



# Agricultural Health Study

STUDY UPDATE

2017

## MESSAGE FROM THE EXECUTIVE COMMITTEE

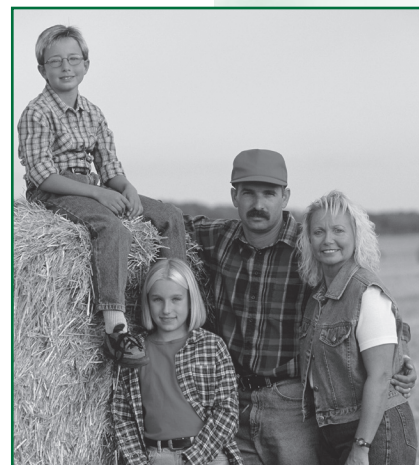
Dear Agricultural Health Study Participant,

In the nearly 25 years since the Agricultural Health Study (AHS) began, we have continued to learn about how exposures on the farm may impact health. In this issue of our newsletter, we share some recent results from the study using information that you provided. We also provide updates on ongoing and new projects. If we contact you about one of these studies, we hope that you will choose to participate. Whether or not you are still farming, your continued involvement in the AHS helps to improve the health of future generations. We thank you for your contributions. To learn more about AHS activities, visit our website (<http://aghealth.nih.gov>) or call us at 1-800-4-AGSTUDY (1-800-424-7883).

## RHEUMATOID ARTHRITIS

Rheumatoid arthritis (RA) is one of the more common types of autoimmune diseases, where the immune system attacks and damages healthy tissue. Several studies have shown that farm work may be related to a higher risk of RA, but the reasons for this are not known. AHS researchers studied 220 male farmers and 275 female spouses of farmers with RA. Male farmers who ever used the pesticides fonofos, carbaryl, and chlorimuron ethyl were more likely to report developing RA, as were those who reported the highest number of days of use of toxaphene and atrazine. Women who developed RA were more likely to report ever using the fungicides maneb/mancozeb and the herbicide glyphosate, as well as solvents and chemical fertilizers. On the

other hand, RA was less common in women who reported both childhood and adult exposure to livestock. We plan to follow up these findings with additional studies of RA and other autoimmune diseases.



Parks CG, Hoppin JA, DeRoos AJ, et al. Rheumatoid Arthritis in Agricultural Health Study Spouses: Associations with Pesticides and Other Farm Exposures. *Environmental Health Perspectives* 2016;124:1728-34.

Meyer A, Sandler DP, Beane Freeman LE, et al. Pesticide exposure and risk of rheumatoid arthritis among licensed male pesticide applicators in the Agricultural Health Study. *Environmental Health Perspectives* (in press).

## MEMORY AND AGING STUDY

A total of 2,622 participants have joined the AHS Memory and Aging study, a project investigating whether past exposures to pesticides or other farming-related factors might affect memory later in life. The first set of phone interviews has been completed and we are currently contacting many

participants to request an in-home visit and blood or saliva samples. By identifying farming-related factors that may affect memory, this study will help identify ways farmers can maintain an active and healthy life throughout their later years.



The AHS is a collaborative effort of the National Cancer Institute, National Institute of Environmental Health Sciences, U.S. Environmental Protection Agency, and the National Institute for Occupational Safety and Health.

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## ALLERGIES LINKED TO A LOWER RISK OF NON-HODGKIN LYMPHOMA

Non-Hodgkin lymphomas (NHL) are a group of cancers that affect cells in the body's immune system. Some studies have found that people with allergies may be less likely to develop NHL. However, none of these studies looked at the relationship between allergies and lymphomas in farming families. Living on a farm may influence how a person's immune system responds to allergens. Recently, we looked at whether the risk of developing NHL was different for farmers and spouses who reported allergy symptoms in the year before joining the AHS than for those without allergy symptoms like a stuffy, itchy, or runny nose. Participants

who reported allergy symptoms were less likely to develop NHL than those without allergy symptoms. Those who had doctor-diagnosed hay fever or eczema also had a lower risk of developing NHL. While this sounds like good news for allergy sufferers, this is the first time that this link has been reported in farming families, so more studies are needed to better understand the relationship between allergies and risk of NHL.

Hofmann JN, Hoppin JA, Lynch CF, et al. Farm characteristics, allergy symptoms, and risk of non-Hodgkin lymphoid neoplasms in the Agricultural Health Study. *Cancer Epidemiology Biomarkers and Prevention* 2015;24(3):587-594.

## POSSIBLE LINK BETWEEN PESTICIDE USE AND THYROID DISEASE

More than 12% of the U.S. population will develop a thyroid problem during their lifetime. The most common thyroid condition is hypothyroidism, when a person's thyroid does not produce sufficient hormones to regulate certain body systems. Previous AHS studies found that hypothyroidism was more common in men and women who reported using certain pesticides. The pesticides linked to hypothyroidism were different for men and women, except for the insecticide chlordane which was related to hypothyroidism in both groups. The AHS team has a new study

that focuses on thyroid disease that was diagnosed after people joined the AHS. To fully evaluate any risk of thyroid disease associated with pesticides, we will be re-contacting some participants with thyroid disease to learn more about their diagnosis and treatment.

Goldner WS, Sandler DP, Yu F, et al. Pesticide use and thyroid disease among women in the Agricultural Health Study. *American Journal of Epidemiology* 2010;171:455-64.

Goldner WS, Sandler DP, Yu F, et al. Hypothyroidism and pesticide use among male private pesticide applicators in the Agricultural Health Study. *Journal of Occupational and Environmental Medicine* 2013;55:1171-8.

## BIOMARKERS OF EXPOSURE AND EFFECT IN AGRICULTURE (BEEA)

In the ongoing BEEA Study, we are collecting blood and urine samples, as well as questionnaire information and house dust samples from some of the men in the AHS. The samples and information collected will be used to investigate how pesticides

and other agricultural exposures may affect biologic processes in the body that could influence the risk of developing cancer or other diseases. We will continue to enroll participants through 2017.

## NEW STUDY: EARLY LIFE EXPOSURES IN AGRICULTURE (ELEA)

We are starting a new study to evaluate how growing up on a farm may influence health in young adulthood and beyond. We may be contacting your adult children to participate

in this new study, which will include completing a survey. If we do contact them, we hope that you will encourage them to participate.

*We thank you for your enthusiastic participation in these studies. We hope you will continue to participate in these and future projects if contacted.*

