

Applicators May Be at Risk for Hearing Loss

Are pesticides linked to hearing loss in men? About 35 out of every 100 applicators in the AHS reported some hearing loss. Hearing loss can put farmers at risk for job-related injuries if they cannot hear warning signals. We often think of hearing loss as part of aging, but it can also be due to other factors, such as head injuries or exposure to loud noise, metals, or solvents.

AHS researchers studied this among men applying pesticides. "We found an increase in self-reported hearing loss associated with several measures of pesticide exposure," said AHS scientist Dr. Freya Kamel.

Farmers who had the highest risk for hearing loss include:

- Those who experienced high pesticide exposure events (such as spills)
- Those who were sickened by pesticide poisoning
- Those who sought medical treatment for pesticide exposure.

"More studies are needed to find out how serious the problem is, especially for agricultural workers who are often exposed to loud noise such as tractors, and who may be exposed to heavy metals and solvents as well as pesticides," added Dr. Kamel.

Crawford, et al., Journal of Occupational and Environmental Medicine 2008; 50: 817-826.

More information on farm noise and hearing loss & protection can be found online at:
<http://www.cdc.gov/niosh/docs/2007-176/pdfs/2007-176.pdf> and
<http://www.cdc.gov/niosh/docs/2007-175/pdfs/2007-175.pdf>

Please stay in touch

No matter whether you are still applying pesticides or what your health status is, we hope you will continue to be part of this important effort.

The information that you give is crucial to help us understand how agricultural exposures may affect health—and to know what can be done to help families enjoy good health.

Please let us know of any changes in your address or phone number by calling 800-217-1954.

As always, we will protect the confidentiality of your information.

Thanks from all of us at the Iowa Field Station.

The AHS is a long-term study to investigate the effects of environmental, occupational, dietary, and genetic factors on the health of the agricultural population. This study will provide information that agricultural workers can use in making decisions about their health and the health of their families.

The study is conducted in Iowa by the Department of Epidemiology at the University of Iowa and in North Carolina by Battelle CPHRE. The study is funded and directed by the National Cancer Institute, the National Institute of Environmental Health Sciences, the US Environmental Protection Agency, and the National Institute for Occupational Safety and Health.

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www.aghealth.org



Agricultural Health Study Iowa Study Update 2009

Identifying factors that promote good health

Study Reaches a Milestone!

With your help and participation, the Agricultural Health Study (AHS) has reached the 15-year mark.

You are part of a unique group of over 89,000 people. You have helped us learn more about the health of rural and agricultural communities and families.

The study results are used by many groups, such as your local extension office, to shape education programs to lower harmful exposures and promote good health.

The AHS has brought together many scientists studying a wide range of health topics. This newsletter highlights our recent findings. More detailed summaries of these

and other findings can be found at www.aghealth.org.

As study directors, we want to express our deep appreciation for your contributions these past 15 years.

Best wishes to you and your family from the AHS Executive Committee,

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Growing Up on a Farm May Benefit Respiratory Health

AHS researchers found that growing up on a farm is good for lung health in women. "Women who grew up on farms were less likely to have asthma," according to AHS scientist Dr. Jane Hoppin, "especially the type of asthma that is accompanied by allergies."

Even so, Dr. Hoppin explained that whether or not they grew up on a farm, women had a higher risk of asthma with allergies if they used these pesticides:

- 2,4-D and glyphosate (herbicides)
- carbaryl, coumaphos, DDT, malathion, parathion, permethrin [on animals], phorate (insecticides) and
- metalaxyl (fungicide).

She also noted that study results in laboratory animals found that organophosphate insecticides, such as coumaphos and parathion, may contribute to increased airway reactivity.

To learn more, AHS researchers are doing a special study called the Lung Health Study. "If you are invited to join the study," said Dr. Hoppin, "we hope that you will agree to take part."

"This research will help us understand how farm exposures may affect lung health, especially the risk of asthma in people living and working on farms."

Hoppin, et al., American Journal of Respiratory and Critical Care Medicine 2008; 177: 11-18.

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Study Measures Applicator Exposure to 2, 4-D and Chlorpyrifos

Pesticide applicators who used a boom sprayer to apply 2,4-D had less exposure to the chemical, on average, than those who sprayed using a hand wand, according to our researchers.

This monitoring study measured exposure levels of 84 men who applied either 2,4-D or chlorpyrifos in Iowa and North Carolina. The men provided urine, hand wipe, body patch, and personal air samples.

Men who applied 2,4-D using a hand wand sprayer had higher average exposure levels if they:

- Repaired or adjusted the equipment
- Contacted the sprayed vegetation

- Experienced minor spills, splashes, or leaks
- Used additives, such as surfactants.

Men who used chemical-resistant or other rubber gloves had lower levels of 2,4-D, on average, in their urine. This finding reinforces the importance of wearing chemical-resistant gloves while handling pesticides.

“Wearing chemical-resistant gloves is an easy, inexpensive step applicators can take to reduce their exposure to 2,4-D and other pesticides,” said AHS scientist Kent Thomas, who directed the study.

Other findings from the study:

- Overall, levels of 2,4-D in urine increased following application.

Even so, levels were well below occupational reference levels.

- Men who used boom sprayers on tractors had about the same average exposure to 2,4-D whether or not the tractor had an enclosed cab.
- For chlorpyrifos, men who applied a granular product generally had lower exposure than those who used a liquid spray.
- Levels of 2,4-D and chlorpyrifos in the men’s personal air samples were much lower than the recommended occupational limits.

Thomas, et al., *Journal of Exposure Science and Environmental Epidemiology* 2009; epub ahead of print, doi:10.1038/jes.2009.6

Understanding Cancer Findings

People in the AHS have a lower cancer risk than the general population. This may be due to farm families getting more exercise and smoking less than non-farm families.

Yet farmers and their families do have higher rates of some specific cancers.

AHS researchers are studying the broad range of information collected in an effort to learn more about factors that raise or lower the risk of many types of cancer.

“Findings from our studies suggest possible links between certain cancers and the use of specific pesticides,” said AHS scientist Dr. Michael Alavanja. “Other pesticides show no association.”

Ongoing Research

AHS researchers are studying the possible links between pesticide use and specific cancers. Here is a summary of recent findings:

- To date, our research has not found any association between cancer and some widely used pesticides such as captan and malathion.

Bonner, et al., *American Journal of Epidemiology* 2007; 166: 1023-34
Greenburg, et al., *Cancer Causes Control* 2008; 19: 1401-1407

- Although the rate of new cases of bladder cancer and colon cancer among people in the AHS is low, people who applied imazethapyr had a higher rate of these cancers. This finding suggests that exposure to aromatic amine pesticides, such as imazethapyr, may increase risk for bladder and colon cancers.

Koutros, et al., *International Journal of Cancer* 2009; 124: 1206-1212

- Pancreatic cancer has been linked with pesticides in other

studies. Our study found an association between pancreatic cancer and two important herbicides—EPTC and pendimethalin.

Andreotti, et al., *International Journal of Cancer* 2009; 124: 2495-2500

- People who applied EPTC also had a higher risk of colon cancer and leukemia, but the results were based on a very small number of people who were exposed and this finding could be due to chance.

van Bommel, et al., *Environmental Health Perspectives* 2008; 116: 1541-1546

Other Cancer Risks

AHS participants with light complexions, red hair, or who easily sunburn are at higher risk for melanoma, a potentially serious form of skin cancer. These findings are the same as results from other studies and are important because farmers and their families spend so much time outdoors.

Our study also observed that people who were overweight or obese were at increased risk of melanoma.

Dennis, et al., *Annals of Epidemiology* 2008; 18: 214-221

Protect your skin from the sun when outdoors

- Wear the right clothing to protect your skin, such as long sleeves and pants, a wide-brimmed hat, and sunglasses that absorb UV light.
- Apply and reapply sunscreen throughout the day with a Sun Protection Factor (SPF) of at least 15.

For more information, go to www.cancer.gov/cancertopics/types/skin or call toll-free 1-800-4-CANCER (1-800-422-6237).

Use safe practices when handling pesticides

- Wear protective clothes and equipment, including chemical-resistant gloves.
- Read the product label and follow the instructions.
- Limit your contact with the product and also equipment or vegetation that may have pesticide residues.
- If your equipment, gloves, or clothes become contaminated, carefully clean or replace items.
- Keep the clothes you wear when using pesticides separate from other laundry and wash separately.
- Check with your local extension office to learn how to safely dispose of old or outdated products and empty containers.
- Call your local extension office for additional information and training.

Pesticide Use May be Linked to Depression

People sometimes feel sad, listless, or discouraged. But when low mood affects daily activities over a period of more than two weeks, a person may have clinical depression.

Because signs of depression have been reported after pesticide poisoning, our AHS team decided to study the possible link between lower levels of pesticide exposure and depression.

For male applicators, the study found doctor-diagnosed depression linked to:

- Pesticide poisonings
- High exposure events, such as pesticide spills
- Use of insecticides, particularly organophosphates and organochlorines
- Many days of pesticide application over a lifetime.

“Our study found that pesticide applicators with greater pesticide use were more likely to experience depression even when no physician-diagnosed pesticide poisoning had occurred,” said AHS scientist Dr. Freya Kamel.

For farm women, the study found links between depression and pesticide poisoning. Overall levels of exposure were lower among wives than applicators, and no relationship with pesticide use was found in wives without pesticide poisoning.

More studies are needed to learn about these and other links between pesticide use and depression.

Beseler, et al., *Journal of Occupational and Environmental Medicine* 2006; 48: 1005-13.

Beseler, et al., *Environmental Health Perspectives* 2008; 116: 1713-9.

