the cereal!
- Cascadian Farm Pickles ~ Excellent. Best I've had in a long time.

**Price Comparison:** In total, students compared 150 organic items (ranging from fresh produce to canned goods, juices, baby food, and dairy products) to comparable non-organic items. The organic item was more expensive in 144 of the 150 cases, sometimes substantially more money.

The biggest price differentials were in dairy products:

- Butter, \$5.19 versus \$2.00 per box
- Eggs, \$2.49 versus \$1.29 per dozen
- Milk, \$3.49 versus \$1.89 per half gallon
- Cheese, \$3.98 versus \$1.89 per pound

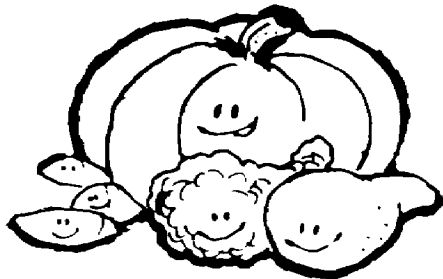


Finally, students were asked if the project changed their view about organic foods. In their opinion, was it worth it to buy organic? Would they purchase organic products? Why or why not? In general, the students were not overly concerned about pesticides, and would not purchase organic food as a health benefit. However, most said they might buy organic foods occasionally, especially if the organic item was something unusual, or not otherwise available. The key was price—if an organic item was significantly more money, they probably wouldn't purchase it. Some of their comments:

"I would consider buying organics if the quality and price were similar, or if they were a specialty item like blue corn chips." "...if one perceives this as a way to help donate to those companies who are taking leadership roles as being stewards of the environment, well then yes I guess paying those few extra cents is worth it." "I for one am quite comfortable with eating pesticide-treated foods, but may be willing to try organically grown produce once in a while to see if my 'finely honed' taste buds can detect any difference."



Thanks to the students who participated in the survey: Kaci Agle, Mark Bernards, Jake Clifford, Trevor Dale, Kirsten Fondren, Corey Guza, Chad Lee, Francisco Santos, and Karen Zuver. Special thanks to Jessica Kostarides, who not only taste tested her organic items, but saved the labels.



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### Diazinon Phase-out—Late Breaking News!

The EPA has announced its agreement with the manufacturers Syngenta and Makhteshin Agan to phase-out Diazinon over a four-year period. Under the FQPA, the EPA has targeted older, “riskier” organophosphate pesticides for review because they pose the greatest risk to children. Diazinon has been used in homes, and on lawns and gardens for over 40 years. The agreement eliminates 75 percent of the use amounting to more than 11 million pounds of the pesticide used annually. The phase-out schedule is as follows:

- Registration for all indoor household uses will be cancelled on March 2001, and all retail sales with stop by December 2002.
- Manufacturing for all lawn, garden and turf uses will end in June 2003; all sales and retailer distribution ends August 2003. The company will implement a product recovery program in 2004 to complete the phase-out.
- Around 20 different crop uses will be also be cancelled as a result of the agreement. These crops include alfalfa, cucumbers, grass forage, potato, rangeland, soybean, strawberry, and tomatoes.

Syngenta issued a press release stating its phase-out of diazinon is mostly related to economic factors rather than health and safety issues. Further information can be found at the EPA website: <http://www.epa.gov/pesticides/op/diazinon.htm>.

Bottomline—use up your stocks of diazinon in 2001!

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### EPA Proposes Changes to the Experimental Use Permit (EUP) Program

*Sandy Perry*

#### *Outreach Specialist, IR-4 Program*

EPA’s Experimental Use Permit (EUP) program has been less active since the Food Quality Protection Act (FQPA) passed in 1996. The FQPA requires nearly the same safety determination review time for a new chemical EUP as for a new chemical registration.

Companies are reluctant to give up one of their registration priorities for an EUP. Also, the EPA Registration Division doesn’t have the resources to review EUPs without deviating from other scheduled priorities such as new registrations, IR-4 projects, reregistrations, etc. As a result, food-use EUPs have gone from 20 per year pre-FQPA to just three per year post-FQPA.

EPA has recognized the impact that the reduction in EUPs has had on growers. Grower and grower representatives have expressed concerns over their lack of knowledge and experience using new pesticide products being registered as alternatives for products they have used for years. Many of the new compounds are more specific, with targeted modes of action that must be evaluated in relation to differing production practices.

EPA is addressing the concerns by developing a pilot program to expedite EUP reviews for certain registered pesticides with food uses. The registrant would not have to use a registration priority for an EUP as long as the chemical fits the following criteria:

- I. Must have been reviewed by EPA since 10/98.
- II. Must have current registered food uses and application methods.
- III. Use rates should be similar to rates used on other crops.
- IV. There must be ample room in the risk cup both before and after the proposed use.
- V. Acreage limitations must be less than 2000 acres for major crops and less than 100 acres for minor crops.

Most residential uses will not be eligible, there will be a 100-acre limit per watershed, and there will be restrictions in areas where endangered species are



present. The EUP will be limited to one year with opportunity to renew in one year increments.

For the pilot program, EPA will limit the active ingredients to methyl bromide replacements, reduced-risk chemicals and organophosphate alternatives with registered food uses. Products that may meet the criteria include: 1) Fungicides and PGR's—Azoxystrobin, Ecolyst, Fenhexamide, Prohexadione Calcium and Trifloxystrobin; 2) Herbicides—Carfentrazone, Diflufenzopyr, Flucarbazone-sodium, glyphosate and halosulfuron and 3) Insecticides and IGR's—buprofezin, indoxacarb, methoxyfenozide, pymetrozine, pyriproxyfen, spinosad and tebufenozide. The vast majority of these products has been or is currently being researched by IR-4. More IR-4 projects slated for food use registrations in the next 12-18 months will also meet the criteria.

EPA will soon be seeking public comment on the EUP pilot proposal and implementation is expected in 2001.

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### Breast Cancer and Farm Work

Women who live and work on farms are less likely to develop breast cancer than women in the general population, according to a new study from the University of North Carolina School of Public Health. The study was published in the September issue of the *Journal of Epidemiology*. Overall, it says, women who have worked on farms for more than 23 years have a 40% lower risk of breast cancer than women who never lived on farms. One of the authors, epidemiology professor David Savitz, said "this is the first population-based, case controlled study to look at a spectrum of pesticides used in agriculture, and for that reason, we think it is a fairly significant addition to the scientific literature. For breast cancer, just as for a lot of other illnesses like cardiovascular disease, living on a farm generally seems to be good for people. We don't fully understand the reasons." The study, which is part of a wider study on breast cancer, details the health and work histories of, and pesticides used by, test subjects. The researchers determined that "pesticides appear to boost the (breast cancer) risk slightly, although the increased risk does not exceed that of women not living on farms," Savitz added. (*Pesticide & Toxic Chemical News*, Vol. 28., No. 47, September 14, 2000).

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## Worker Protection Standards Assessment

*Becky Hines*

### WPS, MSU Pesticide Education Program

In June 2000, the EPA held its first of three stakeholder meetings to assess the effectiveness of WPS implementation, enforcement, and other efforts to protect the health of agricultural workers and children working in agricultural areas. Representatives from states, cooperative extension, agricultural employers, and advocacy groups attended. From this meeting, held in Austin, Texas, focal points for the assessment process were defined. These broad areas are:



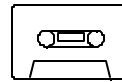
- **Training Issues**—funding and resource distribution, program and materials evaluation, handler training, training content, training quality and consistency, and train-the-trainer networks.
- **Enforcement Issues**—funding, EPA oversight of state programs, quality and consistency of state WPS inspections, national reporting, WPS penalty policy.
- **Complaint and Retaliation Issues**—improving the complaint process, educating workers on WPS and the complaint process, and resolving retaliation problems.
- **Communication Issues**—general WPS outreach with stakeholders, hazard communication information for workers, language and cultural barriers, and outreach and coordination with health care providers.

On December 11-13, 2000 in Sacramento the second stakeholder meeting will take place. At this meeting, work groups for each focus point will be formed. A work group's job is to help further refine the issues and develop strategies and proposals for solving the issues. Meeting attendance is not required to participate in these work groups. For more information about the national assessment of the Worker Protection Standards, plans for future stakeholder meetings, or how to become involved in a work group, see the EPA's website at <http://www.epa.gov/oppfead1/safety/index.htm>.





## Resources



### New Publications from MSU Pesticide Education Program

***How to Read a Pesticide Label, E-2182*** (Spanish Language version E-2182-S). Extension bulletin that explains each section of a pesticide label in detail and is available in both English and Spanish.

***What Does A Pesticide Label Say? How to read the label for important use and safety information, E-2725.*** A three-panel brochure geared for the homeowner as part of the Community IPM Education Series.

***AM-37-SP.*** In addition to the English version, there is now a Spanish-language version of the AM-37 bulletin, *Pesticide Emergency Information.*

***Forest Pest Management, E-2045.*** All new and completely rewritten pesticide applicator training manual in Category 2, Forest Pest Management. A color photo section is included in the back of the manual. The new manual would be of interest to anyone wishing to learn more about forest pest management. Retail cost is \$15.50.



These materials can all be ordered through the MSU Bulletin Office, Telephone, 517-353-0240; Fax, 517-353-7168. They can also be downloaded from the Pesticide Education web site at [www.pested.msu.edu](http://www.pested.msu.edu).

### Michigan Mosquito Control Association (MMCA) Conference

The MMCA conference will be held February 1-2, 2001 at the Holiday Inn in Ann Arbor, Michigan. Contact Charles Dinsmore, Program Chairman, Midland County Mosquito Control, 2180 N. Meridian Road, Sanford, MI 48657-8501, Phone (517) 687-5044 for further information. Conference information is also available at the website [www.mimosq.org](http://www.mimosq.org).



### Pesticide Education Web Site Revised!

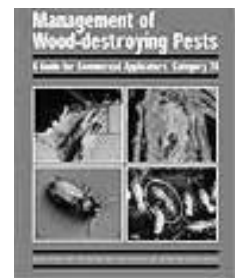
MSU's Pesticide Education Web site has a new face. Check it out at [www.pested.msu.edu](http://www.pested.msu.edu). Several new features have been added to the site, including pesticide applicator training manuals and slide sets for downloading. Also a new Community and School IPM page is in progress.

Training manual slides sets now available include:

***Pesticides and Human Health***—Chapter 6 of the Core training manual available in both English and Spanish at <http://www.pested.msu.edu/BulletinsSlideSetsNewsletters/slides/ch6CoreApplicator/index.html>

***Turfgrass Pest Management*** and ***Right-of-way Pest Management***—slide sets corresponding to the training manuals, Category 3A *Turfgrass Pest Management* and Category 6, *Right-of-way Pest Management* at <http://www.pested.msu.edu/BulletinsSlideSetsNewsletters/slides/CertificationSlides.html>.

Nine pesticide applicator training manuals are currently available for downloading include two **all new for 2000** manuals—Category 2, ***Forest Pest Management*** and Category 7B, ***Management of Wood-destroying Pests.*** They can be downloaded from: <http://www.pested.msu.edu/BulletinsSlideSetsNewsletters/bulletins/index.html>.



The online versions of these manuals, however, do not contain the color photo sections.

Other manuals recently added include Category 5, ***Swimming Pool Pest Management*** (1997), Category 1D, ***Livestock Pest Management*** (1996), and Category 7G, ***Pest Management for Small Animals*** (1994).

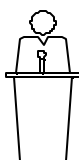
### Federally Registered Restricted Use Pesticides, EC-2500

The University of Nebraska Cooperative Extension has an August 2000 version of the Federally Registered Restricted Use Pesticides list. This publication is based upon the EPA Restricted Use



Pesticide database as maintained by OPP/EPA. The publication can be downloaded from the web site at <http://www.ianr.unl.edu/pubs/pesticides/ec2500.pdf>. For further information about the publication, or if you

wish to adapt it for pesticide education/information use contact Larry Schulze, University of Nebraska Extension Pesticide Coordinator at [Lschulze1@unl.edu](mailto:Lschulze1@unl.edu).



## Pesticide Applicator Recertification Seminars

This partial listing of recertification seminars was provided by MDA. Certified applicators and registered technicians may earn recertification credits by attending these programs. For additional information, call the MDA Lansing office at (517) 373-1087.

**NOTE:** Renewal of pesticide applicator certification credentials can be done by taking the appropriate exam(s) or by obtaining the necessary number of recertification credits by attending approved seminars.



Date	Seminar	Location	Credit	Category	Phone #
12/14	Core Manual Review	Marshall, MI	2	Any	(616)781-0784
12/14	2000 Pesticide Certification Review	Ellsworth, MI	2	Any	(231)946-1510
12/15	MNLA Pesticide Credit Clinic	East Lansing, MI	4	ComCore,3A,3B	(517)381-0437
12/16	Sewer Line Root Control Recert Prog.	Syracuse, NY	4	ComCorr,5C	(800)447-6687
12/19	Fireblight Workshop	Benton Harbor, MI	2	Priv,1C	(616)944-1477
12/19	Agronomy Update Training (2 days)	Indianapolis, IN	3	Priv,1A	(317)915-3000
12/20	2000-01 Pesticide Appl. Cert. Pgms	Clinton Twp, MI	3	Any	(810)469-6440
1/5/01	Corn And Soybean Production Mtg.	Battle Creek, MI	3	Priv,1A	(517)799-2233
1/8	Pesticide Applicator Review Session	Monroe, MI	3	Any	(734)240-3170
1/8	Great Lakes Trade Expo-Insect ID/Mgt	Lansing, MI	2	ComCore,3A,3B	(517)381-0437
1/8	Great Lakes Trade-Insect ID/Mgt PM	Lansing, MI	2	ComCore,3A,3B	(517)381-0437
1/9	Great Lakes Trade Expo-Resrch/Educ.	Lansing, MI	2	ComCore,3A,3B	(517)381-0437
1/9	Great Lakes Trade Expo-MDA Update	Lansing, MI	1	ComCore,3A,3B	(517)381-0437
1/9	Core Manual Review	Coldwater, MI	2	Any	(616)781-0784
1/9	UAP Great Lakes Winter Grower Mtg	Merrill, MI	2	Priv,1A,1B	(888)952-6353
1/10	Corn And Soybean Production Mtg	Dundee, MI	3	Priv,1A	(517)799-2233
1/10	No-Till Conference (four days)	Cincinnati, OH	6	Priv,ComCore,1A,1B,1C	(262)782-4480
1/11	Core Review Session	Allendale, MI	2	Any	(616)673-0370
1/11	Corn And Soybean Production Mtg	Frankenmuth, MI	3	Priv,1A	(517)799-2233
1/12	Corn And Soybean Production Mtg	Clarksville, MI	3	Priv,1A	(517)799-2233
1/12	Pesticide Review Session	Standish, MI	2	Any	(517)846-4111
1/15	Turfgrass Conf-Calc For Pesticide Ap	Lansing, MI	4	ComCore,3A	(517)355-0271
1/15	Turfgrass Conf-ID of Ornamental Dis.	Lansing, MI	2	ComCore,3B	(517)355-0271
1/15	Turfgrass Conf-ID of Orn Disease PM	Lansing, MI	2	ComCore,3B	(517)355-0271
1/15	Lawn Doctor Re-Certification Prog.	Atlantic City, NJ	3	ComCore,3A,3B	(732)308-2300
1/15	Turfgrass Conf-Equipment Washing	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	Turfgrass Conf-Integ Mgmt Strategies	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	Turfgrass Conf-Water Quality & Turf	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	UAP Great Lakes Winter Grower Mtg	Merrill, MI	2	Priv,1A,1B	(888)952-6353
1/16	MI Turfgrass Conf-Turfgrass Fertility	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	Turfgrass Conf-Turfgrass Insect Mngt.	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	Turfgrass Conf-IPM-Athletic Fields/Schls	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	Turfgrass Conf-Weed Control Strategies	Lansing, MI	1	ComCore,3A	(517)355-0271
1/16	MI Turfgrass Conf-General Session	Lansing, MI	1	ComCore,3A,3B	(517)355-0271
1/17	MI Turfgrass Conf-Golf Turf Mngt	Lansing, MI	1	ComCore,3A	(517)355-0271
1/17	MI Turfgrass Conf-General Session	Lansing, MI	2	ComCore,3A,3B	(517)355-0271
1/17	MI Turfgrass Conf-Athletic Fields	Lansing, MI	1	Comm Core,3A	(517)355-0271
1/17	Turfgrass Conf-Lawn Care & Grounds	Lansing, MI	1	ComCore,3A	(517)355-0271



1/17	Turfgrass Conf-Mngt of New Grasses	Lansing, MI	1	ComCore,3A	(517)355-0271
1/18	MI Turfgrass Conf-Aquatic Mgmt	Lansing, MI	1	ComCore,5	(517)355-0271
1/18	MI Turfgrass Conf-Golf Turf Mngt	Lansing, MI	1	ComCore,3A	(517)355-0271
1/18	Turfgrass Conf-Id/Mgmt Grubs in Lawns	Lansing, MI	2	ComCore,3A	(517)355-0271
1/18	MI Turfgrass Conf-Tree & Shrub Diag.	Lansing, MI	1	ComCore,3B	(517)355-0271
1/18	MI Turfgrass Conf-Comm. Turf Mngt.	Lansing, MI	1	ComCore,3A	(517)355-0271
1/18	Turfgrass Conf-Tips-Turf Establishment	Lansing, MI	1	ComCore,3A	(517)355-0271
1/23	UAP Great Lakes Winter Grower Mtng	Merrill, MI	2	Priv,1A,1B	(888)952-6353
1/24	2000-01 Pesticide Applicator Cert. Pgms	Clinton Twp, MI	3	Priv,ComCore	(810)469-6440
1/30	UAP Great Lakes Winter Grower Mtg	Merrill, MI	2	Priv,1A,1B	(888)952-6353
2/5	Pesticide Applicator Review Session	Monroe, MI	3	Any	(734)240-3170
2/6	UAP Great Lakes Winter Grower Mtg	Merrill, MI	2	Priv,1A,1B	888)952-6353
2/8	Wiegand Nursery-Prng to Prevent Pests	Macomb, MI	1	ComCore,3B	(810)286-3658
2/8	Pesticide Review Session	Centreville, MI	2	Any	(616)467-5511
2/9	Core Review Session	Moline, MI	2	Any	(616)673-0370
2/13	UAP Great Lakes Winter Grower Mtg	Merrill, MI	2	Priv,1A,1B	(888)952-6353
2/14	Wiegand Nursery-Native Perennials	Macomb, MI	1	ComCore,3B	(810)286-3658
2/15	RUP Core Training	Paw Paw, MI	2	Any	(616)657-7745
2/21	2000-2001 Pesticide Appl. Cert. Pgms	Clinton Twp, MI	3	Priv, ComCore	(810)469-6440
2/21	Wiegand Nursery's Prog-IPM For Roses	Macomb, MI	1	ComCore,3B	(810)286-3658
2/22	Core Review Session	Allendale, MI	2	Any	(616)673-0370
2/28	Wiegand Nursery-Landscape Diseases	Macomb, MI	1	ComCore,3B	(810)286-3658

Instructions for recertification training seminar attendance and training seminar dates are posted at the MDA website:  
<http://www.mda.state.mi.us/industry/schedule.html>.

## Pesticide Education Staff Directory

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