

GPCAH-funded Pilot / Feasibility Projects, FY2008 thru FY2009 – Executive Summaries

FY2008

**Rural Roadway Safety – Optional Drivers Education Module
NECAS – Dan Neenan**

Rural roadways have more crashes, more miles traveled, and more fatalities than urban roadways. To prevent future crashes and fatalities, focused training should be done to educate drivers about the unique risks of driving on rural roads. This pilot/feasibility project will investigate the need for and interest in an optional module for driver education instructors to use during the training of new drivers. Through the use of questionnaires, the project team will identify what format, content, and distribution method would be most appropriate for a rural roadway module. Partners from neighboring states, Departments of Transportation, insurance companies and other interested parties will participate in an advisory role to ensure this project will lead to the creation and dissemination of a rural roadway safety module.

**Do Farm Crisis Services Affect Farmer Suicide: A Comprehensive Evaluation
AgriWellness – Mike Rosmann**

Since the Farm Crisis of the 1980s, several states have operated farm crisis telephone hotlines that offer telephone counseling to the agricultural population, information about additional resources, and referral when needed for professional behavioral health services (which are provided by contracted licensed professionals who are familiar with agriculture) and other behavioral health supports such as psychoeducational seminars. A comprehensive evaluation of these services has not been undertaken. This project will develop a comprehensive research proposal to evaluate farm crisis services throughout the country. The evaluation will include a longitudinal post hoc comparison of the rates of suicide and knowledge of agricultural resources among the agricultural populations in states that have had farm crisis services for many years with an equal number of agricultural states that have lacked such services. This project will also develop and apply a key evaluation instrument: a survey of behavioral health services in agricultural states.

Expansion of the Rural Health Initiative: Incorporating Occupational Health Interventions in a Community Based Participatory Preventative Health Program for Farm Families – Shawano County, WI – Lisa Schiller

The purpose of this research is to expand the Shawano County Rural Health Initiative (RHI), a successful community based participatory program initiated in 2003, to include occupational health services by incorporating the Certified Safe Farm (CSF) program. During its three-year pilot program, the RHI has focused primarily on screening and education related to cardiovascular health and nutrition. The importance of expansion of services to include occupational health is important to improving health outcomes for this population. Incorporation of the CSF program, which has been tested and proven to be effective in reducing agricultural injury and illness, into an existing program which is accepted, valued, and supported by the local community, will enhance RHI's effectiveness in addressing health risks. In addition, the unique method of delivery of

providing services ‘at the farm’ by the RHI, can be evaluated as an alternative method of occupational health service delivery to farm families.

**Evaluating Noise Exposures of Rural Youth
U of IA Occ & Env Hlth – Michael Humann**

The prevalence of noise-induced hearing loss is higher among farming populations than other occupations due in part to exposure to livestock and noisy machinery normally found on the farm. This common occupational illness is not fatal, but can seriously affect the quality of life for those affected. While hearing loss is mostly associated with farmers over 50 years of age, it is believed that hearing loss among farmers begins in early adolescence. The purpose of this study is to assess the noise exposures of farming and non-farming male adolescents in rural areas. With this information we hope to assess the knowledge of hearing loss and noise exposure among rural adolescents, as well as develop recommendations and procedures for a larger study to identify successful interventions to protect the hearing among this population.

FY2009

**Injury Risk in Part Time Farming
U of IA Occ & Env Hlth – Risto Rautiainen**

Injury prevention efforts have traditionally focused on full-time family farms but an increasing number of farms are part time operations. The 2002 Ag Census found 42% of farmers worked more days off the farm than on the farm, and 64% of farms were limited resource, retirement, or residential and lifestyle farms. This growing population can no longer be ignored. We have a unique opportunity to conduct an injury survey and link that data with existing 2007 Ag Census data in collaboration with NASS. The linkage produces a rich dataset with injury outcomes and farm characteristics. We aim to measure injury risks for the current USDA farm types focusing on part time farms. We also examine preventive strategies to better reach this population. This pilot project establishes a research protocol, produces baseline injury risk data, and forms the scientific basis for intervention research designed for specific farm populations at greatest risk.

Prevalence of Methicillin-resistant Staphylococcus Aureus (MRSA) Colonization in Rural Iowa – U of IA Dept of Epidemiology – Tara Smith

Approximately a fifth of the American population—60 million Americans—live in rural areas. Despite this large population, the vast majority of studies examining the epidemiology of methicillin-resistant Staphylococcus aureus (MRSA) have taken place in urban areas affiliated with large academic hospitals. As a result, significantly less is known about the epidemiology of this important emerging bacterial pathogen in rural areas, despite the fact that several recent studies have shown that livestock—especially swine—can carry the organism and transmit it to humans. Therefore, we propose to initiate a study investigating the epidemiology of MRSA in rural areas of Iowa, combining population-based screening of both humans and animals, coupled with analysis of MRSA isolates collected from small local hospitals.

Development of a Task-based Noise Exposure Database for Ag Grain Farming Operations – U of IA Occ & Env Hlth – Michael Humann

A task-based noise exposure database has remarkable potential for exposure assessment, risk assessment, and surveillance research methods. A carefully developed database of task-based exposures can be used to estimate full-day exposures, determine degree of hazard risks, target control technologies and predict the probability of negative health outcomes. Because of this remarkable potential, this project is being proposed, to collect task-based noise exposures for farmers and farm workers involved in grain farming operations. This information will be used to develop a task-based noise exposure database. Development of this database will involve collecting full-day noise measurements and shadowing subjects the entire work day by investigators to identify potential factors that influence noise exposure. The methodology of this proposed study is a vast improvement over most similar studies, because direct observation of task and covariate information for the subjects by knowledgeable investigators will ensure that the database is as accurate as possible.

FY2010 (Pending)

Individual Variation in Paraoxonase 1 Activity in Human Serum Over Time U of IA Human Toxicology – Laura Badtke

Paraoxonase 1 (PON1) is a serum glycoprotein capable of hydrolyzing many pesticides. Genetic and environmental factors influence PON1 levels, leading to a substantial variation in PON1 among individuals within a population. Low PON1 levels have been associated with atherogenic effects, as well as many other disorders. To our knowledge, no study has ever measured serum PON1 activity levels in the same individuals over time. We hypothesize that individual serum PON1 levels vary significantly over time due to changes in lifestyle, dietary, and occupational exposure factors. By using three serum samples taken since 1994 roughly every 5 years from 256 participants as part of the Keokuk Rural Health Study, we will determine the genotypes represented and PON1 activities at those three time points. Their results will help to counsel rural populations in identifying lifestyle and dietary changes that could limit adverse health effects and decrease chronic illness related to environmental exposures.

Improving Agricultural Environmental Health Literacy AgriWellness – Mike Rosmann

Among the biggest challenges facing agricultural environmental health are limited understanding of environmental health concepts and issues among the public, health professionals and policy makers, along with inadequate community capacity to address agricultural environmental health concerns. This project will carry out pilot work to link a nonprofit healthcare organization, two colleges of public health, educators and concerned citizens in a western Iowa agricultural county to address emerging agricultural environmental health concerns. During this pilot phase we will conduct focus group forums, establish cooperative agreements, collect initial study data on health literacy, public health variables, air and water quality, and complete two research proposals to carry out the follow-up work to enhance health literacy and to build capacity to address identified environmental health concerns.

Neurobehavioral Effects of Organic Solvent Exposure among Farmers U of IA Epidemiology – Sarah Starks

The widespread use of organic solvents in agricultural products and processes results in substantial risk of exposure to farmers and farm workers. Despite numerous studies, the observed long-term effects of organic solvent exposure on the central nervous systems (CNS) are inconsistent. This inconsistency is potentially due to poor characterization of solvent exposure, variability in ascertainment of CNS health effects, and other methodological limitations. To better estimate effects of solvent exposure on the CNS, we propose analyses of data from an epidemiological study of 701 farmers from Iowa and North Carolina from whom information about solvent exposure and measures of CNS function were obtained. The primary aims of the study are 1) to characterize occupational solvent exposures among farmers and 2) to model exposure-effect associations between estimates of cumulative lifetime organic solvent exposure and neurobehavioral measures of CNS function while controlling for relevant covariates.