

NIOSH AGRICULTURAL CENTERS

ANNUAL REPORT SUMMARY

FISCAL YEAR 2003*

(*October 1, 2002 – September 30, 2003)

CALIFORNIA

WESTERN CENTER FOR AGRICULTURAL HEALTH & SAFETY

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

This has been another productive year for the Western Center for Agricultural Health & Safety (WCAHS) with noteworthy accomplishments. We are particularly excited about new and continuing work in several important areas relating to regional agricultural health and safety. These efforts were reflected in scientific publications, professional meetings, and public media attention. Specific accomplishments are noted below. General areas of accomplishment include: (1) increased work addressing policy issues pertinent to agricultural health (this work has been done in collaboration with Dr. Daniel Sumner of the UC Davis Agricultural Issues Center and Dr. Paul Leigh of the Department of Epidemiology and Preventive Medicine); (2) new initiatives and funded research focusing on Hispanic hired farmworkers and health issues, related to poverty, occupational and environmental exposures, immigration and acculturation (this work included several bi-national initiatives including a sabbatical at the Mexico National Institute of Public Health by Dr. Marc Schenker and Train-the-Trainer program for the Mexican government by Jenny Weber); (3) important ergonomic improvements in mechanical harvesting of grapes to reduce musculoskeletal strain; (4) improvements and standardization of cholinesterase testing methods for use in medical monitoring and surveillance.

Efforts of the Center continue to address health and safety issues for the wide diversity of farmers and farmworkers in Western agriculture, including farm owners and managers, migrant and seasonal farmworkers, and farm family members including children. The second joint Agricultural Health and Safety Conference, in collaboration with the Pacific Northwest Agricultural Center (PNASH), was hosted by the WCAHS, in San Francisco, September 7–9, 2003. This successful event attracted a large, diverse group of attendees. The program brought forth new ideas and directions for our Centers, with a focus on populations and practices that predominate in Western agriculture (e.g., dry climate farming exposures, diverse geography, ethnic composition of farmworkers, labor-intensive crops). Regional agricultural health and safety activities of the Center continue at an increased pace with distribution of information using many formats – the Center’s web site, list serve and newsletter, audio cassettes, videos, radio spots, CD’s, and news releases.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. During this past year, Drs. John Miles and Fadi Fathallah continued their research into ergonomic stressors and prevention of task-based injuries. Dr. Miles introduced a new technique that greatly increases the productivity of the strawberry workers, but also promotes and increases the amount of the work cycle spent in a deep stooped

- posture. Dr. Fathallah has been researching the problem of identifying the most hazardous conditions when tractors are used.
2. Intensive use of anticholinergic pesticides and threats of chemical warfare agents establish the need for rapid, reliable and transferable determinations of blood cholinesterase levels to provide early warning of exposures to such neuroactive chemicals. This year, Dr. Barry Wilson's lab worked with California clinical laboratories to evaluate accuracy of individual labs. His work has identified that the majority of laboratories in the state do not have acceptable accuracy for their assays, leading to their deregistration.
 3. Dr. Paul Leigh continued his cost analysis of occupational injury and illness in agriculture (and other industries). The costs of agricultural injuries in the U.S. (~\$4.75 billion) are about the same as the costs of hepatitis C, yet very few of us are aware of this fact. He has more recently estimated the magnitude of undercounting of occupational injuries by federal statistics.
 4. Our second collaborative conference with PNASH "*Challenges in Agricultural Health and Safety*" provided an opportunity for investigators from both Centers to build collaborations between the Centers. Agricultural health and safety professionals from regulatory agencies, health care providers, agricultural industries, and community organizations, as well as faculty from colleges and universities, also attended and were able to network and share their work. Presentations and panel discussions highlighted the similarities in agriculture from each region. Powerpoint file downloads of conference talks are available at http://agcenter.ucdavis.edu/Announce/AgChallenges2003_Agenda.php. Over 100 people attended the conference in San Francisco, CA, September 7–9, 2003.
 5. Dr. Marc Schenker was on sabbatical for six months in 2002 at the National Institute of Public Health in Cuernavaca, Mexico. This time was spent in developing collaborations with colleagues doing health research in Mexico. That effort resulted in successful funding of a bi-national health study of UC Mexus in 2003. The study will compare health status of women in an immigrant community in Madera, California, and women from the companion "sending community" in Michoacan, Mexico. His work also continued to analyze the health effects of agricultural work with a specific focus on respiratory disease and birth outcomes among Hispanic farmworkers.
 6. Dr. Kent Pinkerton examined airborne particles as well as characterizing exposure conditions, which are paramount to defining health effects associated with ambient particulate matter. His ongoing studies in the laboratory continue to define these conditions for both the Sacramento and San Joaquin regions of the central Valley using state-of-the-art technology to concentrate ambient particles from Davis and Fresno, in California.

7. During the past year, Dr. Patrick O'Connor-Marer and Center investigators have been collaborating with US EPA and various federal agencies in Mexico, to develop and conduct train-the-trainer pesticide safety programs for growers, agricultural workers, health care providers, regulators, and other entities in Mexico. Five programs have been conducted in various states in Mexico and others are planned. Curricula for these programs were adapted from Center-developed course curricula.
8. Successful research was completed and presented at professional conferences by four graduate students supported by the Center:
 - (1) *Pesticide Safety Education And Standardizing Cholinesterase Monitoring For Agricultural Workers In Washington: Daniel Arrieta, Graduate Student*
 - (2) *Farm Work And The Epidemiological Paradox Of Low Birthweight Delivery Among Hispanic Women In California: Jeff Bethel, Graduate Student*
 - (3) *Design Of A Prototype Winegrape Picking Container Handling System For Commercial Use: Andrew J. Holtz, Graduate Student*
 - (4) *Health Profile Of Farm Workers And The Interface Of Workers With Health Care In Imperial County, CA: A Qualitative Approach: Health Kun, Graduate Student*
 - (5) *Particle Effects On An Allergic Model Of Asthma: Jeffrey G. Sherman, DVM, Graduate Student*
 - (6) *Development And Evaluation Of Foliar Dust Exposure Assessment: Jodi Smith-Davis, Graduate Student*
9. The Center collaborated with the North American Agromedicine Consortium to host this organization's successful national meeting in San Diego, California, on November 17–19, 2003.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 11
2. **Projects Completed:** 6
3. **New Projects:** None
4. **Feasibility Projects:** 1

D. CENTER INVESTIGATORS

1. **Scientific Investigators:** 11
2. **Program Support Staff:** 30

E. REGIONAL ACTIVITIES

- 1. States Served by Center:** Arizona, California, Hawaii, Nevada
- 2. States with Center Activity for FY 2003:** California, Arizona, Nevada, Hawaii

F. CENTER PRODUCTS

- 1. Presentations:** 53
- 2. Publications**
 - a. Peer Reviewed Journal:** 38
 - b. Trade Journals:** None
 - c. Fact Sheets / Brochures / Technical Publications:** 3
 - d. Other Publications:** 21
- 3. Education / Training / Outreach**
 - a. Training Seminars:** 19
 - b. Short Courses:** 4
 - c. Hazard Surveys / Consultations:** 7
 - d. Academic Training:** 5
 - e. News Letters:** 8
 - f. CD-ROMs or other Computer Based Training Programs:** None
 - g. Other:** 14
- 4. Conferences / Meetings Sponsored:** 6
- 5. Other Products:** 15

COLORADO

HIGH PLAINS INTERMOUNTAIN CENTER FOR AGRICULTURAL HEALTH AND SAFETY

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

HICAHS has served the agricultural population of PHS Region VIII (Colorado, Utah, Wyoming, Montana, North Dakota, and South Dakota) for more than 10 years. The overarching goals of HICAHS are to reduce agricultural injury and illness through focused research, education, and intervention. The following components comprised HICAHS for 2002-2003: Administrative and Planning Core; Research Project 1 “ROPS Design and Testing for Tractors and Other Agricultural Vehicles;” and Research Project 2 “Agricultural Health and Safety Curriculum Evaluation.”

The limited funding for 2001-2003 severely impacted HICAHS’ ability to serve our constituents in Colorado and Region VIII. In particular, the outreach program, utilizing a unique partnership with Cooperative Extension had been very successful and touted as a model for other centers. The Outreach and Education Core received no funds for 2002-2003. In past years, we had reached over 9,000 contacts. In FY 2003, we continued to receive over 100 requests for assistance with training, information, and consultation. Although we no longer have resources to respond, we have assured our constituents that we are seeking support to reinstate this capability, and have referred callers to other sources of assistance when possible. The lack of resources to maintain the website and an External Regional Advisory Board also created barriers; however, we built new partnerships to address these needs.

In addition to completing work on the first two years of Research Project 1 “ROPS Design and Testing for Tractors and Other Agricultural Vehicles,” and Research Project 2 “Agricultural Health and Safety Curriculum Evaluation,” the major emphasis of HICAHS this year was to revitalize and re-establish HICAHS as an essential source of health and safety information and onsite intervention for the agricultural community in Colorado and Region VIII. To accomplish this, we developed new partnerships and opportunities for collaboration on research, outreach, and intervention. We worked with a new External Regional Advisory Board to identify priorities for agricultural health and safety in Federal Region VIII, and to develop a successful grant application for continuation of HICAHS in 2003-2006.

B. CENTER ACCOMPLISHMENTS FY 2003

1. Successful Refunding of HICAHS for 2003-2006. As a key part of Strategic Planning for 2003 and beyond, we established an External Regional Advisory Committee representing agricultural producers, farm bureau, health and veterinary care providers, agricultural business, migrant advocates, cooperative extension, and NIOSH ERC. The first meeting of this group was held on October 30, 2002. In addition to building

an infrastructure for collaborations, these advisors provided critical consultation on the needs of constituents and potential mechanisms for meeting those needs. The External Advisory Group, and many other partners throughout Region VIII, played an important role in developing the HICAHS Center proposal for 2003-2006. Several of these partners are co-investigators on the new projects that were funded for this next cycle.

2. Agriculture Health and Safety Curriculum Evaluation Project. This is a five-year, two state, longitudinal study that utilizes quantitative and qualitative methodologies to evaluate the impact of a new, community-based, technology-driven, agricultural health and safety curriculum for high school students. Over 55 agriculture teachers from across Colorado have been trained. Thirty-nine Colorado school districts with agriculture curricula have been recruited. Approximately 455 students are in the research pool (253 in the experimental group and 202 in the control group). Thirty-nine agriculture teachers were enrolled at CSU in an experiential college credit course as an incentive for their involvement in the research project.
3. ROPS Design and Testing for Agricultural Vehicles. The overall objective of this project is to investigate, develop, and evaluate rollover protective structure (ROPS) designs for agricultural vehicles in the United States, to provide and ensure operator protection on vehicles not currently available. Using the previously constructed non-continuous roll test slope, constructed as specified in ASAE Standard S547 Tip-Over Protective Structure (TOPS) Protective Structure for Front Wheel Drive Turf and Landscape Equipment Standard, four vehicle continuous roll tests were conducted with the 1/3-scale model Deere Gator (off-road utility vehicle) and five continuous roll tests were conducted with a full size Deere F925 front drive mower. The rollover results were used to validate and modify the OECD Code 6 non-continuous roll prediction model.
4. New Methods for Evaluation of Organic Dust Aerosols. This project is supported with outside funds, in addition to the HICAHS Center funds. Dr. Reynolds and Dr. Patrick O'Shaughnessy, at the GPCAH, are collaborating on a priority research objective for both centers. The primary goals of this project are 1) to evaluate a novel Recombinant Factor C endotoxin assay using organic dusts from livestock environments, 2) to evaluate new methods for measuring inhalable particulates, including endotoxins, and glucans/ergosterols that can be used to help establish occupational exposure guidelines for complex organic dusts in swine, poultry, dairy, equine and sheep environments, and 3) to evaluate and develop correction factors for direct-reading aerosol instruments that can be readily used by practitioners for interventions. Initial studies of the performance of inhalable samplers, including the IOM, IOM with Multifoam discs, and Button Sampler, compared to traditional gravimetric methods under controlled laboratory conditions using standard dusts, were completed in 2003. Evaluation of a new Recombinant Factor C endotoxin assay has begun in collaboration with BioWhittaker, and initial method development work is nearing completion at the end of 2003. In comparing three extraction media, endpoint and kinetic measurement approaches, it appears that extraction with Tween

followed by an endpoint assay yields the best recoveries, best precision, and the lowest detection limit for the agricultural dusts tested.

5. Redesign Radio Control System and LVDT Set for Testing Tractors. This pilot study is part of "Precise Tractor Stability and Engineering Control Strategies." Radio-Control System for the radio-controlled tractor and LVDT are very important parts for the project. Current radio-control set was designed in 1996, and has been used for five different tractors to conduct field-upset tests. However, it has some certain shortages, such as short term of power supply, separated safety shutoff, complicated rewiring and installation. LVDT (Linear Variable Differential Transformer) set is another important part of prevention effectiveness of tractor rollover. This pilot study is to redesign radio-control system and LVDT set, to enhance their reliability, convenience, and dynamic characteristics, and to implement them to tractor stability. After redesigning and construction of the radio-control system, the whole system will become more compact, easily installed for multi-tractors. Its function and performance will be evaluated by Simulink and full-size tractor. For LVDT set, the LVDT dynamic response to vibration and metal sensing will be conducted and analyzed at different frequency. Based on the past preliminary data of tractor rollover timing, the performance of the LVDT set will be evaluated regarding its installation structure and position.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 2
2. **Projects Completed:** 2
3. **New Projects:** None
4. **Feasibility Projects:** 1

D. CENTER INVESTIGATORS

1. **Scientific Investigators:** 11
2. **Program Support Staff:** 10

E. REGIONAL ACTIVITIES

1. **States Served by Center:** Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

2. **States with Center Activity for FY 2003:** Arizona, California, Colorado, Florida, Georgia, Iowa, Idaho, Illinois, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Montana, North Carolina, North Dakota, Nebraska, Nevada, New York, Ohio, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Washington, West Virginia, Wisconsin, Wyoming
Brazil, Canada, Czech Republic, Denmark, Great Britain, Italy, Mexico, Netherlands, Poland, Romania, Slovak Republic, Slovenia, Sweden

F. CENTER PRODUCTS

1. **Presentations:** 23
2. **Publications**
 - a. **Peer Reviewed Journal:** 9
 - b. **Trade Journals:** None
 - c. **Fact Sheets / Brochures / Technical Publications:** 1
 - d. **Other Publications:** 5
3. **Education / Training / Outreach**
 - a. **Training Seminars:** 2
 - b. **Short Courses:** None
 - c. **Hazard Surveys / Consultations:** 2
 - d. **Academic Training:** 17
 - e. **News Letters:** 1
 - f. **CD-ROMs or other Computer Based Training Programs:** 1
 - g. **Other:** None
4. **Conferences / Meetings Sponsored:** 5
5. **Other Products:** None

IOWA

GREAT PLAINS CENTER FOR AGRICULTURAL HEALTH

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The Great Plains Center for Agricultural Health (GPCAH), at The University of Iowa, serves as the NIOSH Agricultural Health and Safety Center for Federal Region VII (Iowa, Missouri, Kansas, and Nebraska), America's most agriculturally intensive region. GPCAH continues to make significant progress in advancing the knowledge about agricultural injuries and illnesses through its research activities and to prevent them through its education, outreach, and intervention efforts.

Overall goals of GPCAH are: (1) conduct a multidisciplinary agricultural health and safety research program, targeting national research priorities for agricultural health and safety; (2) develop and evaluate novel disease and injury prevention models that assess educational, outreach, and intervention programs, targeting farm workers and their family members; (3) develop and implement training of health professionals, including industrial hygienists, veterinarians, and physicians for career development in the area of agricultural health and safety, with an emphasis on their professional training needs; (4) provide agricultural health and safety technical assistance and consultation in research methods, training, and education, to health professionals and community-based organizations; (5) maintain and strengthen linkages with health professionals in academic institutions, state and federal agencies, and international organizations, regarding agricultural health and safety research, training, and prevention programs.

During the past year, GPCAH investigators have provided national leadership in the identification, assessment, and control of multiple agricultural exposures and health effects, through presentation and publication of their research. They have also developed educational resources and been active in sponsoring and participating in numerous professional conferences, seminars, and training courses. Their work has led intervention and prevention initiatives to reduce injury and disease in the agricultural workplace.

The GPCAH has been a valuable research, educational, and advisory resource for the Region and the Nation for 13 years. It has a dedicated staff working on a wide variety of tasks. As the health and safety problems of the agricultural community change, we will continue to help address these problems, conducting research that both characterizes these problems and provides solutions. We will continue to work with our partners on both a regional and national level to meet the challenges of the future.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. Increasing and diversifying its research, surveillance, education, and intervention efforts, the GPCAH funded three feasibility projects, which were completed, and initiated five new projects in FY-03. A press clippings surveillance of farm and agricultural injuries provided useful data on the types and proportional incidence of

injuries that are occurring in agriculture. The finished proceedings from a conference entitled “Using History and Accomplishments to Plan for the Future: A Summary of 15 Years in Agricultural Safety and Health and Action Steps for Future Directions” summarized progress in addressing agriculture health and safety issues, identifies gaps, and serves as a resource for national policy discussions. A regional conference entitled “The Clock is Ticking for Rural America: A Behavioral Health and Safety Conference” brought together individuals involved in behavioral health in rural areas of the seven state region, to promote more effective collaboration in the delivery of behavioral health services for rural agricultural populations. The association between musculoskeletal symptoms and work-related or personal factors is being examined in a cross-sectional study of dairy farmers. Neurobehavioral and neuropsychological tests are being given in a cross-sectional study of farmers, to evaluate the association between exposure to solvents and agrichemicals on neurological function. The adherence of ammonia gas on inhalable dust particles is being evaluated to determine the potential synergistic effect of ammonia and organic dusts on respiratory function. A whole blood assay (WBA) is being evaluated for assessing susceptibility and responsiveness of workers exposed to inhaled inflammatory agents in organic dust. A series of focus groups are being conducted in Eastern Nebraska and Western Iowa to identify health needs, safety concerns, and barriers to health service delivery in Hispanic populations.

2. The major research effort of the GPCAH is the Keokuk County Rural Health Study (KCRHS), a population-based, prospective study of health status and environmental exposures of a large stratified random sample of residents in one rural Iowa county. This population has been followed for 13 years, and the second round of data collection is nearing completion, having collected data on 2,042 persons, representing 953 households. Six manuscripts based on Round 1 data have been published or accepted for publication during this grant period, making a total of 18 that have been published from the KCRHS data. Additional manuscripts on childhood asthma, vision, hearing, nutrition and obesity, depression, and adolescent risk-taking behaviors are in progress. Several separate research studies have evolved from the KCRHS. These projects include a study of how different types of smoke alarms function in rural households, a Prevention Research Center, which is working with Keokuk County residents on issues the community has identified as being important to their health, and a school-based hearing conservation program to develop and evaluate the effectiveness of hearing conservation programs in rural schools. Studies of musculoskeletal disorders among Iowa farmers and genetic predisposition in non-atopic non-smoking farmers with airway obstruction ended and publications are being prepared.
3. The Certified Safe Dairy Farm project was conducted in collaboration with the National Education Center for Agricultural Safety (NECAS) in Peosta, IA. This project contributed to secure funding for a four-year Certified Safe Farm (CSF) 600-farm expansion of the CSF program, in collaboration with Iowa Farm Bureau and Iowa Wellmark Blue Cross Blue Shield.

4. The Education and Outreach Core supported a number of outreach activities, including newspaper articles and press releases, focus groups, press conferences, meetings, radio interviews, and public service announcements on agricultural health hazards. Training in agricultural health and safety was provided to 25 occupational and environmental health students, 77 second-year veterinary medicine students, 4 occupational medicine residents, and 50 nursing students. Also, 41 nurses, physician assistants, or physicians completed our 40-hour Agricultural Occupational Health Certificate course. This course incorporated internet-based instruction for the first time this year and continued the online examination feature.
5. Preliminary results from the comparison study of sampling devices for organic dust show inhalable dust samplers are highly correlated with each other, indicating that either sampler would be reliable for estimating the concentration of inhalable dust to which workers are exposed. However, the inhalable and total dust samples do not appear to be correlated with the respirable dust sampler. The reason for this lack of correlation is being investigated.
6. GPCAH staff devoted considerable resources to the Agricultural Centers' tractor-related injury prevention initiative, four of its five working groups, and supporting documentation. Injuries and fatalities associated with tractors were identified by the NIOSH Ag-Center Directors as one of the major problems of farm work. The staff of the GPCAH is continuing to work on major components of the documentation for this initiative.
7. The GPCAH co-sponsored, with the Iowa Center for Agricultural Safety and Health (I-CASH), the Midwest Forum on Agricultural Health in Little Amana, Iowa. This regional conference brought together 110 health professionals, hosted 59 presentations and numerous discussions on agricultural health and safety issues. GPCAH personnel also assisted with the planning of the Future of Rural Peoples Symposium (Saskatoon, Saskatchewan, October 19-23, 2003) and led development of the agricultural worksite assessment track.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 9
2. **Projects Completed:** 5
3. **New Projects:** None
4. **Feasibility Projects:** 5

D. CENTER INVESTIGATORS

- 1. Scientific Investigators: 28**
- 2. Program Support Staff: 11**

E. REGIONAL ACTIVITIES

- 1. States Served by Center: Iowa, Kansas, Nebraska, Missouri**
- 2. States with Center Activity for FY 2003: Wisconsin, Iowa, South Dakota, Kansas, Minnesota, North Dakota, Nebraska, Texas, Illinois**

F. CENTER PRODUCTS

- 1. Presentations: 91**
- 2. Publications**
 - a. Peer Reviewed Journal: 14**
 - b. Trade Journals: 1**
 - c. Fact Sheets / Brochures / Technical Publications: 1**
 - d. Other Publications: 42**
- 3. Education / Training / Outreach**
 - a. Training Seminars: 2**
 - b. Short Courses: 1**
 - c. Hazard Surveys / Consultations: 210**
 - d. Academic Training: 12**
 - e. News Letters: 2**
 - f. CD-ROMs or other Computer Based Training Programs: 2**
 - g. Other: 5**

4. Conferences / Meetings Sponsored: 2

5. Other Products: 6

KENTUCKY

SOUTHEAST CENTER FOR AGRICULTURAL HEALTH AND INJURY PREVENTION

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The period September 30, 2002, to September 29, 2003, represented another significant year of activities for the Southeast Center. A total of 7 projects were funded from NIOSH core funding, during this cycle. Core funding was \$874,065. Carryover funding from the previous budget year was \$186,770. The grand total of NIOSH core dollars budgeted, during the period under review, was \$1,060,835. Of this total, the Center expended approximately \$497,048 (direct and indirect). The anticipated balance of \$563,787 will be requested as a no-cost extension through September 2004.

The Center also continued its role as a catalyst for research, education, and service efforts in the Southeast region, by serving as a home for several new projects funded from sources other than the NIOSH Ag Core funds. Total extramural funding (including NIOSH-core Center dollars) was \$1,651,900 for the period. Non-core projects totaled \$777,835, during the year under review, and included: (1) Further Evaluation and Dissemination of the Kentucky ROPS Program (NIOSH R01), \$185,740 (Year 4 of 4); (2) Children's Injuries on Kentucky Beef Cattle Farms (NIOSH R01), \$206,000 (Year 4 of 4); (3) Vocational Rehabilitation for Migrant and Seasonal Farmworkers (US Dept. of Education/RSA), \$193,235 (Year 3 of 5); (4) Health Insurance Awareness for Kentucky's Hispanic Children (Medicaid-CHIP), \$60,000; (5) Coalitions to Improve Health Access by Hispanics in Rural Kentucky and Tennessee, (USDA, Fund for Rural America), \$132,860 (Year 2 of 4). The following non-core projects were administered through the College of Nursing: (1) Evaluation of Farm Safety 4 Just Kids Day Camps (NIOSH R01), \$201,243 (Year 2 of 3); (2) Sustained Work Indicators of Older Farmers: KY & SC (NIOSH R01), \$252,280 (Year 2 of 5)

During the 12 months under review, the Center had 3 peer-reviewed articles or abstracts submitted and/or published, and 20 presentations made at scientific meetings.

Additionally, Center staff made numerous presentations to community groups, conducted workshops, and set up displays at fairs.

The majority of all research, service, and education activities occurred in Kentucky. Other significant Center projects were conducted in Alabama, Arkansas, Delaware, Georgia, Illinois, Louisiana, Maryland, Missouri, North Carolina, South Carolina, Tennessee, Florida, Texas, Virginia, and West Virginia.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. The Feasibility Studies program allocated \$29,298 in funds for pilot research grants of up to \$12,500 per study. The call for proposals was advertised in September 2002. Three of four proposals submitted in response were funded: (1) Catherine Reavis,

Georgia Southern University, "Epidemiology of *H. pylori* in a Selected Population of Southeast Georgia Farmworkers", \$12,500; (2) Kevin Robinson, University of Tennessee-Knoxville, "Airborne Exposure to Pathogens and Endotoxins During Farm Land Application of Class 'B' Biosolids", \$12,500; and (3) Justin Hughes, University of Alabama-Tuscaloosa, "Foreign Physicians' Interest in Agricultural Medicine", \$4,298.

2. Deborah Reed served as Secretary of the Board for the National Farm Safety 4 Just Kids program.
3. Robert McKnight served as President of the North American Agromedicine Consortium. McKnight also serves on the Advisory board for the Agricultural Safety and Health Network (ASH-Net).

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 7
2. **Projects Completed:** None
3. **New Projects:** None
4. **Feasibility Projects:** None

D. CENTER INVESTIGATORS

1. **Scientific Investigators:** 5
2. **Program Support Staff:** 5

E. REGIONAL ACTIVITIES

1. **States Served by Center:** Kentucky, Tennessee, Alabama, Mississippi, North Carolina, South Carolina, Georgia, West Virginia
2. **States with Center Activity for FY 2003:** Alabama, Arkansas, Delaware, Georgia, Illinois, Louisiana, Maryland, Missouri, North Carolina, South Carolina, Tennessee, Florida, Texas, Virginia, West Virginia (*in addition to several activities that were Regional or National*)

F. CENTER PRODUCTS

- 1. Presentations:** 24
- 2. Publications**
 - a. Peer Reviewed Journal:** 2
 - b. Trade Journals:** None
 - c. Fact Sheets / Brochures / Technical Publications:** None
 - d. Other Publications:** 4
- 3. Education / Training / Outreach**
 - a. Training Seminars:** None
 - b. Short Courses:** None
 - c. Hazard Surveys / Consultations:** None
 - d. Academic Training:** 6 (*Students enrolled in 1 Semester Course*)
 - e. News Letters:** None
 - f. CD-ROMs or other Computer Based Training Programs:** None
 - g. Other:** None
- 4. Conferences / Meetings Sponsored:** 2
- 5. Other Products:** None

NEW YORK

NORTHEAST CENTER FOR AGRICULTURAL SAFETY & HEALTH

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

In its second year of this grant cycle, the Northeast Center (NEC) had 11 active projects, five research (including two pilot projects), three education projects, and two prevention projects. Additionally, there were nine feasibility projects active in the Center in the past year.

The NEC principal investigators, in the past year, came from four different institutions. Feasibility projects were based in six institutions. Projects sponsored by the NEC were located in five different Northeastern states. Three projects were led by an individual from an engineering background, four from occupational medicine, eight from public health, one from industrial hygiene, and three from an educational background.

In addition to its NIOSH Agricultural Centers funding, the NEC has been able to supplement its activities through other federal and state funding. Currently, the Northeast Center continues to work on NIOSH contracts related to development and evaluation of a worker-appropriate report that summarizes the findings of the National Agricultural Workers Survey (NAWS). Additionally, NEC staff are receiving support from two NIOSH RO1 grants, and also from New York State sources.

One of the NIOSH RO1 projects is currently expiring. This study of the effectiveness of the North American Guidelines for Childhood Agricultural Tasks (NAGCAT) examined injury rates on nearly 400 NAGCAT farms employing young workers, and compared these rates to those of a similar control group. The second NIOSH-funded RO1 is a recently inaugurated “Environmental Justice” project that partners NEC with migrant health programs in NY and Maine, in an effort to develop community-based solutions to occupational injury in local farmworker populations.

For activities within New York State, the NEC receives assistance from the NYS Dept. of Labor to support safety training in the farm community. In one such program, educators from the New York Center for Agricultural Medicine and Health (NYCAMH) provide employers on 200 orchards and 70 vegetable farms with training and materials to stimulate and enhance on-farm safety programs for migrant farmworkers. Additionally, this funding enables the NEC to hire additional “Northeast Trainers” for safety trainings within the state of New York. Educators from Cornell University have also been able to use NYS Dept. of Labor funds to enhance the NEC-sponsored Agricultural Hazard Abatement Training program. An additional source of support in NY comes through the Dept. of Health’s Occupational Health Clinic Network, which provides NYCAMH with funding for clinical services, research, and prevention activities within the state. Finally, NYCAMH was able to partner with New York’s Soil and Water districts to help central NY farmers dispose of unwanted agrochemicals again in the past year.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

- 1.** NEC researchers at Penn State have completed the construction, instrumentation, and calibration of a test manure storage facility. This structure has movable walls that permit testing of a wide variety of pit sizes and shapes, in an effort to determine appropriate ventilation protocols for such facilities. The initial fluid dynamic modeling for evolution and ventilation of manure gas are currently being tested.
- 2.** Farms participating in the Cornell-based “Agricultural Hazard Abatement Training Program” currently have a 34% reduction in workers’ compensation claims compared to similar non-participating farms.
- 3.** Exhaustive PATH ergonomic observations of harvesters in NY orchards last season have provided NEC researchers with detailed information on the proportion of each workday spent in various trunk and extremity postures. This data is now being used in the laboratory to assess the impact of NEC ergonomic design modifications to the apple-picking bag.
- 4.** Last year, as part of its Northeast Trainers project, the NEC convened all of the USDA-designated state agricultural safety specialists for the Northeast and Mid-Atlantic regions. At these two meetings, information on various needs, resources, and strategies was exchanged. Partnering opportunities were explored with NEC and USDA project administrator, Brad Rein, encouraged interactions with NIOSH Ag Centers. This approach was felt to be so successful, that the USDA has now adopted it in several other regions of the country.
- 5.** Based upon experience and data gathered by NEC personnel over the past six years, an extensively documented “white paper” was prepared supporting a statewide, ongoing strategy for collection of unwanted farm agrichemicals. This was presented to both stakeholders and the New York State legislature, near the end of the last legislative session. Bills in support of this were introduced in both the Assembly and Senate, but it was too late in the session to secure passage. Efforts on this are ongoing.
- 6.** For several years, NEC has partnered with various migrant education programs serving the eastern stream of migrant farmworkers. A series of first aid and agricultural safety courses were presented at migrant education programs, with participants receiving first aid kits and literature in both English and Spanish. This activity received considerable positive comment from migrant educators. It was felt to be sufficiently important that during the past season, this activity has been continued at a number of the sites without the financial support of the NEC.
- 7.** The NEC’s long standing project on tractor stability monitoring at Penn State has now developed a system of monitoring tractor status and computing risk of overturn for a wide variety of operating conditions. The instrumentation required for this system now costs less than \$50. Recent overturn testing utilized a full-sized tractor

with an attached rotary mower. This is the first time any researchers have begun to address stability issues for a tractor and attached implement.

8. An NEC project dealing with dust exposures to poultry workers, at the University of Delaware, has produced an informational brochure on protective strategies that is being widely distributed throughout the U.S. and Canada.
9. The Northeast Center received a total of thirteen feasibility proposals over the initial two years. Using feasibility funds carried forward from year one, a total of nine projects were funded over these two years. The projects were selected following a blinded scoring process, generally involving members of the center's Executive Panel. Projects underway or completed include: (1) Green Tobacco Illness; (2) Hearing Loss in Farmers - Evaluation for Neurotoxic Effects; (3) Assessing Ototraumatic Exposures in Farm Youth; (4) Enhanced Health & Safety Training for Farm Workers and Clinicians; (5) Pilot Occupational Health Training for Migrant Health Physicians; (6) Safety Training for Farm Employees – Hot Topics; (7) Injury Prevention on Horse Farms; (8) Farmworker Health Utilization Survey; and (9) Back Injury Questionnaire for Migrant Workers.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 10
2. **Projects Completed:** 2
3. **New Projects:** None
4. **Feasibility Projects:** 8

D. CENTER INVESTIGATORS

1. **Scientific Investigators:** 19
2. **Program Support Staff:** 18.5

E. REGIONAL ACTIVITIES

1. **States Served by Center:** Maine, Vermont, Massachusetts, New Hampshire, Rhode Island, Connecticut, New York, Pennsylvania, Maryland, West Virginia, Delaware, New Jersey

2. **States with Center Activity for FY 2003:** Pennsylvania, Connecticut, Massachusetts, New York, New Jersey, Vermont, West Virginia, Delaware, New Hampshire, Maine, Maryland

F. CENTER PRODUCTS

1. **Presentations:** 22
2. **Publications**
 - a. **Peer Reviewed Journal:** 1
 - b. **Trade Journals:** 65
 - c. **Fact Sheets / Brochures / Technical Publications:** 45
 - d. **Other Publications:** 7
3. **Education / Training / Outreach**
 - a. **Training Seminars:** 182
 - b. **Short Courses:** 32
 - c. **Hazard Surveys / Consultations:** 10 / 173
 - d. **Academic Training:** 69 (*Students enrolled in various Courses*)
 - e. **News Letters:** 4
 - f. **CD-ROMs or other Computer Based Training Programs:** None
 - g. **Other:** None
4. **Conferences / Meetings Sponsored:** 2
5. **Other Products:** 5

NORTH CAROLINA

SOUTHERN COASTAL AGROMEDICINE CENTER

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The SCAC is based at the North Carolina Agromedicine Institute -- a collaborative initiative of East Carolina University (ECU), North Carolina Agricultural and Technical State University (NCA&TSU), and North Carolina State University (NCSU). The Center's service region includes Alabama, South Carolina, Virginia, Mississippi, Florida, Georgia, Puerto Rico, and the Virgin Islands, states/territories that face many common agromedicine issues related to climate, common crops, strong timber and commercial fishing industries, a common migrant stream, and endemic rural poverty. This is SCAC's second year of funding.

The 16 projects of the Southeast Coastal Agromedicine Center include participation from ECU, NCA&T, NCSU, Virginia Tech, the University of Florida, the University of Alabama, Mississippi State University, and Ponce Medical School in Puerto Rico. Projects are listed on the Center Web site: www.ncagromed.org/scac. Many products and publications are beginning to emerge from these funded activities. They are outlined in the body of this report. Drs. Rose and Hodgson and associates have presented early findings from the RO1 research project "Human Metabolism of New and Emerging Pesticides" at national and international meetings. A second RO1 project "Ergonomic Interventions in the Agriculture Industry" has produced seven equipment prototypes designed to reduce ergonomic strain and injury.

In 2003, the Southern Coastal Agromedicine Center saw the expansion of project activity with all four discretionary projects funded in 2002 nearing or reaching completion, and four new projects being awarded in 2003. One of the notable outcomes was the development of a test course for standardized measurement of tractor vibration and its effect on the operator, by Dr. T. Burk at UF. A youth farm safety evaluation competition, adapted by Dr. J. Wheat (U of AL) from the 4-H/FFA judging team model, was highly successful in increasing farm safety awareness of students and other community members in western AL and eastern MS.

As a result of participation in the NIOSH Tractor Safety initiative, SCAC has funded expansion of an earlier study of farm deaths in NC, with a focus on tractor related deaths. The National Ag Safety Database Team, headed by Dr. Carol Lehtola at UF, received the American Society of Agricultural Engineers Blue Ribbon Award for Web based educational aids. The team has done an excellent job of expanding and enhancing the NASD this year.

Dr. Juan March (ECU) and his team were successful in getting the Timber Medic Certification Program incorporated into the offerings of the NC Community College System. Plans to expand to other states, with support from the state forestry associations, are underway.

SCAC also co-sponsored a Pesticide Education Conference for Health Care Providers in NC.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. Four discretionary projects were funded this year: "NC Farmscape Interactive Modeling," NC State University, Raleigh, NC; "Mountain Pesticide Education & Safety Outreach (PESO) Initiative: A Pilot Program for Christmas Tree Worker Safety in Western NC," Watauga County Cooperative Extension, Boone, NC; "Farm Related Deaths in NC for 1989-2003," East Carolina University, Greenville, NC (Administrative Core Project); and "A Dynamic System for Monitoring and Predicting Occurrence and Spread of West Nile Virus in Mississippi," Mississippi State University, Mississippi State, MS.
2. National Ag Safety Database Team (PD - Dr. Lehtola) received the American Society of Agricultural Engineers Blue ribbon award for Web based Educational Aids.
3. The NASD team conducted a survey of users on effectiveness and usefulness of the NASD. One hundred fifty-two individuals completed the survey and analysis is underway. The team also added 112 new documents to the Database.
4. "Timber Medic" EMT Certification Course (PI - Dr. March), developed by the East Carolina University Emergency Medicine Department and the North Carolina Forestry Association, was offered through NC Community Colleges. NC EMS CE credit is awarded for the courses. Additional offerings of the course are planned in NC and other Southern Coastal Region sites in 2003-2004.
5. The Ergonomic Intervention Project (PI - Dr. Mirka) has developed 7 different types of systems/equipment designed to reduce worker injury. An Ergonomic Tip Sheet is also being distributed in English and Spanish.
6. The "Skin Disorders in Commercial Fishermen" project (PI - Dr. W. Burke) executed a sub contract with Dr. Matta, at Ponce Medical School, Puerto Rico, to develop an informational brochure in Spanish, on sun exposure and risk of skin disease. Seven different versions of the brochure/flyers were produced and distributed in Puerto Rico, to over 1800 individuals.
7. A review of migrant workers treated in the ECU Trauma Service over a 10-year period was completed.
8. J. Storm (PI - "Educating Agricultural and Health Practitioners about the Agricultural Health Study") took the lead for the Center in working with AHEC and the NC Pesticide Environmental Trust Fund, in planning of the Pesticide Education Conference for Health Care Providers in NC.

9. The SCAC staff assisted in the development of an RO1 proposal submitted to NIOSH in the October 1, 2003, funding cycle.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 16
2. **Projects Completed:** 2
3. **New Projects:** None
4. **Feasibility Projects:** 4

D. CENTER INVESTIGATORS

1. **Scientific Investigators:** 30
2. **Program Support Staff:** 4

E. REGIONAL ACTIVITIES

1. **States Served by Center:** Alabama, South Carolina, Virginia, Mississippi, Florida, Georgia, *Puerto Rico*, *Virgin Islands*
2. **States with Center Activity for FY 2003:** North Carolina, Virginia, Florida, Alabama, Mississippi, *Puerto Rico*

F. CENTER PRODUCTS

1. **Presentations:** 26
2. **Publications**
 - a. **Peer Reviewed Journal:** 12
 - b. **Trade Journals:** None
 - c. **Fact Sheets / Brochures / Technical Publications:** 3
 - d. **Other Publications:** 10

3. Education / Training / Outreach

- a. Training Seminars:** None
 - b. Short Courses:** 2
 - c. Hazard Surveys / Consultations:** 5
 - d. Academic Training:** 14
 - e. News Letters:** 1
 - f. CD-ROMs or other Computer Based Training Programs:** 1
 - g. Other:** 2
- 4. Conferences / Meetings Sponsored:** 3
- 5. Other Products:** 8

OHIO

GREAT LAKES CENTER FOR AGRICULTURAL SAFETY & HEALTH

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The Great Lakes Center serves the states of Illinois, Michigan, Wisconsin, Ohio, Pennsylvania, and Kentucky. These states share many common attributes, i.e., crops, farming practices, farm size, migrant streams, poverty in Appalachian areas, strong commercial fishing or timber harvesting, and Amish populations, to mention a few. The goal of the Great Lakes Center is to promote safety and health education, prevention, outreach, intervention and research which would benefit employers, agricultural workers, families and the agricultural communities in the states served by the Great Lakes Center. To that end, the Center has, in FY 2003, completed a regional needs assessment, the first two years of research on farm-related asthma, a prevention/intervention project on the effectiveness of sun safety behavior of agricultural workers, and four feasibility projects. We have also been pleased to receive a CDC/NIOSH conference grant to hold a conference on evaluation of agricultural safety and health programs early in FY 2004. Other accomplishments have included: a published *Journal of Agricultural Safety and Health* article; a peer-reviewed journal article and professional poster presented for the National Institute for Farm Safety; a professional paper presented at the west coast conference "Challenges in Agricultural Health and Safety," which was co-sponsored by the Western Center for Agricultural Health and Safety and the Pacific Northwest Agricultural Safety and Health Center; preparation of four papers and two professional posters for presentation at the Fifth International Symposium – "Future of Rural People;" and preparation of five papers and one professional poster for presentation at the "National Occupational Injury Prevention Research Symposium." Our most challenging endeavor was the preparation and submission of a proposal for Center renewal for the next three years.

In FY 02, three extramural projects were completed. We now have extramural funding that includes two USDA projects, one project from the state of Ohio, one OSHA project, and one additional NIOSH project.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. Completed the first two years of RO1 research project "Farm-Related Asthma."
2. Completed Prevention/Intervention Core Project "Effectiveness of Sun Safety Behavior of Agricultural Workers."
3. Completed four feasibility projects.

4. Successful application for a CDC/NIOSH Conference Grant of Evaluation of Agricultural Safety and Health Programs.
5. Publication of one journal article: J. R. Wilkins III, H. L. Engelhardt, T. L. Bean, M. V. Byers and J. M. Crawford. "Prevalence of ROPS-Equipped Tractors and Farm/Farmer Characteristics." ASAE Journal of Agricultural Safety and Health 9.2 (2003): 107-118.
6. Presentation of one peer-reviewed paper and one professional poster at the National Institute for Farm Safety Annual Meeting, Windsor, Canada, June 2003.
7. Preparation of four papers and two professional posters for presentation at the Fifth International Symposium – "Future of Rural People."
8. Preparation of five papers and one professional poster for presentation at the "National Occupational Injury Prevention Research Symposium."
9. Completed a regional needs assessment.
10. Successfully competed and received funding for Center renewal.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 1
2. **Projects Completed:** 5
3. **New Projects:** 5 (*funded through the Center renewal*)
4. **Feasibility Projects:** 3 (*to be funded*)

D. CENTER INVESTIGATORS

1. **Scientific Investigators:** 13
2. **Program Support Staff:** 1

E. REGIONAL ACTIVITIES

1. **States Served by Center:** Kentucky, Illinois, Indiana, Michigan, Ohio, Pennsylvania, West Virginia, Wisconsin

2. **States with Center Activity for FY 2003:** Illinois, Michigan, Ohio, Pennsylvania, Wisconsin

F. CENTER PRODUCTS

1. **Presentations:** 7
2. **Publications**
 - a. **Peer Reviewed Journal:** 1
 - b. **Trade Journals:** 2
 - c. **Fact Sheets / Brochures / Technical Publications:** 1
 - d. **Other Publications:** 2
3. **Education / Training / Outreach**
 - a. **Training Seminars:** 2
 - b. **Short Courses:** None
 - c. **Hazard Surveys / Consultations:** 3
 - d. **Academic Training:** None
 - e. **News Letters:** 2
 - f. **CD-ROMs or other Computer Based Training Programs:** None
 - g. **Other:** 11
4. **Conferences / Meetings Sponsored:** None
5. **Other Products:** 8

TEXAS

SOUTHWEST CENTER FOR AGRICULTURAL HEALTH, INJURY PREVENTION, AND EDUCATION

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The Southwest Center for Agricultural Health, Injury Prevention, and Education (SW Center) experienced a substantial increase in the level of activity during FY03, the second year of funding in this current cycle. This was due, in part, to capitalizing on opportunities, as well as adjustments based on internal, ongoing evaluation of Center activities.

The bid from the SW Center to design and produce the national newsletter for the Agricultural Centers was successful, and produced 4 issues highlighting activities within each Center. In addition to the newsletter design, significant coordination efforts were expended to gather and edit contributions. Some issues surfaced related to mailing list management. Nonetheless, feedback about the newsletter has been positive, as evidenced by comments received from participating Centers, and a request to reprint an article on tractor safety initiatives.

Another significant achievement was the development, and subsequent approval for funding, of a conference grant proposal. The program "Agroterrorism Workshop: Engaging Community Preparedness" will be delivered using Interactive Televideo connections with five highly agricultural communities in Texas. This conference represents a major collaborative effort with the Great Plains Center, the UT-Houston School of Public Health, the Texas Department of Health, and the Texas Agricultural Experiment Stations.

Administratively, the Center maintains continuity in the staff and organizational function. The external Advisory Board, under the long-term leadership of Karen Mulloy, D.O., MSCH, continued its active participation with the Center as a whole and with individual projects. Advisory Board members participated in the review of feasibility study applications, a shrimping industry site visit, project progress updates, the critique of Center products, as well as discussions to strengthen the work of individual projects and Core Leader contributions. The Core Leaders for Research, Education, and Intervention/Prevention continued their active consultation with Principal Investigators. As a result of feedback from the Advisory Board, and discussion with the Core Leaders, the decision was made to shift the Arkansas Delta project from the Intervention/Prevention Core into the Education Core, to better reflect the evolution of project activities and intent.

Other significant evidence of the ongoing evaluation within the Center was the approved shift in methodology for two projects. Preliminary data collected for "The Study of Injuries in Migrant Farmworker Children" indicated that the case-control strategy would not yield a significant sample size. The relationship between the research team and community liaison workers made it possible to administer the survey in all the schools in the targeted county, thereby broadening the target population to include a comparison

group of non-agricultural adolescent workers. With substantial guidance from the Intervention/Prevention Core Leader, the Panhandle Coalitions for Ag Safety and Health project will use Computer Assisted Telephone Interviews to collect quantitative rather than qualitative data, in order to assess the impact of the project in the targeted communities.

Along with the other Centers, the SW Center participated in the meetings and conference calls organized to develop a national plan to address reducing tractor-related injuries and fatalities, and specifically contributed to the Epidemiology Section of the report.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. Designed and produced AgConnections, the newsletter for the NIOSH Agricultural Centers (4 issues).
2. Successfully competed for Conference Grant funding for “Agroterrorism Workshop: Engaging in Community Preparedness,” an Interactive Televideo conference. The Great Plains Center is one of the program collaborators.
3. Four articles published in peer-reviewed journals. Numerous manuscripts in development.
4. Active Feasibility Study program resulting in the initiation of four new studies.
5. Two of three Occupational Medicine physicians selected agricultural safety/health topic for research course.
6. Actively participated in the planning process for the 5th International Symposium on the Future of Rural Peoples and took the lead on organizing and sponsoring a workshop session on migrant labor issues.
7. Hosted two meetings of External Advisory Board with Center Project Directors.
8. Hosted a Core Leader meeting using Interactive Televideo conferencing.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 14
2. **Projects Completed:** 1
3. **New Projects:** None
4. **Feasibility Projects:** 5

D. CENTER INVESTIGATORS

- 1. Scientific Investigators:** 15
- 2. Program Support Staff:** 2

E. REGIONAL ACTIVITIES

- 1. States Served by Center:** Arkansas, Louisiana, New Mexico, Oklahoma, Texas
- 2. States with Center Activity for FY 2003:** Arkansas, Louisiana, New Mexico, Texas, Kansas, Oklahoma, Colorado, Arizona

F. CENTER PRODUCTS

- 1. Presentations:** 34
- 2. Publications**
 - a. Peer Reviewed Journal:** 4
 - b. Trade Journals:** None
 - c. Fact Sheets / Brochures / Technical Publications:** 3
 - d. Other Publications:** None
- 3. Education / Training / Outreach**
 - a. Training Seminars:** 7
 - b. Short Courses:** None
 - c. Hazard Surveys / Consultations:** None
 - d. Academic Training:** 8
 - e. News Letters:** 12
 - f. CD-ROMs or other Computer Based Training Programs:** 2
 - g. Other:** 6

4. Conferences / Meetings Sponsored: 5

5. Other Products: 1

WASHINGTON

PACIFIC NORTHWEST AGRICULTURAL SAFETY AND HEALTH CENTER

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The Pacific Northwest Agricultural Safety and Health (PNASH) Center serves Alaska, Idaho, Oregon, and Washington, in reducing occupational disease and injury among agricultural operators and workers and their families, in the farming, forestry, and fishing industries. This broad definition of agriculture is in keeping with the importance of these resource-based industries to the Northwest. The PNASH Center's emphasis is on injury and illness prevention and health promotion. Our approach is to: (1) work in partnership, with employers, agencies, and research and service organizations; (2) lead innovative research and intervention programs to find solutions; (3) develop training, education, outreach, and evaluation programs.

The 2002-2003 period was the second year of the five-year program cycle, continuing the projects: (1) Identification and Prevention of Injuries in NW Orchards; (2) Workplace Determinants of Take Home Pesticide Exposure; (3) Developing, Testing and Objective Tool for Measuring Postural and Vibrational Exposures During Forestry and Agricultural Work; (4) Finding Common Ground: Developing, Testing and Evaluating a Narrative Based Model for Presenting Safety Information in Two Socially Diverse Farm Communities; (5) Development of a Community Theater Troupe: Health and Farm Safety Training for Hispanic Agricultural Workers; (6) Agricultural Health and Safety Communication and Education; (7) Feasibility Project: Wildland Firefighter Injuries in Idaho and Montana; (8) Feasibility Project: Diagnosis of Mental Illness Among Farmworkers with a Range of Literacy; (9) Feasibility Project: Assessment of Farmers' Exposure to Smoke from Agricultural Burning.

In addition, the PNASH Center was awarded new project funds for: (1) Feasibility Project: Evaluation of the Worker Protection Standard Train-the-Trainer Model Curriculum; (2) Document Development for Prevention of Tractor-Related Injuries and Fatalities; (3) Washington State Cholinesterase Monitoring Rule Evaluation: Medical Monitoring Education and Informed Consent for Handlers; (4) Conference: Cultivating a Sustainable Agricultural Workplace; (5) Community Health Intervention with Yakima Agricultural Workers.

At this early stage of the five-year cycle, most projects are still underway, with one project completed: the feasibility study, Diagnosis of Mental Illness Among Farmworkers. This study developed and tested a self-administered mental illness diagnostic tool for use among farmworkers with varying literacy skills. It found that the diagnostic tool is effective and copies are now available.

The PNASH Center is proud to have joined the other eight agricultural centers in an initiative on tractor safety. PNASH is the designated center for developing the document on this national agricultural center initiative to reduce tractor-related accidents. For the first time, all nine NIOSH Centers are collaborating on a national prevention program.

This new activity and other needs in our communications effort led to the hire of Eric Swenson, PNASH Center public information specialist.

As of Year 2 of its second program cycle, the PNASH Center is well prepared for moving forward with our program of research, prevention, and education.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. Interviews and workers compensation data analysis for the RO1 project, Identification and Prevention of Injuries in NW Orchards. Key informant interviews highlighted musculoskeletal and eye injuries, ladders, and risk factors of worker responsibility, employer obligations, priorities and responsibilities, governmental oversight, and the difficult nature of the work. The 25 qualitative open-ended interviews revealed themes that indicate that knowledge and experience, physical and psychological aspects, and external influences are factors that affect the occurrence of injuries in orchards. Workers Compensation claims filed between 1996 and 2001 (more than 13,000 claims) show nearly one third of the claims were related to ladders. Other common causes of injury were trees, branches, and vegetation; structures and materials; and ground-related injuries.
2. Development of the Virtual Corset, a product of the pilot project Developing and Testing an Objective Tool for Measuring Postural and Vibrational Exposures during Forestry and Agricultural Work. This project developed a new device, which allows ergonomic researchers to continuously collect simultaneous data on back, side, and limb dynamics of agricultural workers over the course of their day or multiple days. This “virtual corset” was developed in conjunction with Microstrain, Inc., and will better develop our understanding of the relationship between cumulative exposure to vibration, posture, and musculoskeletal disorders.
3. Pesticide Issues Conference, Yakima, Washington. The PNASH Center jointly sponsored this short course with Washington State University (WSU) Cooperative Extension and the UW Northwest Center for Occupational Health and Safety (NIOSH ERC) on February 26, 2003. The one-day conference was a professional education course, covering topics of cholinesterase monitoring, pesticide drift in Washington state, and pesticide exposure. The 108 attendees ranged widely in background with course credits given to pesticide applicators from Washington, Oregon, and Idaho; physicians; nurses; industrial hygienists; and safety professionals. A course manual was handed out onsite then updated as a proceedings and made available in pdf format on the PNASH Web site. The program was ambitious, and participants concluded it was well done and met the established goals.
4. PNASH Stakeholder Workshop, Toppenish, Washington. The July 21, 2003, workshop brought together 18 stakeholders and 7 PNASH staff, to develop a process to actively involve regional stakeholders in the Center’s activities. Attendees included service providers and investigators in government, agricultural industry, labor, academia, extension, tribes, and community organizations. Process oriented workshop

- objectives included: (1) developing a method to periodically update our “Occupational Research Agenda for Northwest Farming,” a product of our 1996-2001 project to understand stakeholder hazard priorities and our guide for research and training efforts; (2) brainstorming ideas for center-to-stakeholder communications and participation; (3) forming an active Outreach Advisory Committee with a process for the committee to reiteratively review, guide, and be meaningfully involved in the work of PNASH. The stakeholder workshop was viewed by participants as valuable in meeting both their objectives and the Center’s.
5. Challenges in Agricultural Safety and Health Conference in San Francisco, California. The PNASH Center joined the UC Davis as co-hosts for this September 7-9, 2003, event. PNASH participated as program advisors, presenters (9), poster presenters (6), exhibitor, and support in conference implementation.
 6. Completion of the feasibility project, Diagnosis of Mental Illness Among Farmworkers. This study developed and tested the sensitivity and specificity of a mental illness diagnostic tool for use among farmworkers with varying literacy skills. It found the self-administered diagnostic tool to be effective and the audiotape tool is now available for use.
 7. Initiation and evaluation of the new feasibility project, Evaluation of the Worker Protection Standard Train-the-Trainer Model Curriculum. PNASH initiated this evaluation project at the request of the project lead organizations, the Environmental Protection Agency (EPA), and the Council for Agriculture Science and Technology (CAST). The overall goal was to evaluate if the feasibility project, Worker Protection Standard (WPS) train-the-trainer model curriculum, ensures consistency and quality WPS training in Washington, Florida, and New Jersey, and if it is feasible as a national model. The objective of the evaluation of the pilot is to determine if the train-the-trainer model curriculum ensures all potential trainers obtain the basic training skills, tools, and knowledge they need to impart quality WPS training to workers.
 8. Initiation of the new project, Document Development for Prevention of Tractor-Related Injuries and Fatalities. PNASH is the designated NIOSH agricultural center for developing a document that will detail the national agricultural center initiative to reduce tractor-related accidents. For the first time, all NIOSH centers are collaborating on a national prevention program. Tractor accidents remain the leading cause of farm fatalities and injuries. The document produced will be used within NIOSH/CDC, with other stakeholders, and for seeking additional national support and partners.
 9. New Projects and Grants: (1) Evaluation of the Worker Protection Standard Train-the-Trainer Model Curriculum [EPA/CAST, Washington State Medical Aid and Accident Fund, and NIOSH supplement]; (2) Document Development for Prevention of Tractor-Related Injuries and Fatalities [CDC/NIOSH Supplement]; (3) Washington State Cholinesterase Monitoring Rule Evaluation: Medical Monitoring Education, Informed Consent for Handlers [Washington State Medical Aid and Accident Fund];

(4) Cultivating a Sustainable Agricultural Workplace Conference [CDC/NIOSH C13/CCU022993]; (5) Community Health Intervention with Yakima Agricultural Workers [CDC/NIOSH 1 R25 OH008143].

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

- 1. Ongoing Projects: 8**
- 2. Projects Completed: 1**
- 3. New Projects: 2**
- 4. Feasibility Projects: 4**

D. CENTER INVESTIGATORS

- 1. Scientific Investigators: 30**
- 2. Program Support Staff: 4**

E. REGIONAL ACTIVITIES

- 1. States Served by Center:** Washington, Idaho, Oregon, Alaska
- 2. States with Center Activity for FY 2003:** Washington, Idaho, Oregon, Alaska, Montana, California, New Jersey, Florida, *Puerto Rico*

F. CENTER PRODUCTS

- 1. Presentations: 33**
- 2. Publications**
 - a. Peer Reviewed Journal: 10**
 - b. Trade Journals: 1**
 - c. Fact Sheets / Brochures / Technical Publications: 6**
 - d. Other Publications: 23**

3. Education / Training / Outreach

- a. Training Seminars: 7**
 - b. Short Courses: 1**
 - c. Hazard Surveys / Consultations: 8**
 - d. Academic Training: 7**
 - e. News Letters: 1**
 - f. CD-ROMs or other Computer Based Training Programs: 4**
 - g. Other: 5**
- 4. Conferences / Meetings Sponsored: 5**
- 5. Other Products: 33**

WISCONSIN

MIDWEST CENTER FOR AGRICULTURAL RESEARCH, EDUCATION, AND DISEASE AND INJURY PREVENTION

I. CENTER OVERVIEW INFORMATION:

A. EXECUTIVE SUMMARY

The mission of the Midwest Center for Agricultural Research, Education, and Disease and Injury Prevention is to conduct innovative research to improve the health and safety of agricultural workers and their families. The Midwest Ag Center is housed within the National Farm Medicine Center at Marshfield Clinic, one of the largest group practices in the Nation. The relationship with the Clinic allows for extensive collaboration in matters of administration, education, prevention, and research. Funded since 1991 by the National Institute for Occupational Safety and Health, the Midwest Agricultural Center has completed studies on back pain, hearing loss, fatality risks of manure storage facilities, safety guidelines for children's agricultural tasks, women's reproductive health, and agricultural zoonoses. The Center is comprised of administrative, research, and education/prevention cores.

During FY 2003, the research core supported three projects including "Pesticides, Genetics, and Risk of Parkinson's Disease," "Farm Health Surveillance," and "Evaluation of a Web-Based Course — A Nurse's Guide to Children's Agricultural Safety: NAGCAT." The goal of "Pesticides, Genetics, and Risk of Parkinson's Disease" is to characterize the interaction between host genetic factors, agricultural exposures, and the risk of neurological disease. The study "Farm Health Surveillance" compared the incidence and prevalence of selected health conditions of farm and non-farm residents using the Marshfield Epidemiologic Study Area (MESA). The findings of this pilot study will provide a basis for formulating intervention research aimed at minimizing novel hazardous exposures of the agricultural worksite. The study "A Nurse's Guide to Children's Agricultural Safety" targets rural health nurses assessed the effectiveness of the web-based approach for continuing education.

Center scientists assisted with planning, chairing sessions, and providing scientific presentations for the Midwest Agricultural Safety and Health Forum, held in Amana Colonies, IA, November 13-14, 2002. Drs. Barbara Lee and Anne Greenlee met monthly with Canadian colleagues, of the Institute of Agricultural Rural and Environmental Health, to plan the 5th International Symposium on the Future of Rural Peoples, in Saskatoon, Saskatchewan, Canada, held October 2003. In February 2003, Drs. John Shutske and Mark Purschwitz represented the Midwest Agricultural Center at the NIOSH Tractor Safety workshop meeting in Pittsburgh, PA. Dr. Shutske presented the talk "New Tractor Technologies – Opportunities for Progress." Lesley Day, PhD, presented the talk "An Overview of Australian Tractor Safety Strategies." Dr. Purschwitz continues to provide input on this nationally important topic. Jamie Zentner, MS, interacted with dairy producers and Hispanic workers at the "Hispanic Dairy Labor Meeting," March 25, 2003, in Kaukauna, WI. The purpose of the conference was to familiarize workers and employers with cultural issues, safety training, team-building, best practices, and

employee retention. The quarterly newsletter “Cultivate” was initiated in 2003 by the National Farm Medicine Center, and highlights activities of the Midwest Agricultural Center.

The Center hosted Richard Franklin, PhD, from the Australian Injury Prevention Network, Lane Cove NSW, Australia. Dr. Franklin is a Churchill Fellowship Recipient, and worked with Center scientists to familiarize himself with injury prevention efforts in Marshfield. Dean Aberle, PhD, Dean of the College of Agricultural Life Sciences, visited the Midwest Agricultural Center, to foster collaborative relations for the USDA-ARS-UW-Madison “Institute of Environmentally Integrated Dairy Management.” Dr. Greenlee serves on the committee overseeing the construction of this Institute, to be fully staffed in the Fall of 2006. Personnel changes during the year included the addition of Drs. Mark Purschwitz and Steve Kirkhorn to the National Farm Medicine Center in 2003.

B. CENTER ACCOMPLISHMENTS FOR FY 2003

1. Drs. Barbara Marlenga and Robert Greenlee and Jamie Zentner, MPH, completed the feasibility project “Farm Health Surveillance.” This resulted in an oral presentation at the 5th International Symposium on the Future of Rural Peoples, Saskatoon, Saskatchewan; a poster presentation at the American College of Epidemiology, Chicago, IL; and a manuscript entitled “Farm Health Surveillance in the Marshfield Epidemiologic Study Area: A Pilot Study” by RT Greenlee, B Marlenga, J Zentner, B Kieke, J Elliot.
2. Michelle Schermann, MS, and Ruth Rassmussen, MPH, completed the feasibility project “Evaluation of a Web-Based Course – A Nurse’s Guide to Children’s Agricultural Safety.” Participants were drawn from Minnesota, North Dakota, Ohio, Texas, Missouri, and Kentucky. A total of 75 persons, out of 135 who logged on to the site, completed the course and quiz. The course is available through <http://safety.coafes.umn.edu/nagcatcourse.html>.
3. The redesigned National Farm Medicine Center web site went online in June 2003, with the Midwest Ag Center as one of its core areas. The new site averaged 5,297 visits per month during July, August, and September, compared to an average of 4,434 visits per month for the first nine months of FY 2003.
4. The Center hosted three scientific seminars on agricultural health topics that were open to the public. Speakers spent time talking with audience members and scientists of the Midwest Ag Center. The scientists were: Lesley Day, PhD, National Health and Medical Research Council, Monash University, Melbourne, Australia; Richard Franklin, PhD, Australian Injury Prevention Network, Lane Cove, NSW, Australia; and Steve Kirkhorn, MD, MPH, Stueland Scholar, National Farm Medicine Center.

5. Recruitment of participants continued for the case-control study “Pesticides, Genetics, and Risk of Parkinson’s Disease.” The study examines host susceptibility factors that may influence the risk of developing Parkinson’s Disease. Laboratory methods were developed to detect single nucleotide polymorphisms (SNPs) in mitochondrial DNA.
6. In March 2003, Yiguo Jiang, PhD, began a postdoctoral fellowship in Dr. Greenlee’s lab.
7. The article “Risk Factors for Female Infertility in an Agricultural Region” appeared in the July 2003 issue of Epidemiology. The study was featured in numerous news articles, list serves, live radio interviews (WCCO, St Paul, MN) and lay press (AP release, Redbook Magazine; Illinois Farm Weekly). A presentation of findings was made to the Marshfield Clinic Department of OB-GYN.
8. The study “Potential Sources of Bias in a Study of Infertility and Environmental Exposures” by WR Carl, et al, was presented at the September 2003 meeting of the American college of Epidemiology, Chicago, IL.
9. The NFMC staffed booths at Wisconsin Farm Technology Days and World Dairy Expo.
10. Midwest Center sponsored the printing of “*Una agüia para prevenir los riesgos de los pesticides,*” a storybook lesson on decreasing unintentional pesticide exposures.
11. The Midwest Center provided two articles for the AgConnections newsletter, on pesticide exposure and risk of Parkinson disease and osteoarthritis. The newsletters were distributed to approximately 525 recipients throughout the Midwest.
12. The National Farm Medicine Center issued press releases on National Farm Safety and Health Week, safe play areas on farms, and gastrointestinal illness related to private wells and septic systems.

C. CENTER PROJECTS / ACTIVITIES FOR FY 2003

1. **Ongoing Projects:** 3
2. **Projects Completed:** 2
3. **New Projects:** None
4. **Feasibility Projects:** 2

D. CENTER INVESTIGATORS

- 1. Scientific Investigators:** 9
- 2. Program Support Staff:** 11

E. REGIONAL ACTIVITIES

- 1. States Served by Center:** Wisconsin, Illinois, Minnesota, Michigan, Indiana
- 2. States with Center Activity for FY 2003:** Wisconsin, Illinois, Minnesota, North Carolina, West Virginia, Kentucky, New York, Iowa, Maryland, Texas, Ohio, Pennsylvania, Colorado

F. CENTER PRODUCTS

- 1. Presentations:** 14
- 2. Publications**
 - a. Peer Reviewed Journal:** 19
 - b. Trade Journals:** 1
 - c. Fact Sheets / Brochures / Technical Publications:** None
 - d. Other Publications:** None
- 3. Education / Training / Outreach**
 - a. Training Seminars:** None
 - b. Short Courses:** None
 - c. Hazard Surveys / Consultations:** None
 - d. Academic Training:** 1
 - e. News Letters:** 2
 - f. CD-ROMs or other Computer Based Training Programs:** None
 - g. Other:** None

4. Conferences / Meetings Sponsored: 3

5. Other Products: None