

Agriculture, Forestry, Fishing, Safety & Health



NIOSH Agricultural Center Initiative Evaluation Project January 2010

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**The NIOSH Agricultural Center Initiative
Evaluation Project
Fiscal Year 2009 Report**



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EXECUTIVE SUMMARY

NIOSH Agricultural Center Initiative Evaluation Report - FY 2009

Introduction

The Agricultural Health and Safety Center Initiative began with the development of two Centers in 1990 funded by the National Institute for Occupational Safety and Health (NIOSH). Due to the vast regional differences in agriculture production and practices across the United States, NIOSH chose to add additional Centers roughly corresponding to Public Health Service Regions. In FY 2009, the Initiative consisted of seven Agricultural Centers mandated to undertake research, develop prevention and education programs and provide consultation to constituents across the United States in an expanded North American Industry Classification System, occupational sub code 11, Agriculture, Forestry, Fishing & Hunting.

The mission of the Initiative is to reduce injury and disease in three of the most hazardous occupations in the United States, agriculture, forestry and fishing. This mission is to be accomplished by addressing the following objectives:

1. Conduct research related to the prevention of occupational disease and injury among producers, workers and their families.
2. Develop, implement and evaluate educational and outreach programs for promoting health and safety for production agriculture/forestry/fishing including farmers, workers and their families. This would include providing consultation and/or training to researchers, health and safety professionals, graduate/professional students, and agricultural extension agents and others in a position to improve the health and safety of workers.
3. Develop, implement and evaluate model programs for the prevention of illness and injury among agriculture/forestry/fishing producers, workers and their families.
4. Develop linkages and communication with other governmental and non-governmental bodies involved in health and safety with special emphasis on communications with other agricultural/forestry/fishing health and safety programs (PAR-06-057).

Sections of FY 2009 report

The report for fiscal year 2009 is made up of four sections, two are new to this report, and were added based upon feedback from the Agricultural Center Evaluation (ACE) team members:

- Monitoring report on Center Initiative accomplishments for FY 2009
- An aggregate report on Initiative accomplishments for fiscal years 2007-2009
- An Illustration of projects featuring Research to Practice (*r2p*) successes from each Center
- A presentation of Center research projects by the National Occupational Research Agenda (NORA) Strategic Goal categories to provide a quick overview of the work of the Center Initiative

Background

In 1997 the High Plains Intermountain Center for Agricultural Health and Safety (HICAHS) obtained funding to begin the Initiative evaluation effort. Representatives from existing Centers attended biannual workshops, hosted by HICAHS, and collaboratively developed an Initiative database and defined indicators of progress on objectives. Reports were produced by the evaluation group for fiscal years 1999-2001, and with renewed funding 2005-2007.

NIOSH awarded supplemental funding to continue the program evaluation for fiscal years 2008 and 2009, and to produce both progress and year-end reports from the ACE database utilized by each Center. With the assistance of a small subgroup, consisting of NIOSH, the Southwest Center team members and HICAHS, forms were developed in ACCESS that allow Centers to pull up reports by project with the necessary components to respond to NIOSH requirements for each of these reports.

Initiative accomplishments FY 2009 – Program monitoring

Seven Centers collected and input data on 111 projects into a copy of the ACCESS™ database which was forwarded to HICAHS for aggregation and reporting. The FY 2009 Initiative data combines the productivity of all Centers to provide the necessary data to address eleven evaluation questions; a brief response to three of the questions is presented here, the reader is encouraged to review the full report for the remaining responses and discussion related to these outcome measures.

- 1. What were the target groups of Center Initiative work during FY2009?**
Over 450,000 contacts were made during FY 09; the primary target groups included Agricultural owners/operators, agricultural workers (including migrant & seasonal), the general public and health professionals.
- 2. For what degrees and professional disciplines did the Center Initiative provide education during FY 2009?**
The Center Initiative awarded over 80 professional degrees in 2009 including PhDs, DVMS, Masters, Bachelors and MDs. Disciplines included Occupational Health, Public Health, Nursing, Agricultural Safety and Health, Environmental

Health, and Epidemiology. In addition, internships were provided by some Centers as well as one Post Doctoral fellowship.

3. What research-to-practice (*r2p*) accomplishments were undertaken during FY 2009?

The *r2p* concept is a key outcome measure identified by NIOSH that indicates impact of Initiative work on target audiences. There are eight categories of *r2p* defined (see full report); the majority (63%) of Center project *r2p* was related to “Intervention & Education”, the second highest category was “Field Use.”

Aggregate report for current funding cycle FY 2007-2009

The second section of the report provides an overview of the work of the Center Initiative for the years 2007 through 2009, the first three years of the most recent funding cycle. The information provides responses to the same evaluation questions (three of which are provided below) and illustrates the cumulative accomplishments of Center personnel related to research, outreach, products, and additions to the knowledge base related to agriculture/forestry/fishing health and safety.

1. What were the primary target populations or audience contacts by specific activities of the Center Initiative between 2007-2009?

Over the three year period, a total of 2,002,126 contacts were reported by the Center Initiative, approximately 380,000 of these were by direct contact, the remaining were indirect through product distribution.

2. What products has the Center Initiative produced during fiscal years 2007-2009?

Eight hundred and eighty two products were developed by Initiative personnel over the three year period of the new cycle. Types ranged from professional publications to factsheets, newsletters, video/DVD/CDs and exhibit materials. All are methods of disseminating results of Initiative work to multiple stakeholders.

3. What was the reported monetary value leveraged by the Center Initiative (in dollars and in-kind support) between 2007 and 2009?

A total of \$2,022,347 dollars was leveraged by the Initiative over the three year period; of this \$1,687,147 was in actual dollars. The remaining \$335,200 was received as in-kind support such as specialized lab analysis or equipment access.

Project success stories

This year’s ACE report includes a new section presenting a project “success story” from each Center. These short reports were submitted by each participating Center and represent one or more categories of “Research to Practice” (*r2p*) efforts that have been accomplished through the efforts of Initiative personnel.

List of FY 2009 Initiative Projects by NORA Strategic Goals

The final section of the ACE report presents the projects of all of the Centers categorized by NORA II Strategic goals and Intermediate goals. This overview was recommended by the members of the ACE team as a way to illustrate topics and types of current projects of the Centers, and to perhaps provide potential for future collaborative efforts particularly as personnel work on submission for the next funding cycle.

Discussion

The 2009 fiscal year report represents the work and accomplishments of the staff, collaborators, and partners of the seven reporting Agricultural Centers undertaking research, prevention and education on behalf of those working in agricultural, forestry and fishing occupations across the United States.

NIOSH again provided support to each participating Center to acknowledge the time and effort that individual team members put into the ACE data collection process; and the Centers are most appreciative of the funding provided.

The Centers which make up the Agriculture/forestry/fishing Initiative provided data in the ACCESS™ database to HICAHS for aggregation. A number of limitations to this monitoring process are presented in the report and represent some of the methodological limitations of all multisite evaluation efforts.

Recommendations and conclusions

The ACE team has now completed three full years of program monitoring during the current funding cycle. The results presented in the report describe a broad range of activities across diverse regions of the country during fiscal year 2009 as well as cumulatively over the current funding cycle. In addition selected Initiative *r2p* success stories are presented and Initiative work is categorized by NORA strategic goals.

The ACE project began as a response to an external evaluation review of the Center Initiative (Kennedy, 1995). The National Academy of Science evaluation completed in 2008, also encouraged the Centers to work together with NIOSH to approach the evaluation need collaboratively. The ACE team, with support from NIOSH, has provided a viable approach to monitor and document the activities, products, outreach, and translation efforts of Initiative projects.

The primary recommendation of this ACE report is to build upon the experience and knowledge the ACE process has provided and continue to pursue collaborative evaluation with the new funding cycle. The second recommendation is to continue to provide support to the ACE team members located in each participating Center, as it is through their efforts that the view of the Initiative as a whole is possible.

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Evaluation Report NIOSH Agricultural Center Initiative Fiscal Year 2009

Introduction

The Agricultural Health and Safety Center Initiative in FY 2009 consisted of seven Centers funded by the National Institute of Occupational Safety and Health (NIOSH) to undertake research, develop and evaluate prevention programs and develop and evaluate education programs as well as provide consultation and outreach across the ten Public Health Service regions of the United States. The mission of these Centers is to reduce injury and disease in one of the most hazardous occupations in the United States, agricultural production. NIOSH has recently expanded the responsibilities of the Centers to include both Forestry and Fishing industry classification codes, now referred to as AgFF. The most recent statistics for this industry sector are for 2008 and reflect a fatality rate of 29.4 per 100,000 employed (CFOI, 2009). The nonfatal injuries and illnesses for AgFF were reported at a rate of 5.3 per 100 full time workers (BLS, 2008). These statistics are both significantly higher than the national average for all workers, with a fatality rate of 3.6 (per 100,000 employed) and nonfatal injury and illness of 4.2 per 100 full time workers (BLS, 2009). “Collectively, the three sectors consistently have the highest injury and fatality rates of any U.S. industries, so the overall effect on the safety and health of exposed populations in agricultural, forestry, and fishing worksites is enormous” (NRC, 2008, p. 1). The locations, full Center titles, and primary contacts of each of these Centers are identified on the map presented on the inside front cover of this report.

In the fall of 2004 NIOSH funded an evaluation contract to undertake both an accountability (monitoring) and outcomes assessment evaluation on the Center Initiative. In January 2006, the first evaluation report (a pilot for FY 2005) of this three year contract was published. With additions to the contract, reports have been published for fiscal years 2006 through 2008. Each report has included a full fiscal year of program monitoring data across the Initiative and additional sections addressing summary data over several years, or trend data across two Center funding cycles.

Outline of the fiscal year 2009 report

The report for fiscal year 2009 consists of four sections. Two sections are new this year and have been suggested by both ACE team members and Center feedback. The report contains the following sections:

- A report of Center Initiative accomplishments for FY 2009
- An aggregate report on Initiative accomplishments in the current funding cycle: 2007-2009
- An *r2p* success story from each Center representing an example of Initiative work reaching application with our target audiences

- A presentation of Initiative research projects by NORA Strategies and sub-goals

Background

In 1990 the National Institute of Occupational Safety and Health (NIOSH) began an Initiative to address one of the most hazardous and long ignored occupations in the nation, agricultural production. Due to the vast regional differences in products and practices across the country, NIOSH chose to fund the development of multiple Centers roughly corresponding to Public Health Service regions. As a cooperative agreement, the Centers and NIOSH address the objectives of the Agricultural Center Health and Safety Initiative which are to:

1. Conduct research related to the prevention of occupational disease and injury among agricultural producers, workers and their families.
2. Develop, implement and evaluate educational and outreach programs for promoting health and safety for production agriculture/forestry/fishing including farmers, workers and their families. This would include providing consultation and/or training to researchers, health and safety professionals, graduate/professional students, and agricultural extension agents and others in a position to improve the health and safety of agricultural workers.
3. Develop, implement and evaluate model programs for the prevention of illness and injury among agricultural producers, workers and their families.
4. Develop linkages and communication with other governmental and non-governmental bodies involved in agricultural health and safety with special emphasis on communications with other agricultural health and safety programs. (PAR-06-057)

Two external evaluations of the Center Initiative, the 1995 Kennedy Report and 2007 National Academy of Sciences evaluation of NIOSH, have encouraged the Centers to work together to develop a cross-site evaluation of the Center Initiative. In response to the first of these recommendations, a collaborative multisite evaluation design of the Center Initiative was proposed by one Center and NIOSH agreed to fund workshops to develop the evaluation approach in 1997. Over the next three years, a team of representatives from each funded Center and NIOSH, developed a program monitoring approach to Initiative accountability. A six month pilot of the evaluation was completed for fiscal year 1999, with a report issued in early 2000. Centers continued to gather data based upon the indicators and variables selected

and defined by the evaluation team for two full years, with reports issued for fiscal years 2000 and 2001. There was a funding hiatus for Initiative evaluation after completion of the FY 2001 report.

In the fall of 2004, a new evaluation contract was awarded to the High Plains Intermountain Center for Agricultural Health and Safety (HICAHS: V. Buchan & H.Holmquist-Johnson, #212-2004-09852) renewing the Agricultural Center Initiative evaluation effort. Each Center again designated a representative to become a member of the collaborative Agricultural Center Evaluation Team (ACE). The monitoring model that had been developed for 2000 and 2001 reports was reviewed, and modifications as well as additions were made to the variables to be included and to the definitions of those variables.

The team meets once each year to make the necessary modifications to both the variables being collected and to make recommendations related to reporting format. In addition, over this last funding cycle, with the assistance of the South West Center and NIOSH, reports were developed in the ACCESS database that allows Centers to more easily provide NIOSH with progress and year-end reports. The citations for all published reports may be found in the reference list at the end of the report.

Methodology

Program monitoring

The aim of this evaluation project is to document Initiative progress on the NIOSH objectives for the Agricultural Centers. The model, program monitoring (Rossi, Freeman & Lipsey, 2004), provides a picture of the scope, reach, and intensity of Initiative work across the nation. A monitoring approach to evaluation of the Initiative provides “administrative intelligence,” that is access to the information improves Initiative and Center planning, enhances collaboration opportunities, addresses accountability and helps set the stage for targeted outcome assessment.

Each fiscal year, after the ACE workshop and based upon the recommendations of the ACE team, the lead center makes minor revisions in both the Access database and the categories of the key variables or indicators. A copy of the database is then forwarded to each team member to enable data collection at their Center for the current fiscal year (September 15, 2008 through September 14, 2009). Centers, utilizing various methods of data collection on projects, collect information and forward that data to HICAHS for collation into an Initiative database. HICAHS staff then analyze the collated data and report on the work of the Initiative for the most recent fiscal year.

Figure 1 provides an abbreviated overview of the key indicators and variables that are collected and entered into ACCESS. Each participating Center enters their own data into ACCESS and then forwards it to HICAHS.

IDENTIFYING INFORMATION					
Center Name	Project Title and Description	Center/Project Objective	PI or Project Contact Person	Project Dates	
KEY INDICATORS					
Type of Agriculture	Contact Numbers	Activities	Academic Degrees	Products	Audience Demographics
Collaboration	Leveraging	Regionalization	Special Sector		
NIOSH SPECIFIC INDICATORS					
Core	NORA	Research to Practice			
Administrative and Planning	Priority Research Area (for Research)	Research to:			
Education and Outreach	Disease and Injury	Intervention and Education			
Multi-Disciplinary Research	Work Environment and Workforce	Research			
Prevention-Intervention	Research Tools and Approaches	Field Use			
		Policy			
		Academia			
		Evaluation			
		Technical Assistance			
		Surveillance			

Figure 1. Database Overview

Challenges

The success of any evaluation is greatly increased if it is “built in” from the beginning of program planning (Rossi, Freeman & Lipsey, 2004). The original NIOSH Center Initiative objectives included the need to evaluate individual projects within each Center, but lacked a clear agenda to address the Initiative as whole until the resurrection of the Evaluation Project contract in 2004. Additional challenges include the great variance between the Centers’ approaches to fulfilling NIOSH objectives due to differences in auspices, resources, expertise and regional agriculture.

An additional challenge to both program monitoring and the cross site impact assessment efforts are Center personnel changes. The lead Center has incorporated updates and abbreviated training on the ACCESS database into each Workshop, but it is clear that personnel changes, while unavoidable in a large Initiative, impact data collection and reporting. Initiative evaluation efforts are

enhanced when there is stability in the personnel identified at each Center responsible for both data collection and ACE team membership.

A final challenge has been the lack of stable funding to support Initiative wide evaluation. Funding has been somewhat sporadic beginning with the first Workshop in 1997, with a hiatus between 1998 and 1999, and then again between 2002 and 2004 a three year contract was awarded. Through supplemental funding NIOSH continued to support the ACE effort for fiscal years 2008 and 2009. The ACE team has made remarkable progress in spite of all of these challenges in their efforts to present a national vision of the accomplishments of the Agricultural Center Initiative.

Limitations of program monitoring

Multisite evaluation efforts present methodological limitations for a number of reasons: the most difficult of these limitations is that they are usually begun “after the fact.” The Center Initiative had been in existence for seven years prior to working collaboratively, and each Center had developed its own methods of project evaluation and reporting format. The only logical approach therefore was to involve all the Centers, and form a collaborative team approach to developing the evaluation model and implementations procedures.

Both the reliability and validity of the data collected and forwarded to HICAHS are impacted by a number of limitations, key among these are personnel changes, and with those changes alterations in data collection procedures. It takes time to for ACE team members to learn both how to collect data on Center projects and how to enter it into the ACCESS database. They in turn need to work with their own Center principal investigators to provide the necessary data per project funded. Our experience indicates that each time there are personnel changes either on Center projects or with ACE team participation, the potential exists for the Center to lose both data and reliability related to that data. Personnel changes are clearly unavoidable, but it is important to acknowledge the limitations that accompany such events. A related limitation is changes in either a Centers’ funding or participation in the ACE project. Table 1 illustrates the changes that have occurred during the current funding cycle.

Part of the responsibility of the lead Center is to increase reliability by data editing as each team member forwards their Center data, a step which provides the opportunity to check back with team members to verify or correct information collected. This approach to data editing helps to increase the validity and reliability of the data reported.

Table 1. Centers Funded and providing data 2007-2009

Fiscal Year	2007		2008		2009	
	Funded	Data	Funded	Data	Funded	Data
Great Lakes Center	B	✓	⊖	⊖	⊖	⊖
Great Plains Center	✓	⊖	✓	✓	✓	✓
HICAHS	✓	✓	✓	✓	✓	✓
North East Center	✓	✓	✓	✓	✓	✓
PNASH	✓	✓	✓	✓	✓	✓
South East Center	✓	✓	✓	✓	✓	✓
Southern Coastal	B	✓	⊖	✓	⊖	⊖
South West Center	✓	✓	✓	✓	✓	✓
Western Center	✓	✓	✓	✓	✓	✓

B = Bridge funding to assist reapplication

✓ = Full funding

⊖ = Not funded or data not submitted

Acknowledgements

NIOSH as a collaborative partner

The importance of the NIOSH role as a federal collaborative partner in this process cannot be overemphasized. First, NIOSH has continuously provided administrative personnel to assist the center evaluators; these contacts have been supportive and very helpful in assisting the evaluators and HICAHS with suggestions, definitions and updates from NIOSH. NIOSH has also provided three very important frameworks that continue to assist the evaluation effort. The first framework is provided by the Initiative objectives that the Centers are to respond to based upon each Center's region and expertise. The second is the National Occupational Research Agenda (NORA) which provides a categorization scheme for all Initiative research projects. The third and most recent indicator has been the "r2p" (Research to Practice) concept which the team has defined for our use with the database with the assistance of NIOSH.

Center representatives

The staff at the lead Center would like to express our deep appreciation to each current and past member of the ACE team (current are listed on the inside back

cover) for their time, travel, ideas and efforts in reinstating the Agricultural Health and Safety Center Initiative evaluation project. Members of the team have volunteered for assignments related to helping with the database, editing the reports, providing report cover design, and numerous other additional duties that have enhanced the team's accomplishments. This report is only possible because of a truly dedicated and collaborative team effort.

Program Monitoring Questions – FY 2009

1. What were the target populations or audience contacts by specific activities by the Center Initiative during FY 2009?

The mission of the Agricultural Center Initiative is met in a number of ways. The activities of the Initiative are presented below and divided into two types of contact:

- Direct (active) contact with constituents (Table 2); and
- Product distribution (passive) contact with constituents (Table 3).

Both table 1 and 2 present approximate numbers, as Center personnel vary in specificity of reporting data; however, they are presented as an indicator of the work of the Centers with multiple target groups.

Table 2. Initiative activities directly involving constituents

ACTIVITY TYPE	CONTACTS
Material Distribution	100,805
Data Collection	51,859
Conference – Present	19,590
Conference – Arrange or Sponsor	16,517
Participant Recruitment	12,507
Professional Presentation	2,913
Outreach Education	1,804
Website Hit Counts	1,779
Conference – Attend	1,364
Workshop – Present	1,207
Material Development	1,200
Training	920
Consultations	723
Exhibit	601
Testing/Screening	441
Academic Lecture/Education	318
Workshop – Arrange	280
Stakeholder Meeting	195
Data Analysis	150
Project Development/Planning	136
Response to Stakeholder	62
Workshop – Attend	30
IRB Activities	18
Resource Cultivation	1
TOTAL	215,420

Table 3 presents indirect stakeholder contacts via information distribution, such as publications or newspaper articles (reported by circulation) and newsletters (reported by distribution lists). A primary objective of the Center Initiative is to translate information gained from research, intervention and evaluation projects to persons working and living in agricultural settings. According to previously conducted needs assessments, these methods of communication have been the most requested by persons employed in agriculture, due to ease of access.

Table 3. Initiative product distribution frequency

PRODUCT TYPE	FREQUENCY
Article Published, feature (trade publication)	116,000
Article Published, professional (juried publication)	44,212
Thesis or Dissertation	32,055
Poster	19,934
Questionnaire or Survey Instrument	16,575
Exhibit Material	10,265
Newsletter	1,681
Website hits or Webpage Established	1,500
PowerPoint Presentation (for distribution)	996
Abstract	775
Fact Sheet	530
Report to NIOSH (year-end or continuation)	184
Report (unpublished)	157
Course Manual	155
Evaluation Instrument / Tool	123
Video / DVD	92
TOTAL	245,234

2. What were the target groups of the Center Initiative work during FY 2009?

The Agricultural Center Initiative had a broad range of target groups for projects and products during fiscal year 2009. As illustrated in Table 4 below, the vast majority of efforts were targeting either agricultural owners and operators or more than one group within the agricultural community. The large numbers in Table 4 represent dissemination of information and corroborate the contact numbers. The groups include a number of key constituent groups that assist with dissemination of Center work, such as health professionals, manufacturers, Cooperative Extension agents and educators.

Table 4. Agricultural center target groups by frequency

TARGET GROUP	CONTACTS
Agricultural Owner/operator	144,895
Agricultural – Farm/Ranch/Horticulture	109,502
Migrant Seasonal Farmworker	86,041
Multiple/Various Target	53,043
General Public	22,739
Health Professionals	13,142
Agricultural Employees	8,048
Agricultural Producer	4,336
Academic Faculty	2,534
Researchers	2,505
Children/Students secondary school	1,488
NIOSH/Ag Centers	1,379
Agriculture (General)	1,228
Farm Families	1,013
Agricultural – Fishing/Hunting	699
Children/Students primary school	697
Students – College/University	660
Teachers/Educators	629
Agricultural – Forestry	378
Advisory Committee	340
Federal Agencies	262
Agricultural Business	231
Public Health Agencies	145
Parents	98
Cooperative Extension	91
Agricultural Services	39
Farmworker Health Advocate	38
Community Based Organizations	37
Advocacy Groups	22
State Agencies	21
Media/Marketing Agents	15
TOTAL	456,295

3. What research projects did the Center Initiative undertake in FY 2009? By NORA research priority?

For FY 2009, the ACE team changed categorization of research projects to NORA II. A complete list of these projects may be found in the 2009 project list.

Table 5. Initiative research projects by NORA II strategic goals

2009 - Nora Strategic Goal	Projects
Strategic Goal 1 – Surveillance - Improve surveillance within the Agriculture, Forestry, and Fishing Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupation hazards; and worker populations at risk of adverse health outcomes.	16
Strategic Goal 2 – Vulnerable Workers - Reduce deleterious health and safety outcomes in workers more susceptible to injury or illness due to circumstances limiting options for safeguarding their own safety and health.	38
Strategic Goal 3 – Outreach, Communications and Partnerships - Move proven health and safety strategies into agricultural, forestry and fishing workplaces through the development of partnerships and collaborative efforts.	44
Strategic Goal 4 – Agriculture Safety - Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of production agriculture and support activities.	33
Strategic Goal 5 – Agriculture Health - Improve the health and well-being of agricultural workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.	30
Strategic Goal 6 – Forestry Safety - Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of forestry.	3
Strategic Goal 7 - Forestry Health - Improve the health and well-being of forestry workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.	0
Strategic Goal 8 – Fishing Safety - Reduce the number, rate and severity of traumatic injuries (including deaths) involving hazards of commercial fishing.	5
Strategic Goal 9 – Fishing Health - To improve the health of commercial fishermen by reducing occupation causes or contributing factors to illness and disease.	8

4. What special sector activities has the Center Initiative undertaken during FY 2009?

The Center Initiative continues to focus on activities related to special sector populations (note: revised NORA is now defining as “vulnerable populations”) as illustrated in Table 6. It is clear that the collective Centers made a concerted effort to undertake research and provide information, education and services for a variety of ethnic groups working in agricultural production. The vast majority of reported special sector activities targeted Hispanic migrant workers. Where it is possible to break down the Center work into more specific subgroups, we have done so. Where no specific ethnicity or age group is noted, the demographic information is not provided.

Table 6. Initiative projects reporting Special Sector target groups by frequency

SPECIAL SECTOR	FREQUENCY
Migrant Workers	86,223
Hispanic	86,172
No Ethnicity Noted	51
Children	1,940
Hispanic	945
No Ethnicity Noted	995
Ethnic Minority Workers	5,639
Hispanic	3,576
Asian	375
Native American	540
No Ethnicity Noted	1,148
Women	98
Hispanic	98
TOTAL	93,900

5. What products has the Center Initiative produced in FY 2009?

A total of 335 products were reported as having been developed during the 2009 monitoring period. In reviewing the list of products it is clear that the majority of products reflect efforts to disseminate information or educational materials to a variety of audiences. Figure 2 lists the product categories, frequencies and percents of each type. Products with specific titles are listed in the appendix by type of product.

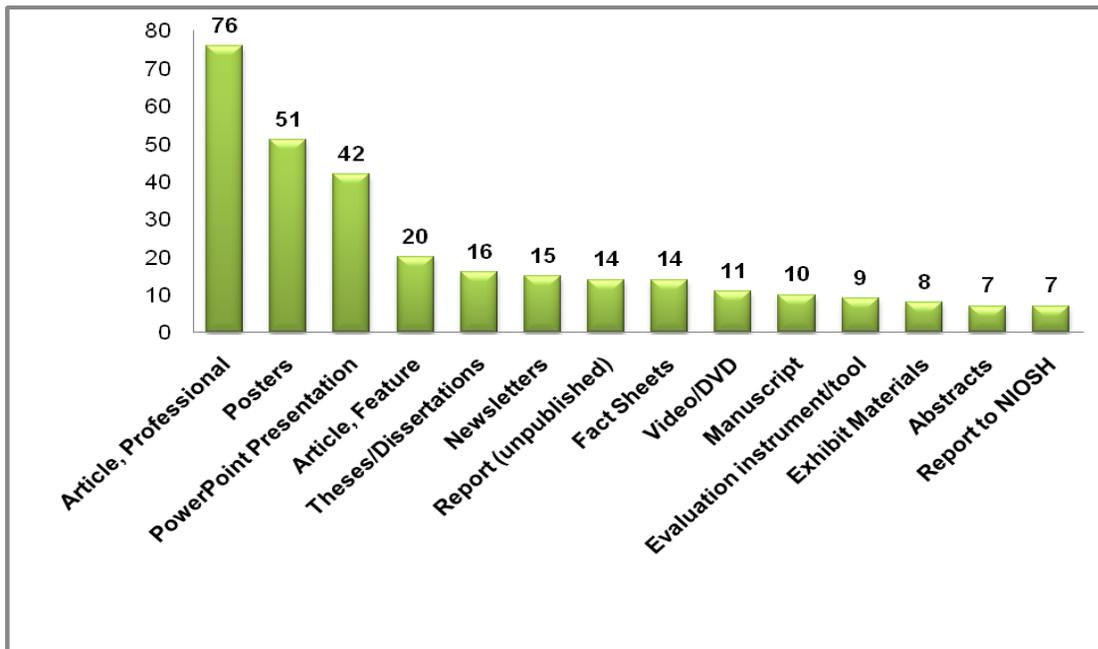


Figure 2. Center initiative products by category, frequency, and percent

6. What collaborative efforts have occurred during FY 2009?

There were over 430 collaborative efforts reported by the Initiative this past year. These efforts are related to activities and/or products as well as Center projects. Table 7 presents the types of collaborators, illustrating the remarkable range of partnerships that the Center Initiative fosters and maintains to address the Center mission. While both NIOSH and other Agricultural Centers are identified as partners, it is important to point out the number of collaborators outside of the Initiative.

Table 7. Center collaborations by organizational type and frequency

ORGANIZATIONAL TYPE	FREQUENCY
Health Care Provider/Organization	74
University, academic department	55
Agricultural Centers (other than own)	39
Governmental Agency (other)	37
Cooperative Extension	32
Agricultural Organizations	30
University, academic research center	24
School(s)	22
Community Organization	18
Agribusiness	18
NIOSH	13
University, institute or internal organization	12
Health Department	11
Multiple types – non-specific	9
Producer/Grower	8
Equipment Dealer	7
Research organization	5
Media	5
Technical, Trade or Professional Association	5
Labor / Employee Organization	4
Agricultural Organizations (focus on children)	3
Trade Association	1
Insurance Company	1
TOTAL	433

7. For what degrees and professional disciplines did the Center Initiative provide education during FY 2009?

There were over 80 professional degrees granted during fiscal year 2009, which included an agricultural health and safety component (Figure 3). Twelve doctoral degrees were awarded in Agricultural Safety and Health, Occupational Health, Public Health, Epidemiology and Anatomy. There were 33 master's degrees awarded in the following disciplines: Public Health, Environmental Health, Social Work and Nursing. In addition, nine bachelor's degrees were awarded in Nursing. There were 16 M.D. degrees and three D.V.M. degrees granted. Finally, there was one Post Doctoral Fellowship completed in Nursing. In addition the Center Initiative helped provide internships for 9 students in these same disciplines.

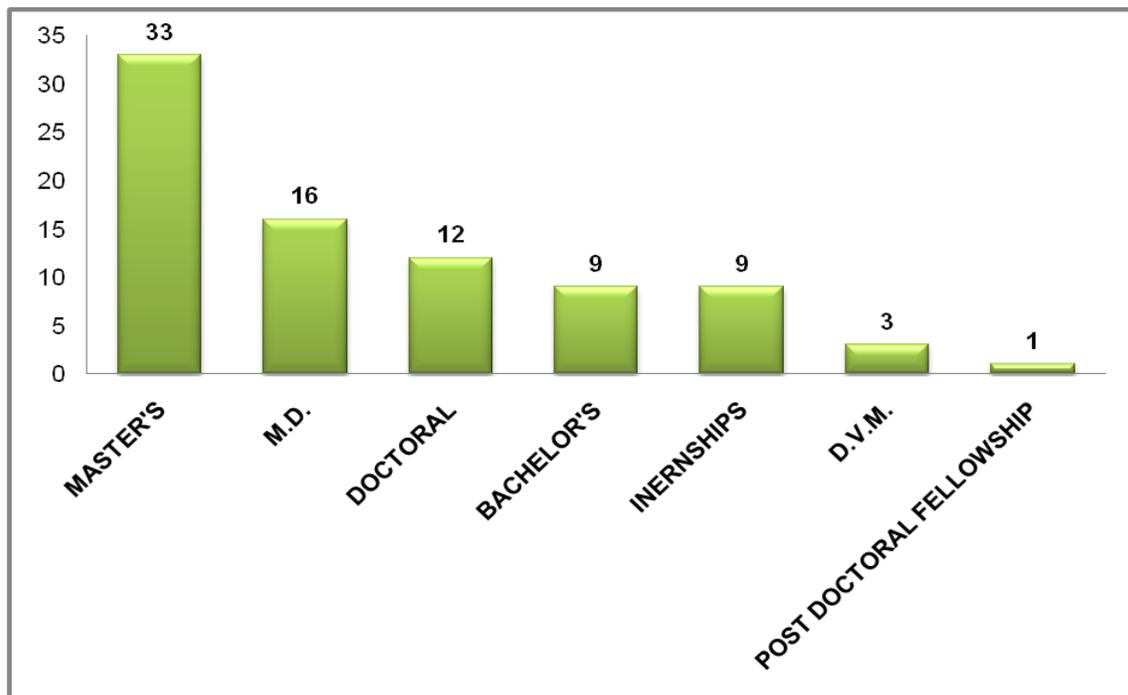


Figure 3. Degrees and professional disciplines

8. What was the reported monetary value leveraged by the Center Initiative (in dollars and in-kind support) during FY 2009?

The amount of dollars reported as leveraged by the various Initiative projects increased considerably compared to FY 2008. The total dollar value reported this year was \$876,400 and the in-kind dollar equivalent was equal to \$85,800 for a total of \$962,200.

9. In which states was Center Initiative active during FY2009?

The Agricultural Initiative reported approximately 484,935 contacts in 44 states, across the U.S. and internationally in 2009. Over half of the contacts (243,018) were reported as impacting the nation as a whole rather than a specific state. These national contacts

involve educational efforts such as articles and newsletters, which explains the broader nationwide impact. The reported contacts are further defined by the type of contact activity in Tables 2 and 3 above. The intensity of contacts in states varies considerably, with the highest levels of state reported activity correlated with proximity to the location of each Center.

10. What types of agriculture were addressed nationwide by Center projects?

Of the 111 projects reported during 2009, 50 projects (45%) were identified as being related to a particular type of agriculture. Of those projects reporting a type of agriculture, 20 indicated that they covered all agriculture or various types. For example, educational efforts with children could cover multiple types of agriculture.

11. What research to practice (*r2p*) accomplishments were undertaken during FY2009?

Research to practice (*r2p*) is defined as research findings or products that are accepted and used by Center target audiences. With the assistance of NIOSH, the ACE team defined eight categories of this concept that illustrate various methods of moving Initiative projects into use by others. Out of 111 total Agricultural Center projects 78 projects, or 70% of all projects, were designated as having *r2p* impact. Figure 4 below illustrates the percent of each of the *r2p* categories reported by the Centers. It is clear that the concept developed by NIOSH to emphasize the importance of translating study results into practice has been incorporated by the personnel of the Agricultural Initiative.

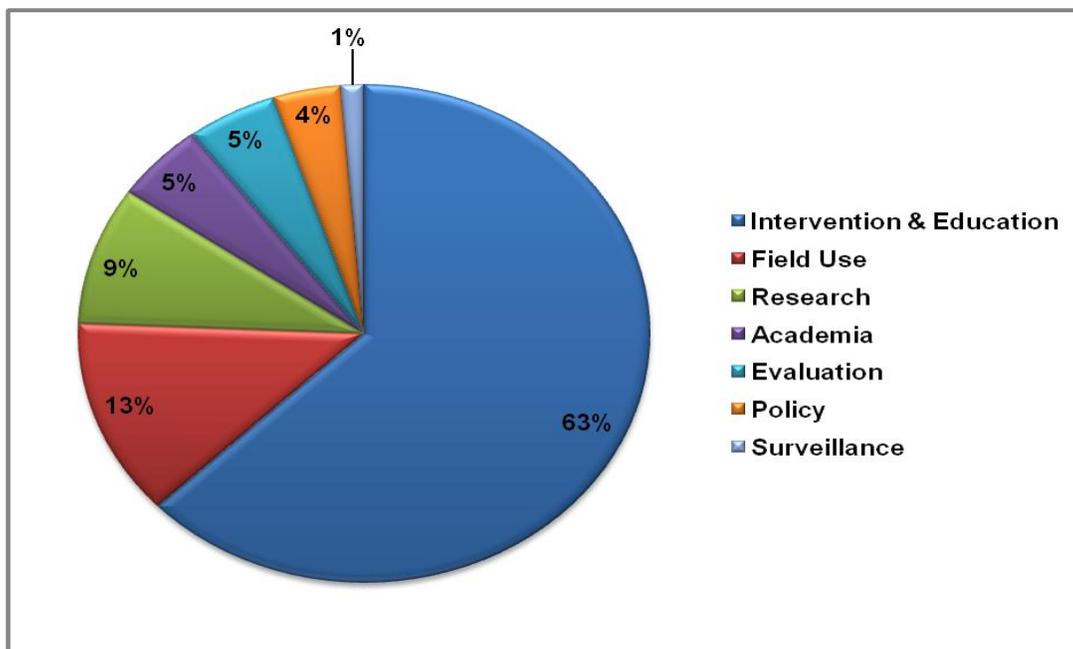


Figure 4. *r2p* accomplishments by category

Summary Data for Fiscal Years 2007, 2008 and 2009

As the Center Initiative moves into the fourth fiscal year (2010) of the current Cooperative Agreement, the ACE team decided it would be useful this year to document the work of the Centers in the first three years of this cycle. The eleven evaluation research questions are addressed in cumulative format across all funded and/or participating Centers in this section. Some of the changes that have occurred in the number of participating Centers over the three year time period, based on funding and personnel changes, have impacted the number of Centers submitting data (see Table 1). In 2007 nine Centers were receiving funding, either full funding or bridge funding, in 2008 the number of Centers funded dropped to seven and remained the same for 2009.

It is important to reiterate that the same limitations that apply to each individual year's Center Initiative report are applicable to this overview. It is difficult to assess the additional impact of the changes in each Center's status, but we continue to believe that the measurement errors related to these limitations reflect "under" rather than "over" reporting of Center work.

1. What were the primary target populations or audience contacts by specific activities of the Center Initiative during fiscal years 2007 through 2009?

As indicated earlier in this report, there are two ways of responding to this question, direct constituent contact and indirect through product distribution. Over the three year period, a total of 2,002,126 contacts were reported by the Agricultural Center initiative, slightly more than 379,266 of these were by direct contact. Figure 5 below, presents the primary methods of direct contacts made with constituents.

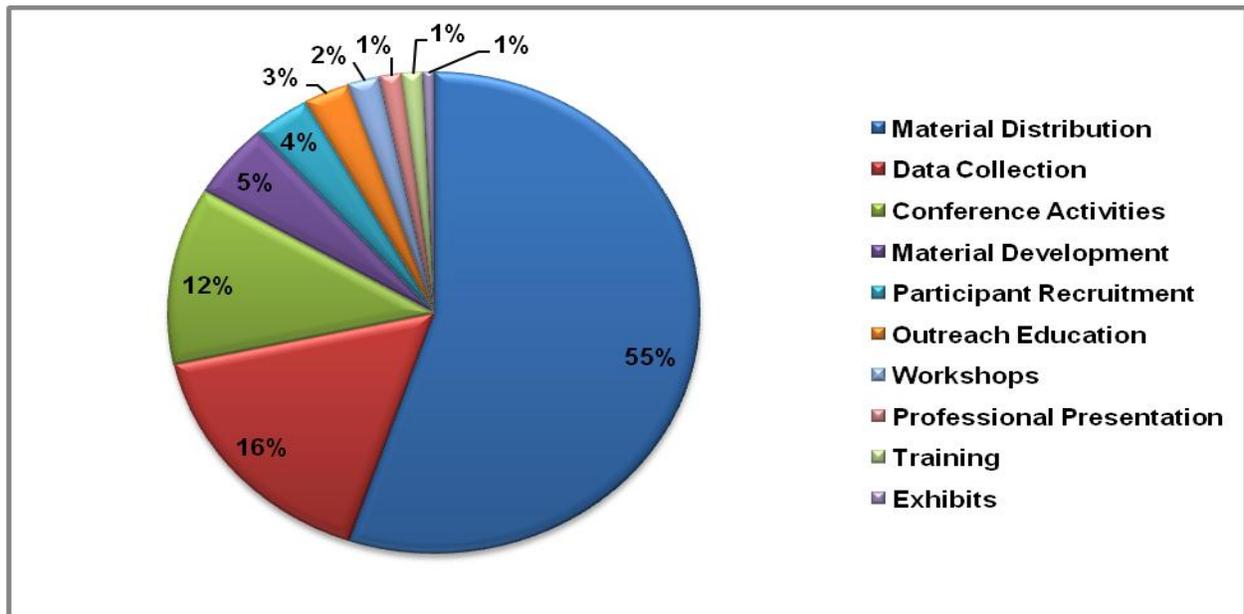


Figure 5. Cumulative direct audience contacts by type

2. What were the primary target groups of Center Initiative work between fiscal years 2007 through 2009?

The primary target group of Initiative work was the general public (via media and public service announcements) followed by agriculture – farm and ranch (see Figure 6). These largest two groups indicate that much of the Initiative’s work was appropriate for more than one specific type of agriculture, and secondly that the Centers sought to raise awareness of agricultural health and safety issues both within and outside of direct producers. The next three largest contact groups were multiple /various (for example farm families and children), migrant-seasonal farm workers and agricultural producers (a category including owners, operators and farm families).

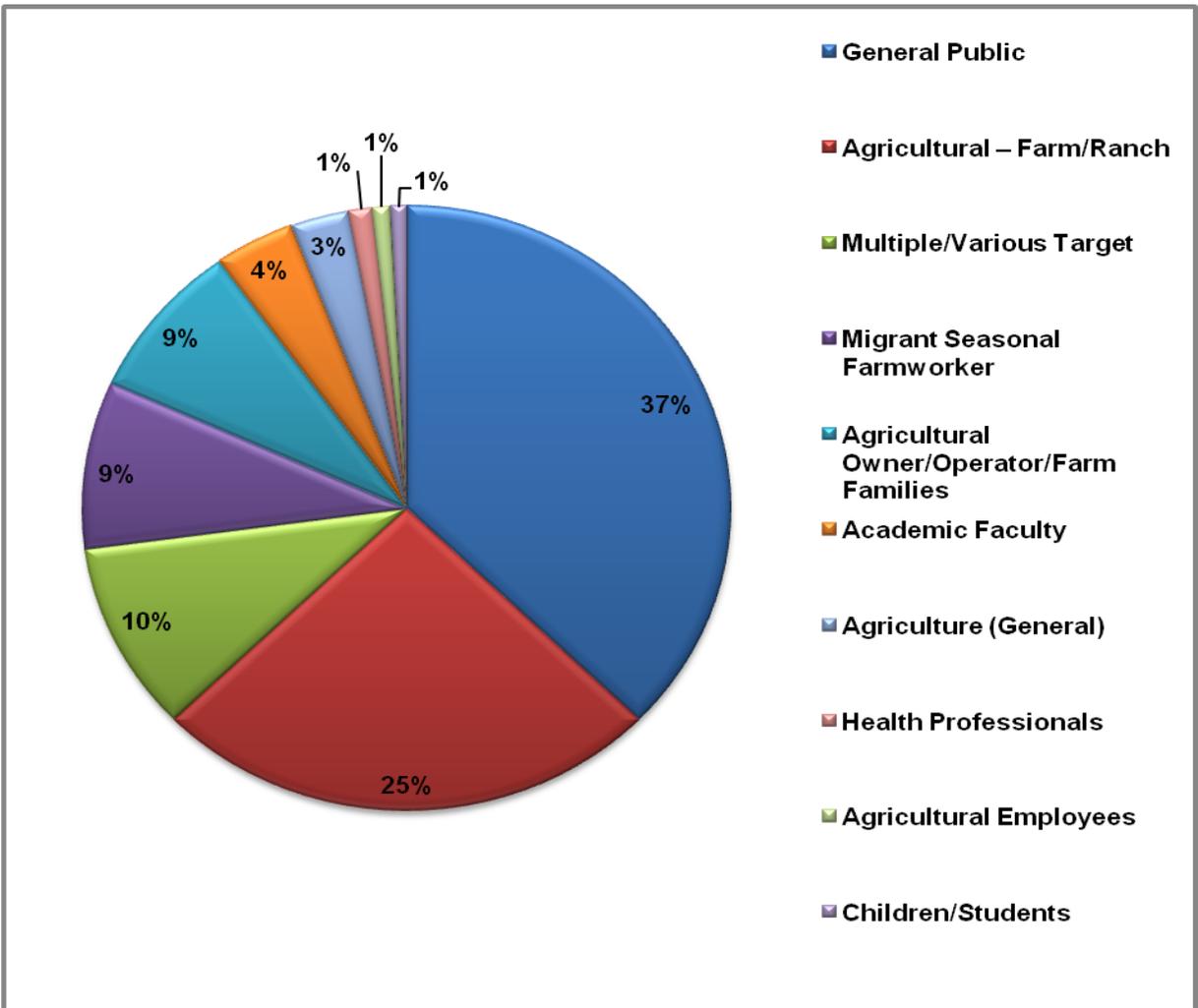


Figure 6. Cumulative primary target groups by type

3. How many research projects by NORA I (2007-2008) and NORA II (2009) did the Center Initiative undertake in fiscal years 2007-2009?

There are two tables below that illustrate the topics of research projects undertaken by the Center Initiative over the first three years of the current funding cycle. During 2007 and 2008 the ACE team continued to use the first version of NORA for data entry as the Sector Council was working on NORA II. In 2009 the sector-based version was operational and we switched project entry to the new version.

Table 8. Initiative research project frequencies by NORA I categories

Category	Priority Research Areas	2007	2008
Disease and Injury	Allergic and Irritant Dermatitis		
	Asthma and COPD	4	4
	Fertility and Pregnancy Abnormalities		
	Hearing Loss	1	2
	Infectious Diseases		1
	Low Back Disorders	1	
	Musculoskeletal Disorders/Upper	1	1
	Traumatic Injuries	3	16
Work Environment and Workforce	Emerging Technologies	1	1
	Indoor Environment		
	Mixed Exposures	1	
	Organization of Work		
	Special Populations at Risk	12	22
Research Tools and Approaches	Cancer Research Methods		
	Control Technology and PPE	1	1
	Exposure Assessments Methods	3	2
	Health Services Research		1
	Intervention Effectiveness Research	1	5
	Risk Assessment Methods		2
	Social and Economic Consequences of Workplace Illness and Injury		
	Surveillance Research Methods	2	3

The ACE team utilized workshop time in 2008 to develop and test the process of redefining research efforts by the draft version of NORA II. After the workshop the process of changing the database began and the revised version was sent to each Center for use during 2009. Those projects funded for the full five year period of the cooperative agreement needed to be re-categorized by each Center. New projects, such as feasibility or pilot projects funded by Centers during 2009 are also included under the new version of NORA. Table 9 below provides a sector based frequency of Initiative research efforts.

Both versions of NORA reflect vulnerable or special populations as a primary target group for Initiative research effort indicating that there is an agreement between the two frameworks. The new sector based version, however, better illustrates the outreach,

education and collaborative efforts of the Centers that were not easy to illustrate under NORA I. It appears that NORA II does a better job of enabling Centers to document work related to two of the primary objectives (#2 and #4 as listed on p. i) that NIOSH set forth in the charge to the Centers.

Table 9. Initiative research projects by NORA II Strategic Goals - 2009

2009 - Nora Strategic Goal	Projects
Strategic Goal 1 – Surveillance - Improve surveillance within the Agriculture, Forestry, and Fishing Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupation hazards; and worker populations at risk of adverse health outcomes.	16
Strategic Goal 2 – Vulnerable Workers - Reduce deleterious health and safety outcomes in workers more susceptible to injury or illness due to circumstances limiting options for safeguarding their own safety and health.	38
Strategic Goal 3 – Outreach, Communications and Partnerships - Move proven health and safety strategies into agricultural, forestry and fishing workplaces through the development of partnerships and collaborative efforts.	44
Strategic Goal 4 – Agriculture Safety - Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of production agriculture and support activities.	33
Strategic Goal 5 – Agriculture Health - Improve the health and well-being of agricultural workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.	30
Strategic Goal 6 – Forestry Safety - Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of forestry.	3
Strategic Goal 7 - Forestry Health - Improve the health and well-being of forestry workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.	0
Strategic Goal 8 – Fishing Safety - Reduce the number, rate and severity of traumatic injuries (including deaths) involving hazards of commercial fishing.	5
Strategic Goal 9 – Fishing Health - To improve the health of commercial fishermen by reducing occupation causes or contributing factors to illness and disease.	8

4. What special sector activities has the Center Initiative accomplished between fiscal years 2007 and 2009?

Figure 7 below presents a cumulative overview of the special sector groups targeted by initiative activity. There were 200,860 contacts identified as special sector (note: revised NORA is now defining as “vulnerable populations”) 86% were related to migrant workers and 5% were related to ethnic minority workers. It seems clear that the Center Initiative is responding to the changing workforce found not just in agriculture, but also in fishing and forestry across the country. From the expanding industrialized approach to dairies and farming, to the southern coastal fishing operations, immigrant populations are increasingly the focus of research, education and intervention efforts of the Centers. As the workforce changes it is important for the Initiative to respond to those changes with appropriate health and safety projects.

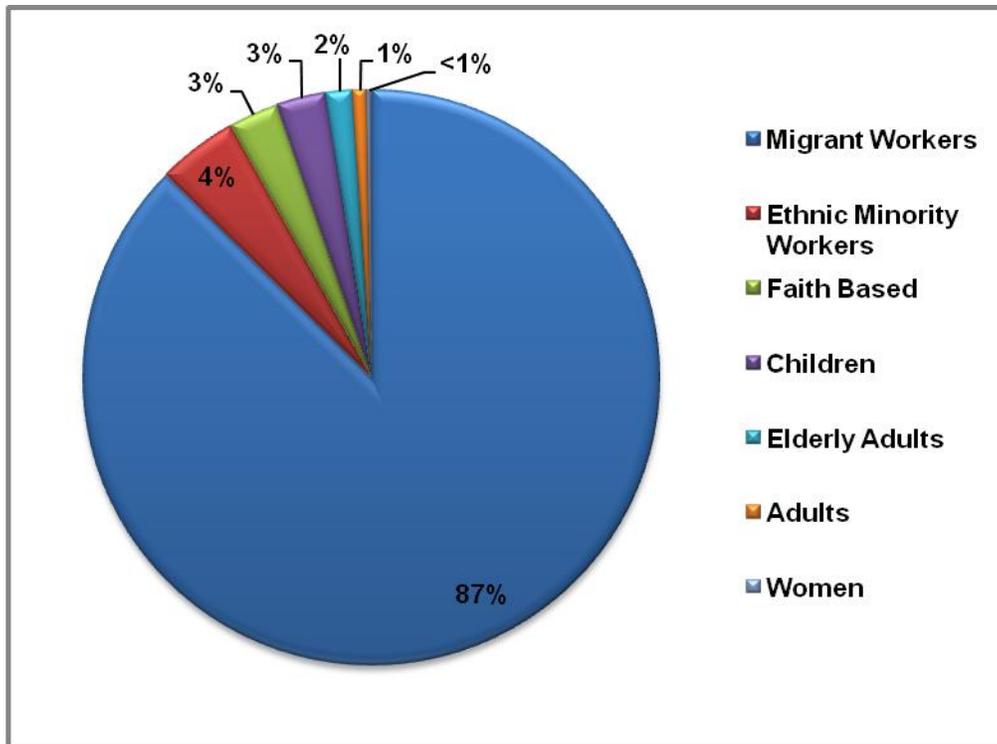


Figure 7. Vulnerable populations addressed by category 2007-2009

5. What products has the Center Initiative produced during the three years between 2007 and 2009?

Eight hundred and eighty two products were developed by Initiative personnel over the three year period. Table 10 illustrates the major categories of products by type; the largest of these categories was articles in professional journals 19.2 %, followed by manuscripts and reports, both of which help disseminate the research accomplished by Center personnel to colleagues and help add to the knowledge base related to occupational injury and disease in the AgFF sector.

A list of all products developed during FY 2009 can be found in the product appendix of this report. The products are indexed by type of product, such as training materials, information booklets etc. Those products which are available in a language other than English are identified and the Center where it was developed is also listed to enable contact with the project personnel.

Table 10. Center Initiative products 2007-2009 by type

Product	Frequency	Product Percentage
Article, Professional	169	19.2%
Manuscript/Reports	131	14.9%
PowerPoint Presentation	127	14.4%
Posters	92	10.4%
Article, Feature	59	6.7%
Research Instruments	54	6.1%
Booklets/Factsheets/Brochures	51	5.8%
Newsletters	38	4.3%
Abstracts	32	3.6%
Video/DVD/CD	30	3.4%
Website	25	2.8%
Books/Theses/Dissertations	25	2.8%
Curricular Materials	17	1.9%
Exhibit Materials	14	1.6%
Databases	13	1.5%
Analysis of Data	5	0.6%
Total product count	882	

6. What collaborative efforts have Center personnel undertaken during the last three fiscal years?

There has been increasing encouragement for the Initiative to work collaboratively with a variety of stakeholders in their efforts on behalf of the AgFF occupational categories. The fourth objective that NIOSH set for the Initiative recommends that Centers develop “linkages and communication” with other entities working in health and safety. This initial objective has been strengthened both by the work of the Sector council and by the National Academy of Science (NAS) evaluation of NIOSH programs. Strategic Goal 3 of NORA II is “Outreach, Partnerships, and communications: Move proven health and safety strategies into workplaces through the development of partnerships and collaborative efforts.” (NORA II, p.6). The report of the NAS began with the “ideal” AgFF research program. “Partnership and collaboration with stakeholder groups are integral to favorable change and improved outcomes” (NAS, 2008, p. 35).

As early as 1997, the ACE team recognized and began documenting partnership efforts as necessary to accomplishing and disseminating the results of our funded projects. As Table 11 illustrates that over the past three years, the Centers have established more than one thousand partnerships. Approximately 50 percent of these are represented by interdisciplinary work within or between Universities, health care

providers, between Center projects and Cooperative extension services. The breadth of these key relationships is also illustrated.

Table 11. Cumulative frequency of collaborations by type 2007-2009

Organizational Type	Frequency	Percentage
University academic department	170	14.2 %
Health Care Provider/Organization	168	14.0 %
Agricultural Centers (other than own)	124	10.5 %
Cooperative Extension	102	8.5 %
Governmental Agency (other)	91	7.7 %
University, academic research center	81	6.8 %
Agricultural Organizations	70	5.9 %
School(s)	65	5.4 %
University, institute or internal organization	52	4.4 %
Community Organization	48	4.0 %
NIOSH	38	3.3 %
Producer/Grower	30	2.6 %
Multiple types- non-specific	27	2.3 %
Agribusiness	24	2.0 %
Health Department	22	1.8 %
Equipment Dealer	16	1.3 %
Media	15	1.3 %
Research Organization	14	1.2 %
Labor/Employee Organization	13	1.1 %
Technical, Trade or Professional Association	9	.8 %
Agricultural Organizations (focus on children)	7	.6 %
Trade Association	4	.3 %
Insurance company	3	.2 %
Total	1193	100%

7. For what degrees and professional disciplines did the Center Initiative provide education in 2007-2009?

An area where the Center Initiative clearly responds to the needs related to agricultural/forestry/fishing occupational health and safety concerns is by providing education opportunities for multiple disciplines that can continue to provide research, outreach and services to this occupational sector. The advantage of multiple Centers in the Initiative is that each setting offers a unique set of disciplinary choices; each adding to the cumulative potential for the future of sector professional practice. Over the three

year period one hundred and twenty professional degrees and internships were provided by the Center Initiative.

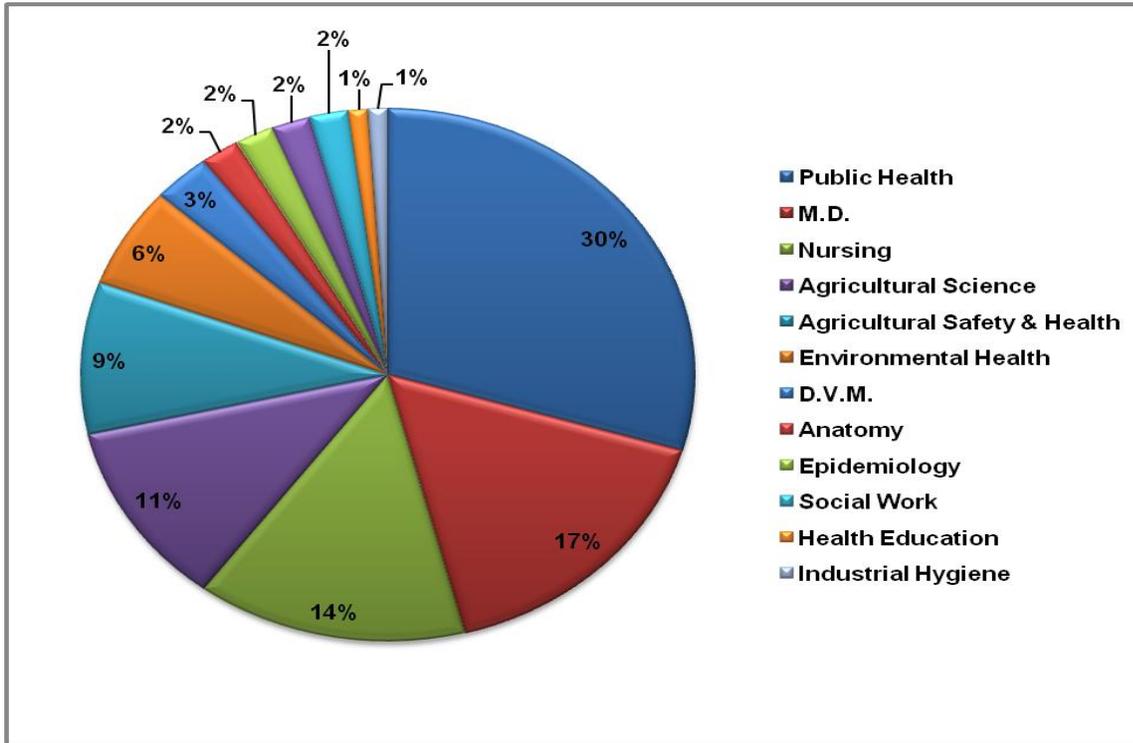


Figure 8. Cumulative professional education by percent in discipline 2007-2009

8. What was the reported monetary value leveraged by the Center Initiative (in dollars and in-kind support) between 2007 and 2009?

A total of \$2,022,347 dollars was leveraged by the Initiative over the three year period. Of this total, \$1,687,147 was in actual dollars and the remaining \$335,200 was received as in-kind support. As illustrated in Figure 9 the Centers have increased the amount of leveraged funding as they get further into the five year cooperative agreement.

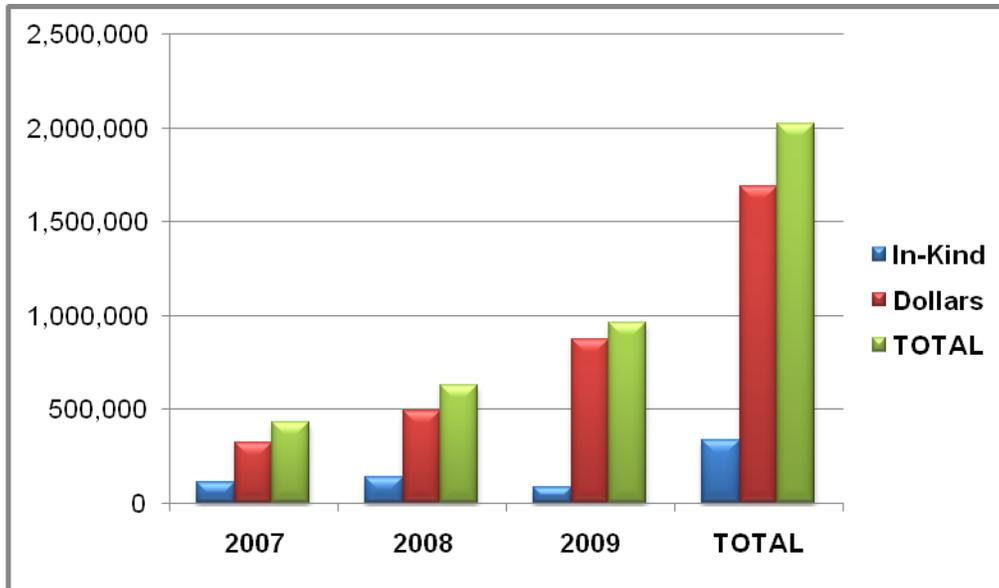


Figure 9. Dollars Leveraged by fiscal year and cumulative 2007-2009

9. In which states was the Center Initiative active between the years 2007-2009?

The Center Initiative was active in all 50 states and a number of foreign countries during the last three years. The location and states identified as the region of each Center helps make sure that the diversity of agricultural production across the United States is addressed. While there is some overlap in terms of agricultural commodities; the topography, climate and soil varies tremendously across the states, and impacts the selection of resources used in each region. Collaboration with researchers in other countries assists the Centers in developing innovative approaches by which we address and investigate health and safety in the United States. The experience of several Nordic countries related to the use of policy to require ROPS and the resulting drastic reduction in tractor roll-over fatalities is an example of such capacity.

10. What types of agriculture were addressed nationwide by Center projects during fiscal years 2007, 2008 and 2009?

Over the three year period, the largest percent of Initiative work was related to the production of field crops. These projects range from research and intervention about pesticide use to health and safety training of migrant and seasonal field workers. The second largest percent of Initiative projects (22%) reported they were addressing most types of agriculture; these include research such as that related to increasing the use of ROPS through social marketing, or education projects providing training for rural health care professionals related to agricultural safety and health in general. It is encouraging that the Initiative is responding to the expanded sector responsibilities, and although the projects are smaller in number, both forestry and fishing are now included.

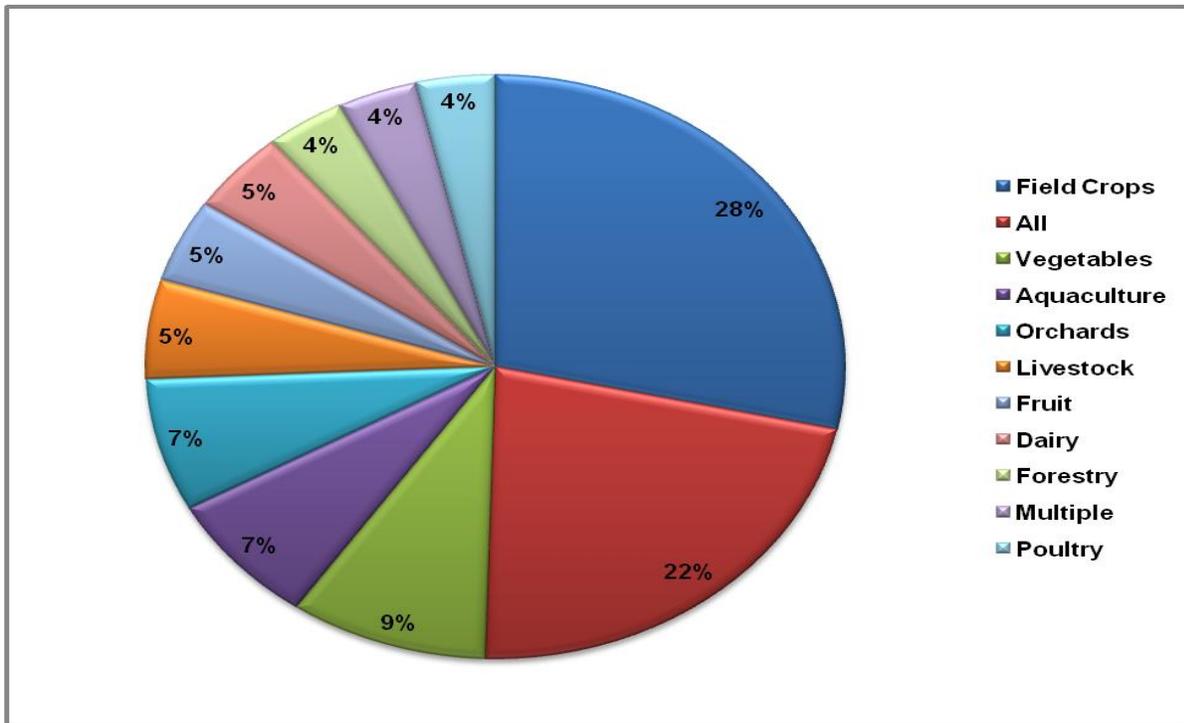


Figure 10. Types of agriculture addressed by Initiative Projects 2007-2009

11. What types of research-to-practice (*r2p*) activities were accomplished by Center personnel between fiscal years 2007-2009?

The research to practice category that is most reported by Center activity is “Intervention and Education” which is key to the transfer of knowledge from the Initiative to various target audiences. The category of “Field Use” appears to be increasing slightly as the fruits of Center research move into testing or actual application. As identified by the NORA Sector Council, surveillance activities remain minimal, as they were not specifically identified in the objectives set forth for the Centers by NIOSH in the 2006 proposal.

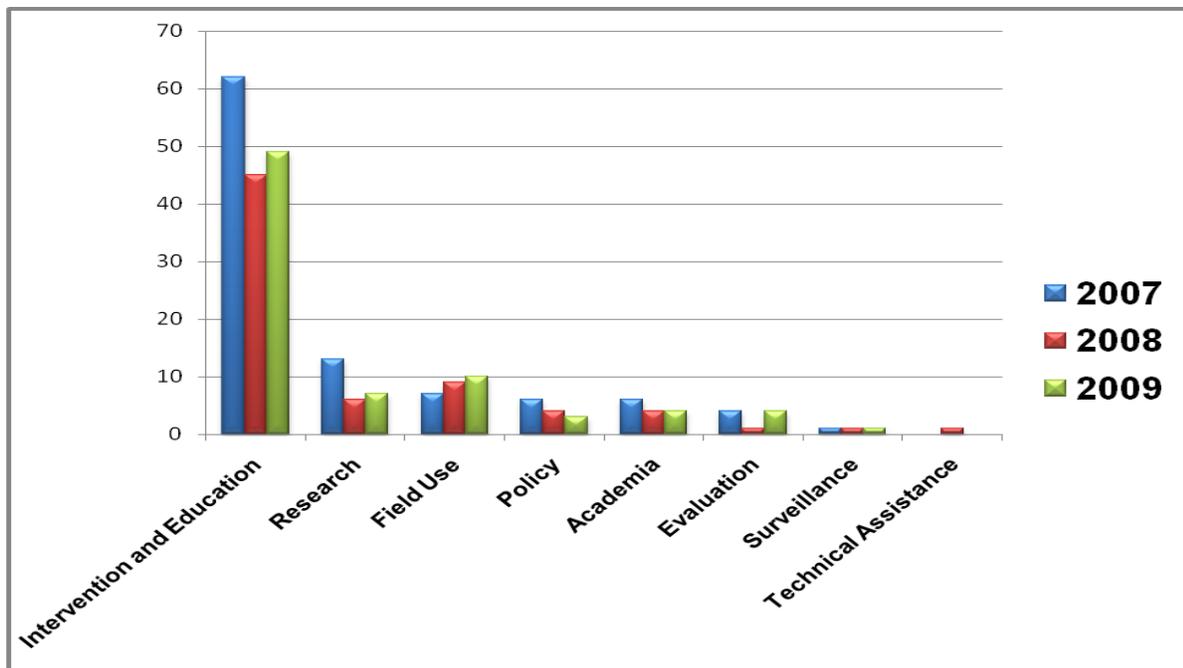


Figure 11. Research to practice categories identified by fiscal year.

Summary and Recommendations

Thanks to continued support for evaluation from NIOSH, the AgFF Centers have now completed five years of continuous program monitoring since 2004, the longest data collection period since the Center Initiative began. The results presented in this year's ACE Report, offer several ways to view the work of the Centers. An overview of Initiative work for fiscal year 2009 is provided, as well as an overview of the three years of work in the current funding cycle of the cooperative agreement.

The ACE team chose two additional ways to provide information to stakeholders on Center work in this year's report. First, by providing examples of "*r2p* Success Stories", one from each Center; and secondly by providing an overview of Center research projects utilizing the framework provided by NORA II. The latter illustrates both the breadth of Center Initiative activities as well as providing opportunities for Center personnel to learn more about what others are doing in similar topic areas. One of the hopes of the team is that this information may prove an impetus to working more collaboratively in certain areas as well as avoid unnecessary duplication of effort.

Over the years and despite some funding hiatus, the ACE team has had remarkable collaboration both in development of the approach to Center Initiative Evaluation, as well as in making the necessary modifications in variable definitions and data collection procedures. NIOSH has also played a very supportive collaborative role and has been very responsive to recommendations that have come from previous reports. Because of this responsiveness we have been able to:

- work together as a team since the fall of 2004,
- improve the usefulness of the ACE database to include both progress and year-end reports
- explore both cumulative and trend analysis potential
- experiment with various approaches to presenting overviews of Center Initiative work
- provide monetary support for each Center representative to the ACE team.

Each of these accomplishments we hope will provide examples of ways that program monitoring can be used to document the important work of the AgFF Center Initiative as it moves towards responding to a new PAR. The National Academy of Science review (2008) suggests that NIOSH pursue a "comprehensive program evaluation mechanism" (p. 197); the team would suggest that collaboration with the funded Centers should be part of that process in order to take advantage of the experience gained since the ACE project's inception in 1997.

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***r2p* Project Success Stories**

Center Success Stories of Research to Practice (*r2p*)

The Research to Practice concept was proposed by NIOSH administration in the early 2000s to promote the importance of the “supply chain of knowledge” (NAS, p. 124). The Agricultural Centers have the obligation to not only undertake research, but they also need to address the transfer of the knowledge gained to appropriate stakeholders in the production communities of agriculture, forestry and fishing. The ACE team with the assistance of NIOSH personnel developed measurement categories of this key variable to add to the database enabling Center’s to illustrate their *r2p* accomplishments related to their research activities. During the 2009 ACE team workshop it was decided that each Center would provide one example of a successful *r2p* activity that could be included as a new section in this year’s ACE report. There are eight categories of *r2p* defined, six of these are illustrated by the examples that follow. The knowledge transfer efforts based upon research illustrate not only the breadth of topics Initiative research is addressing, but also the variety of stakeholder groups targeted.

Project Title	<i>R2P</i> Category	Center
Building Capacity of Safety and Health Professionals	Academia	GPC
Commercial Dairy Farms in the High Plains Benefit from Ergonomic Analysis of Milking Process	Research	HIC
Preventing Tractor Overturn Injuries: The New York ROPS Retrofit Social Marketing Intervention	Intervention & Education	NEC
Fluorescent Tracer for Hands-on Pesticide Handler Training	Evaluation	PNC
Supporting a Distributed Research Infrastructure: A Web-based Online Data Collection System Supports <i>r2p</i> for Researchers and Instructors Involved in a Multi-Site NIOSH Grant	Intervention & Education	SEC
Navigation Simulation for Vietnamese Commercial Shrimp Fishermen	Technical Assistance	SWC
Reducing Occupational Risks in Dairies: Dairy Safety Training Guide	Field Use	WC



Great Plains Center for Agricultural Health

Educational / Translation project, Building Capacity of Safety and Health Professionals

The GPCAH research project, the *Keokuk County Rural Health Study* (KCRHS) which has followed approximately 1,000 rural Iowa families for over 15 years, has provided evidence of the association between rural life exposures and risk factors for respiratory disease, injuries, mental illness, and hearing loss. For example, findings show associations between increased asthma prevalence and agricultural exposures, such as raising swine. Likewise, hearing tests on participants ages 8-92 showed that nearly everyone (99%) had hearing thresholds significantly poorer than normal and that noise-induced hearing loss was evident even for young children. Similar findings included results indicating inconsistent use of personal protective equipment (among KCRHS farmers only 5% usually wore respirators, 12% wore hearing protectors, and 15% wore safety glasses when exposed to hazards). Overall the evidence demonstrates the need for interventions which would provide for the occupational health and safety needs of the agricultural work force and at the same time attempt to improve the safety culture within rural communities. The shortage of agricultural occupational health and safety professionals has threatened the implementation of interventions however.

BACKGROUND / SIGNIFICANCE

The GPCAH Educational/Translation project, *Building Capacity of Safety and Health Professionals*, has addressed this critical shortage of agricultural occupational health and safety researchers, program leaders and health care providers with the establishment and recent expansion of the Agricultural Health and Safety Certificate Training (AHS-CT) program, the development of a series of introductory lectures for health care professions students, and the support and establishment of AgriSafe Network Clinics. The AgriSafe Network of clinics, established in 1987, is the first and only comprehensive agricultural occupational health service delivery program in the U.S. Training through courses developed and taught by experts from the AHS-CT program is required for nurses, nurse practitioners, physicians and physician assistants interested in becoming AgriSafe providers.

During the past fiscal year (FY2009) the AHS-CT program has provided the 40 hour Agricultural Medicine course in Iowa, Illinois, and Vermont. In FY10 it will be offered in Wisconsin, Vermont, North Carolina, North Dakota, and Iowa. Enthusiasm for

the program was expressed recently by program participant and project leader Dr. Greg Cope, associate professor and campus coordinator for agromedicine at North Carolina State University; “This is the kind of program that we have envisioned all along for agromedicine in North Carolina,” said Cope. “We are excited to see it take shape at the community level.”

A major activity of the North Carolina project will be the course, “Agricultural Medicine: Occupational and Environmental Health for Rural Health Professionals,” held Nov. 30 - Dec. 4, 2010 in Greenville, N.C. Taught by experts from the University of Iowa, along with faculty and partners of the N.C. Agromedicine Institute, the course will address diagnosis, treatment and prevention of agricultural health conditions. It will be required for nurses, nurse practitioners, physicians and physician assistants interested in becoming AgriSafe providers.

Robin Tutor, interim director of the North Carolina Agromedicine Institute, says, “Right now, there is little if any agricultural occupational safety and health preparation for nurses, doctors and allied health professionals in North Carolina, We are excited to collaborate with Dr. Kelley Donham of the University of Iowa, a recognized expert in agricultural medicine, and Natalie Roy, executive director of the AgriSafe Network.”

This GPCAH Education/Translation project has been received with great enthusiasm among state collaborators nationwide. Several states have repeated the program. It is our hope that other states will have a similar successful experience and will want to continue offering the program.

RESULTS / r2p

Our research results have demonstrated evidence of need for interventions which would provide for the occupational health and safety needs of the agricultural work force. Implementation of interventions has been threatened however, by a shortage of trained agricultural occupational health and safety professionals. This GPCAH Education/Translation project provides a research to practice approach by training the agricultural occupational health and safety professionals – researchers, program leaders and health care providers critically needed to change the culture of healthcare provision and safety in rural communities nationwide.

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THE HIGH PLAINS INTERMOUNTAIN CENTER FOR AGRICULTURAL HEALTH & SAFETY

Commercial Dairy Farms in the High Plains Benefit from Ergonomic Analysis of Milking Process

Participating dairies in a research project funded by NIOSH and currently underway by HICAHS researchers, have already received beneficial practice suggestions to improve the milking routine thereby increasing milk production and milking practice efficiencies. Health and safety recommendations have also been made such as suggestions to wear eye protection and gloves when applying chemicals in the cow preparation process. Veterinarians, on the project, provide free consultations to owners and dairy workers to improve cow health and comfort, key to high milk production and reduced animal disease. The provision of immediate feedback on parlor performance for the dairy owners has led to continual access to the dairies.

BACKGROUND

A project funded by The National Institute for Occupational Safety and Health being undertaken at Colorado State University seeks to reduce the incidence of *musculoskeletal injuries among dairy workers*.

SIGNIFICANCE

As the U.S. dairy industry has moved to a more industrialized, mass production model, the numbers of workers involved has increased as have the occupational risk factors particularly related to the repetitive movements involved in milking and close proximity to large animals. The project addresses 3 NIOSH priorities through: reducing the number of unintentional injuries; improving the use of appropriate livestock-handling procedures; and reducing adverse safety and health events in migrant/seasonal farm workers. In addition the project incorporates a business friendly model that seeks to not only improve worker safety, but also increase operational efficiency, the bottom line to sustainability.

R2P

A primary aim of this project addresses the NIOSH research-to-practice (*r2p*) initiative: to move the results of research into successful methods of reducing occupational injuries and disease.

Aim 5. Identify safety interventions through active participatory partnerships with Dairy Operators.

What has been realized, through this and other HICAHS projects, is that *r2p* does not need to wait until research has been completed or a final product (in this case a safety intervention) is produced, but can become part of the research process itself.



ACCOMPLISHMENTS TO DATE

- Provision of immediate feedback to dairy owners re: parlor performance
- Provision of information to workers regarding ways to improve cow health
- Recommendations, based on observation, related to easily correctable health & safety issues

IN ADDITION THE FOLLOWING BENEFITS HAVE BEEN IDENTIFIED

- Establishment of relationships leads to access for further research
- Identification of future research needs
- Establishing HICAHS Ag Center as a trusted partner among dairy stakeholders

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NORTHEAST CENTER FOR AGRICULTURAL AND OCCUPATIONAL HEALTH

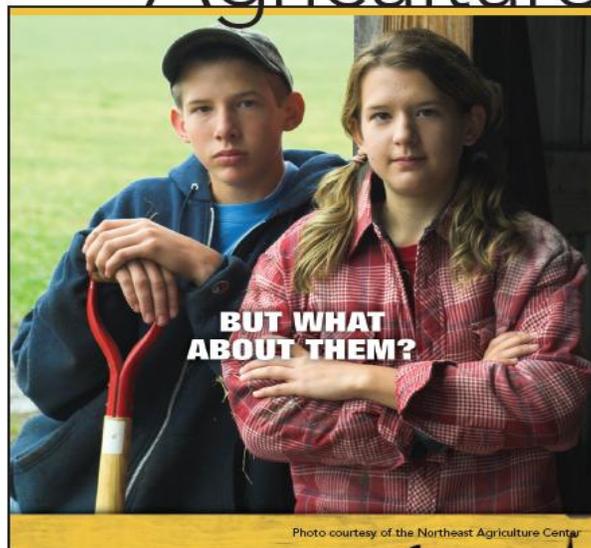
Preventing Tractor Overturn Injuries: The New York ROPS Retrofit Social Marketing Intervention

THE CHALLENGE

About one-third of fatalities in the agricultural sector result from tractor overturns, yet rollbars on tractors can minimize and prevent overturn injuries. Rollbars (also called Roll-over Protective Structures or rops) have been standard on tractors manufactured in the U.S. since 1985, but many older tractors without rops are still being used daily. Cost and cultural factors present barriers to retrofitting these older tractors.

NIOSH protecting workers in

Agriculture



IMPACT

In the six months following the NIOSH-funded Northeast Center for Agricultural and Occupational Health's (NEC) social marketing intervention, tractor dealers in the 5 targeted counties sold approximately ten times more rollbars than in the six months prior to the intervention. They also sold roughly eight times as many retrofits as dealers in comparison counties. 40% of farmers who received rebates, however, bought their rollbars directly from the manufacturer, making the dealer numbers a conservative estimate of the intervention's impact.

APPROACH

Researchers at NEC studied risk perceptions, barriers, and motivating factors to tractor retrofitting among farmers in New York State. The results guided a social marketing campaign that was rigorously evaluated by implementing different levels of intervention efforts around New York and Pennsylvania and then comparing retrofit sales across different campaign regions.



Ad A was created with social marketing techniques that identified protecting the next generation as an important issue for farmers. The ad was distributed through print media in 5 counties (marked in yellow on the map).

Ad B was distributed throughout the state in print media and at the farm show in Syracuse (marked in green on the map). It provides the information in a traditional format.

RESULTS

NEC'S campaign included a hotline to make retrofitting more convenient and multimedia communications that emphasized advantages of retrofitting. Farmers were offered a 70% rebate on the cost of the rollbar, funded by the New York State Legislature. In the first year, more than 1000 farmers expressed interest, 259 completed the retrofit/rebate process, 80 additional rebates were designated and another 404 were being processed pending additional funding.

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PACIFIC NORTHWEST AGRICULTURAL SAFETY AND HEALTH CENTER

Fluorescent Tracer for Hands-on Pesticide Handler Training

The Fluorescent Tracer (FT) technique was first used in research to assess dermal pesticide exposure and has evolved into an effective training tool for hands-on pesticide safety training. The dramatic visualization of the FT shows workers where contamination occurs and helps them evaluate their practices and protective equipment. Quick demos and hands-on activities make learning fun and memorable - seeing is believing! FT can be used by first time trainers or integrated into an existing hands-on training program – it has been a great asset to pesticide safety educators throughout the United States and internationally.



Current FT resources are available through the Fluorescent Tracer Website, <http://depts.washington.edu/pnash/FT.php>:

- FT Manual (Available in Spanish)
- FT Instructional Video
- FT Kit, with everything you need to conduct 200 group trainings

SIGNIFICANCE (CHALLENGE)

The state of knowledge on pesticide exposure and health effects is not yet complete. Studies are developing a picture of what the problems and solutions to pesticides might be, but uncertainty among scientists and the lack of safer alternative products makes for difficult decisions on how to work safely. From a 2005 survey of Washington state licensed pesticide applicators, we learned that 60% of respondents wanted further information on pesticides and their health effects. From a farmworker town hall meeting in 2006, pesticides ranked as a top concern. At this meeting it was expressed that what was needed was “Information; about what to do coming home from work. Like after working with pesticides, keep away from the home, like remove the clothes before entering home.”

Likewise, there has been a lack of evidence to support the benefit of pesticide safety hands-on training. Many pesticide safety program providers understand that hands-on pesticide training is more effective than other educational measures at increasing knowledge and awareness on pesticide safety practices. Yet there has been little evidence to support this belief.

What has been established is the importance of the dermal route of pesticide exposure and that there is an opportunity to communicate these risks and partner



with agricultural workers and employers to evaluate their practices and minimize exposures. The FT Hands-on Training is a proven educational tool that is seeing increased use on farms and in the classroom.

R2P

The FT technique has moved from a research tool to a hands-on training technique that has been adopted by educators and the pesticide handlers. The FT training is active in pesticide safety and Integrated Pest Management programs in:

- The United States: Washington state, Oregon, Montana, Pennsylvania
- Internationally: Cambodia, Vietnam, Equador

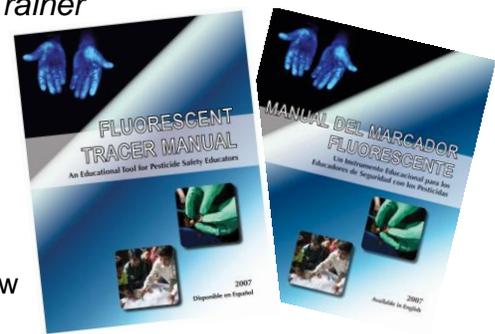
Also as a research tool, it continues to be used widely.

“This is one of the most powerful training tools that I have encountered, because the message is clear and it is shocking.” – Pesticide Safety Trainer

ACCOMPLISHMENTS

Fluorescent Tracer Resources

- **Website.** <http://depts.washington.edu/pnash/FT.php>
- **Manual.** A compilation of FT training components for pesticide safety educators. This FT Manual builds on existing model hands on training programs, and includes new FT quick demonstrations as well as information on how to obtain supplies. It is available in Spanish and English.
- **Video.** This video instructs on preparing FT for demonstrations, and provides tips for preparation of training. It also has a section that walks the viewer through the lessons learned during an actual airblast application that included tracer mixed in the tank. This video great for instructors and applicators alike. This DVD is available in the FT Kit.
- **Tool Kit.** The FT Educational Tool Kit provides everything you need to conduct a training.



FLUORESCENT TRACER OUTCOMES

- Demonstrated effectiveness of FT hands-on training in: improving knowledge and awareness in workers, meeting the needs of pesticide educators, and assisting workers identify contamination sources and solutions.
- Incorporated into the Washington State Department of Agriculture’s hands-on training curriculum, training approx. 200 handlers annually.
- Provided to national and international pesticide safety educators in through direct requests for the manual (247 English, and 115 Spanish) and over 20 presentations and demonstration workshops.
- The PNASH Center is conducting continuous evaluation and development of the FT hands on training resources.

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SOUTHEAST CENTER FOR AGRICULTURAL HEALTH AND INJURY PREVENTION

Supporting a Distributed Research Infrastructure: A Web-based Online Data Collection System Supports *r2p* for Researchers and Instructors Involved in a Multi-Site NIOSH Grant

The Economics of Preventing Injuries to Adolescent and Adult Farmers (EOP) is a 4-year, NIOSH-funded project targeting four types of injury events that are prevalent among adolescents and adults who live and/or work on farms: (1) crush injuries to operators when tractors without rollover protective structures (ROPS) overturn, (2) deadly collisions between farm tractors and other motor vehicles on public roadways, (3) traumatic brain injuries to horseback and ATV riders without helmets, and (4) hearing loss to individuals with long-term exposure to high frequencies and loud noises.

The Economics of Prevention uses narrative simulation exercises and computerized cost analysis tools to help the next generation of high school teachers and agricultural Extension agents understand the individual and social costs of injury. It is anticipated that, in turn, these professionals will employ EOP methods and materials to reach at-risk adolescents and adult farmers where they are accessible: in their classrooms and community activities.

SIGNIFICANCE

The EOP project has demonstrated a prompt and virtually seamless translation of research to practice (*r2p*):

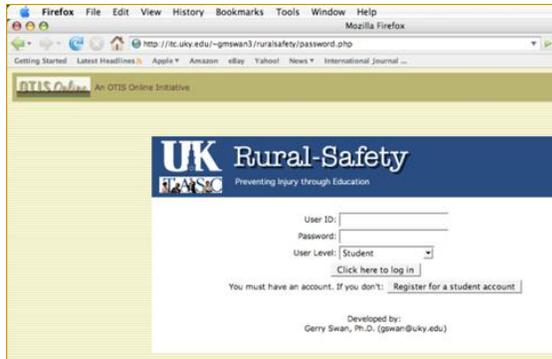
- For researchers, the innovative online data collection tool
 - Provides built-in compliance with procedures for the protection of human subjects;
 - Enables timely access to data that can be used for instruction and surveillance aims;
 - Ensures accurate, efficient data transfer for analysis and evaluation.
- For teachers, EOP methods and materials incorporate readily into core content requirements for economics, social studies, and practical living curricula.
- At a time of high-stakes performance testing in schools and data driven decision-making, immediate access to student responses and scores allows educators to quickly evaluate instruction and progress.
- For teachers, students, and farmers alike, EOP methods and materials make instruction about risk/hazard reduction and injury prevention personally relevant and meaningful.



The EOP data collection system employs a relational database constructed in MySQL and PHP hosted on a secure server at the University of Kentucky. Educators can examine students' responses via online access to the system and make immediate use of this data in classroom instruction. An ag safety educator, for example, may ascertain quickly who in class lives or works on a farm, who has been involved in a tractor overturn, or who has suffered financial consequences from an agricultural injury. Instruction can then be tailored accordingly.

Connecting students' prior experience with new insights regarding the cost-effectiveness of prevention makes the course content personally relevant and compelling. The tool also tracks users' performance and aggregates these data for self-assessment and academic grading purposes.

The EOP online data collection system provides built-in compliance with human



subjects' procedures: The computer-assigned student ID preserves subject anonymity, and the system does not report data for analysis if a student's informed consent is not documented. Data transfer is efficient and accurate, accomplished through a point-and-click protocol that moves data from the online database to EPIData, Excel, SPSS, or other analysis packages; i.e., data that once required months of compilation and checking by hand can now be entered in a few simple steps.

Measures can be designed so that exposure data and surveillance are embedded in the simulation exercises (Cole, 1994). When administered to large representative samples of at-risk populations, the demographic measures and simulation exercises yield aggregate data that can provide robust estimates of subjects' exposure to specific injury and illness hazards; subjects' knowledge related to hazard recognition and injury prevention; and the prevalence of close calls, minor, serious, and fatal injury events – data that are otherwise difficult to obtain.

ACCOMPLISHMENTS

- **Enhanced data accessibility and data sharing:** The online data collection tool enables immediate access to data by educators and researchers while preserving subject confidentiality.
- **Stakeholder Partnerships:** University of Florida College of Agriculture, Mississippi State University Department of Agricultural Economics, Kentucky Council for the Social Studies, National Association of Agricultural Educators (NAAE)
- **Narrative Simulation Exercises & Computerized Cost Analysis Tools:** *No Way to Meet a Neighbor, Kayles' Difficult Decisions, Heather on Horseback, Sound Advice through the Years, Brad's Last Ride*
- **Web site:** <http://eoonline.org>

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SOUTHWEST CENTER FOR AGRICULTURAL HEALTH INJURY PREVENTION AND EDUCATION

Navigation Simulation for Vietnamese Commercial Shrimp Fishermen

The commercial fishing trades are among the most dangerous jobs in the world with one of the highest occupational fatality rates. In 2007, commercial fishing had an annual fatality rate 28 times greater than the rate of all U.S. workers. Approximately 80,000 fishing vessels employ 80,000-160,000 commercial fishermen in the United States. A U.S. Coast Guard (USCG) review of commercial fishing fatalities between 1994-2004 found that 641 commercial fishermen died while fishing in the U.S and more than 100 vessels were lost each year. These lost-vessel events resulted in more than half of all fatalities.

The USCG District 8 (Gulf of Mexico) has the second highest level of vessel loss and crew fatalities in commercial fishermen. Knowledge of maritime navigation rules and preparation of commercial fishermen for emergencies aboard vessel can enhance crew survival. Effectiveness of safety training may be influenced by cultural factors. A cross-sectional survey of this work group near the Port of Galveston, Texas in 2004 revealed a majority of the commercial fishermen and 95% of the shrimp fishermen to be Asian, predominantly Vietnamese and 53.6% claimed to speak little or no English. Over 67% of those surveyed preferred either hands-on training or a combination of hands-on training and classroom instruction.

SIMULATION DESCRIPTION

The USCG District 8 has reported multiple navigational incidents resulting from failure to properly signal or communicate ship-to-ship. Specific skill deficits identified by stakeholders for training included signaling with the horn and executing a mayday call. Reported obstacles have been lack of knowledge and language barriers, including training conducted in English for non-English speaking workers.

Guided by an advisory group of stakeholders and survey responses, a half-day training program was developed and conducted in three coastal cities. The training included both classroom instruction and hands-on demonstrations, all conducted in Vietnamese or with a Vietnamese interpreter. PowerPoint presentations were created and translated into Vietnamese for the classroom instruction. For additional training programs, a model was built replicating a vessel's steering wheel, speed control, horn blast, and radio, in order to simulate the bridge of a fishing vessel. Professional video/audio footage of a fishing vessel and a freight liner was incorporated into the new model. Using this footage, vessel captains are instructed by an experienced mariner in Vietnamese how to listen to and signal approaching vessels with the horn. Using a tip card with English and Vietnamese instructions, they are also able to practice a mayday call.



R2P1 SIGNIFICANCE

This hands-on experience provided in Vietnamese by experienced instructors is responsive to findings of the early project survey and focus groups. It illustrates the importance of securing stakeholder input and considering cultural factors in the design of workplace safety training interventions with this group.

Products:

- Vietnamese Presentations

Navigation safety PowerPoint presentations were created and translated into Vietnamese. The topics included information about radio use, ship to ship communications with the horn, danger signals, meeting another vessel, overtaking another vessel. These presentations were delivered at Galveston, TX, Palacios, TX and Abbeville, LA.

- Vietnamese Tip Cards

Vietnamese/English bilingual tip cards were created to capture the most important safety information including navigation rules of the road and mayday. The tip cards were color coded and laminated for easy use and durability. Each training participant received a set of tip cards for their vessel.

- Professional Navigation Video

Professional video of a shrimp fishing vessel and a freight liner in the ship channel was captured for use in the navigation training module.

- Quasi-Simulation Training Module

A quasi-simulation training module was built by one of the project partners to help the shrimp fishermen achieve a more realistic training experience. The video mentioned above plays on the screen and trainees use the horn and the steering wheel to react to the navigational situation. The module also includes a radio to allow the participants to practice mayday calls in English.



OUTCOMES

This training has been well received by Vietnamese shrimp fishermen along the Texas and Louisiana Gulf Coast and has served as an important survey recruitment tool during a second phase of the project. From 2004-2008, 387 commercial fishermen have been trained (including repeats) at 6 events. In addition, several things have been recognized and observations made:

- A gap in knowledge regarding use of navigational communication;
- Language is a barrier to use of radio communication;
- Increased acceptance of the USCG as partners in safety; and
- Workers have increasingly recognized their roles and contribution to safety.

*“I have been fishing for 20
years and I never knew what
the horns meant.”*

shrimp fisherman at training
in Abbeville, LA



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WESTERN CENTER FOR AGRICULTURAL HEALTH AND SAFETY AT UNIVERSITY OF CALIFORNIA DAVIS

Are you OK
Pablo?
You look pale!!



Reducing Occupational Risks in Dairies: Dairy Safety Training Guide

BACKGROUND

Dairy industry dramatic changes in recent years and the undeniable forces of the economy have pushed increased efficiency in animal production. The concentration of animals is increasing and there has been a decrease in the number of workers employed. Increasing the number of animals per worker may increase workers' exposure to health risks and injuries. Project PI Dr. Frank Mitloehner states that the main causes of workers' injuries in concentrated animal operations are machinery and animal-related accidents, including animal kicks and bites and workers being pinned between animals and a fixed object. The number of inexperienced dairy workers today is a widespread and alarming situation.

APPROACH / SIGNIFICANCE

WCAHS Education and Outreach Specialist, Teresa Andrews, MS, after careful review of Dr. Mitloehner's research findings is creating materials for dairy owners and managers that will include tip sheets on the various hazards, suggestions on how employers can involve their employees in health and safety promotion efforts, and a photo-novella addressing specific occupational hazards dairy workers face which employers can use to teach their employees important safety information and skills. The training guide addresses the following topics: safe moving of animals; identifying hazards, reducing hazards, machinery safety, and animal safety and planning for emergencies. The educational package, designed to be used by owners and managers, contains step by step instructions for conducting five training sessions and background information and resources. The training methods used in the guide are participatory and based on the principles of adult education, including case studies, guided discussions, a photo-novella and a puzzle. For years, participatory methods have been used to successfully increase awareness about diverse health issues among adults with limited literacy levels.

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Initiative Research Projects by NORA Strategic Goals

This final section of the ACE Report for fiscal year 2009 provides an overview of Initiative research projects using the framework provided by the National Agriculture, forestry and Fishing Agenda section of the National Occupational Research Agenda (NORA). This second version of NORA was released in December of 2008 and the ACE team revised the database to reflect the move from NORA I to NORA II. All projects are now reported by the Strategic Goals and Intermediate Goals developed by the sector council. The ACE team suggested that it might be useful to develop a section of the report that illustrated the work of each of the Centers by these goals in order to facilitate the potential for collaboration as well as to indicate areas for building upon previous work. It is encouraging that this overview illustrates that the Centers have adapted to a broader occupational responsibility with projects illustrating the expansion of work into both forestry and fishing.

NORA Goal

Strategic Goal 1 – Surveillance -Improve surveillance within the Agriculture, Forestry, and Fishing Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupation hazards; and worker populations at risk of adverse health outcomes.

Center Project Title

SWC	ACE Team Collaboration and Data Collection
SWC	Worker Team Collaboration and Data Collection
SWC	Migrant Adolescent Health Research Study
SWC	Assessment of Pesticide Exposure Prevention Programs in the Border Region of NM
SWC	Worklife Assessment of Agricultural Aviators
GPC	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury
NEC	Community Collaboration for Farmworker Health
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children

Intermediate Goal 1.1 - Improve national and state-level illness, injury, hazard, and exposure surveillance by utilizing existing data systems or creating new databases to identify injuries, illnesses, hazards, and exposures within the AgFF sector.

SWC	Assessment of Pesticide Exposure Prevention Programs in the Border Region of NM
SWC	Migrant Adolescent Health Research Study
SWC	Worklife Assessment of Agricultural Aviators
WSC	Respiratory health and Exposures on Large Californian Dairies
NEC	Statewide Surveillance of New York State Farm Injuries
SEC	Poison center Surveillance of Agricultural Poisonings

NORA Goal

Intermediate Goal 1.2 - Improve worker demographic information at the national and state level by enhancing existing employment demographic data or creating new systems to better characterize the workforce within each AgFF sub-sector.

Strategic Goal 2 – Vulnerable Workers - Reduce deleterious health and safety outcomes in workers more susceptible to injury or illness due to circumstances limiting options for safeguarding their own safety and health.

Intermediate Goal 2.1 - Define and indentify “vulnerable workers” in each sector – agriculture, forestry and fishing.

Intermediate Goal 2.2 - Identify the deleterious health and safety outcomes of vulnerable workers in each sector – agriculture, forestry and fishing.

Center Project Title

SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Worklife Assessment of Agricultural Aviators
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children
SWC	Bio-Cultural Assessment of Perceptions of Pesticide Exposure Among Mexican Immigrant Farmworkers
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Promoviendo Farmworker Safety
SWC	Model Farmers Dissemination Project
SWC	Migrant Adolescent Health Research Study
SWC	Developing and testing Interactive CD Health and Safety Curricula for 4H Youth
SWC	Assessment of Pesticide Exposure Prevention Programs in the Border Region of NM
GPC	Keokuk County Rural Health Study: The epidemiology of Agricultural Disease & Injury
NEC	Community Collaboration for Farmworker Health and Safety Project: Assessing the Capacity and Needs Within Maine’s Maine's Broccoli Harvest
NEC	Visual Impairment and Eye Symptoms in Latino Farmworkers
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Engaging High School Students in Activities to Prevent Tractor-Related Injuries (Stakeholder’s Project Supplemental)
SEC	Nurse Agricultural Education Project
SEC	Pesticide Biomonitoring in Florida Agricultural Workers
SEC	Kentucky Migrant Farmworkers Outreach: Kentucky Children’s health Insurance Program (KCHIP)
SEC	Sustained Work Indicators of Older Farmers
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Migrant Adolescent Health Research Study
SEC	Proyecto de Salud de los Trabajadores del Campo: Latino Farmworker Health Project

NORA Goal

Intermediate Goal 2.3 - Improve data collection and existing databases to provide information on safety and health disparities among vulnerable workers.

Intermediate Goal 2.4 - Use innovative and proven communication, education, training, and marketing techniques to tailor workplace safety and health programs to be responsive to the unique needs of vulnerable workers.

Strategic Goal 3 – Outreach, Communications and Partnerships

- Move proven health and safety strategies into agricultural, forestry and fishing workplaces through the development of partnerships and collaborative efforts.

Center	Project Title
SWC	Bio-Cultural Assessment of Perceptions of Pesticide Exposure Among Mexican Immigrant Farmworkers
SWC	Migrant Adolescent Health Research Study
SWC	Assessment of Pesticide Exposure Prevention Programs in the Border Region of NM
PNC	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers
SEC	NIOSH Agricultural Disease and Injury Research, Education and Prevention Centers: Agricultural Centers Evaluators (ACE) Multisite Evaluation Project - sub award through CSU-HICAHS
SEC	Proyecto de Salud de los Trabajadores del Campo: Latino Farmworker Health Project
SEC	Poison Center Surveillance of Agricultural Poisonings
SWC	Promoviendo Farmworker Safety
SWC	Model Farmers Dissemination Project
SWC	Developing and Testing Interactive CD Health and Safety Curricula for 4H Youth
HIC	Developing and Testing Interactive CD Health and Safety Curricula for 4H Youth
NEC	Reducing Occupation Injuries and Illnesses in Migrant and Seasonal Tobacco Farmworkers through Coalition of a Community Health Program and a Research Team
NEC	Task based Assessment of Occupation Noise Exposures in Migrant and Seasonal Agricultural Workers
NEC	Safety Training Tools for Vermont Dairy Producers
PNC	Fluorescent Tracer Component for Hands-on Pesticide Handler Training
PNC	Pilot 7: Responding to Uncertain Results in Research: A pilot study of pesticide handlers responses to PON1 status
	NIOSH Agricultural Disease and Injury Research, Education and Prevention Centers: Agricultural Centers Evaluators (ACE) Multisite Evaluation Project - sub award through CSU-HICAHS
SEC	Developing and Testing Interactive Agricultural Health and Safety Curricula for 4H Youth
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Promoviendo Farmworker Safety
SWC	Model Farmers Dissemination Project
SWC	Worklife Assessment of Agricultural Aviators
NEC	Community Collaboration for Farmworker Health and Safety Project: Assessing the Capacity and Needs Within Maine's Maine's Broccoli Harvest
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children

NORA Goal

Intermediate Goal 3. 1 - Form collaborative efforts with key stakeholders to: 1) biennially assess current and emerging major occupational health and safety concerns and solutions; and 2) prioritize interventions for implementation.

Intermediate Goal 3. 2 - Identify practical and proven occupational safety and health interventions, then encourage new studies to meet needs where proven strategies do not exist.

Intermediate Goal 3. 3 - Use innovative and proven communication, education and social marketing techniques to influence knowledge, attitudes and practices of agricultural workers, loggers and commercial fishermen.

Center	Project Title
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
NEC	Reducing Occupation Injuries and Illnesses in Migrant and Seasonal Tobacco Farmworkers through Coalition of a Community Health Program and a Research Team
PNC	Community Health and Intervention with Yakima Agricultural Workers
PNC	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures
SEC	Partnering with Stakeholders for Prevention
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Promoviendo Farmworker Safety
SWC	Model Farmers Dissemination Project
HIC	ACE Project
PNC	Community Health and Intervention with Yakima Agricultural Workers
PNC	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures
PNC	Education 1: Introducing a Cholinesterase Test Kit into Clinical Practice
SEC	NIOSH Agricultural Disease and Injury Research, Education and Prevention Centers: Agricultural Centers Evaluators (ACE) Multisite Evaluation Project - sub award through CSU-HICAHS
SEC	Developing a Smart ROPS Decision-Making Guide
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Promoviendo Farmworker Safety
HIC	Enhancing Translation and Dissemination through Agricultural Partnership
NEC	Safety Training Tools for Vermont Dairy Producers
PNC	Community Health and Intervention with Yakima Agricultural Workers
PNC	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers
PNC	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures

NORA Goal

Intermediate Goal 3. 3 - Use innovative and proven communication, education and social marketing techniques to influence knowledge, attitudes and practices of agricultural workers, loggers and commercial fishermen.

Intermediate Goal 3. 4 - Use innovative educational techniques and certification programs to improve the safety practices of agricultural workers, loggers and commercial fishermen.

Strategic Goal 4 – Agriculture Safety - Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of production agriculture and support activities.

Center Project Title

PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
PNC	Pilot 7: Responding to Uncertain Results in Research: A pilot study of pesticide handlers responses to PON1 Status
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Engaging High School Students in Activities to Prevent Tractor-Related Injuries (Stakeholder's Project Supplemental)
SEC	TSI: Tractor Safety Initiative: Designing Community-based Social marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers
SEC	Developing and Testing Interactive Agricultural Health and Safety Curricula for 4H Youth
SEC	Refinement and Enhancement of Agricultural Safety Curricula for Children (REACCH)
SEC	Kentucky Migrant Farmworkers Outreach: Kentucky Children's Health Insurance Program (KCHIP)
SWC	Worklife Assessment of Agricultural Aviators
GPC	Building Capacity of Health and Safety Professionals
PNC	Fluorescent Tracer Component for Hands-on Pesticide Handler Training
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
SEC	Teaching Public Health Students about Agricultural Safety and Health
SEC	Nurse Agricultural Education Project
SEC	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers
SEC	Agricultural Safety and Health Training for Public Health Graduate Students
GPC	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury
SWC	Model Farmers Dissemination Project
NEC	Visual Impairment and Eye Symptoms in Latino Farmworkers
NEC	Safety Training Tools for Vermont Dairy Producers
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Nurse Agricultural Education Project

NORA Goal

Intermediate Goal 4.1 - Reduce number of fatalities due to overturns of tractors in agricultural by 50%, through the use of Roll-Over Protective Structures or similar technologies, by 2018.

Intermediate Goal 4.2 - Reduce number and rate of fatalities in production agriculture and support activities due to runovers by agricultural field and farmstead machinery by 50% by 2018.

Intermediate Goal 4.3 - Reduce the number and rate of fatalities in production agriculture and support activities involving agricultural field and farmstead equipment, not covered in 4.1 and 4.2 by 25% by 2018.

Intermediate Goal 4.4 - Reduce the number rate and severity of non-fatal injuries (OSHA recordable type) in production agriculture and support activities involving agricultural field and farmstead equipment by 25% by 2018.

Center	Project Title
HIC	TSI – Ag Center Tractor Initiative
NEC	The Social Marketing of Tractor Rollover Protective Structures in New York
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
SEC	Engaging High School Students in Activities to Prevent Tractor-Related Injuries (Stakeholder's Project Supplemental)
SEC	TSI: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
SEC	TSI: Tractor Safety Initiative: Designing Community-based Social marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers
SEC	TSI: National Agricultural Tractor Safety Initiative
SEC	Developing a Smart ROPS Decision-Making Guide
NEC	The Social Marketing of Tractor Rollover Protective Structures in New York
NEC	A Bilingual Skid Steer Loader Safety training Tool for Vermont dairy Producers
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
SEC	TSI: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
NEC	The Social Marketing of Tractor Rollover Protective Structures in New York
NEC	A Bilingual Skid Steer Loader Safety training Tool for Vermont dairy Producers
NEC	Research to Practice for Safe Entry into Confine-Space Manure Storages
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
SEC	Characteristics of ALL-Terrain Vehicles and Their Operators on Kentucky Farms (2007-2009 Feasibility Study)
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
SEC	TSI: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
SEC	TSI: Tractor Safety Initiative: Designing Community-based Social marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers
SEC	Characteristics of ALL-Terrain Vehicles and Their Operators on Kentucky Farms (2007-2009 Feasibility Study)

NORA Goal

Intermediate Goal 4.5 - Reduce the number, rate and severity of non-fatal injuries (OSHA recordable type) and the number and rate of fatalities in production agriculture and support activities not covered in 4.1, 4.2, 4.3 and 4.4 by 25% by 2018.

Strategic Goal 5 – Agriculture Health - Improve the health and well-being of agricultural workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.

Intermediate Goal 5.1 - Reduce the incidence and prevalence of musculoskeletal disorders (MSD) associated with work practices and production agriculture.

Intermediate Goal 5.2 - Reduce acute and chronic respiratory disease caused, or exacerbated by, agricultural exposures including asthma, chronic obstructive pulmonary disease, and interstitial and infectious diseases of the respiratory system.

Intermediate Goal 5.3 - Reduce acute and chronic illnesses associated with exposure to pesticides and other agrochemicals.

Center Project Title

SWC	Model Farmers Dissemination Project
NEC	Assessing Hearing hazards in Farm Youth
NEC	Characterizing WMSD's through Direct Postural Measurements in a Nursery Population
PNC	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures
GPC	Keokuk County Rural Health Study: The epidemiology of Agricultural Disease & Injury
NEC	Visual Impairment and Eye Symptoms in Latino Farmworkers
NEC	Safety Training Tools for Vermont Dairy Producers
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Nurse Agricultural Education Project
HIC	Injury Risk Analysis in Large-Herd Dairy Parlors
NEC	Pilot Testing Direct Postural Measurement Instrumentation in a Nursery Population
NEC	Horticulture Ergonomics and Safety Training Program
NEC	Characterizing WMSD's through Direct Postural Measurements in a Nursery Population
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research
GPC	Determinants of Gas and Dust Exposures Among Swine Workers
HIC	Prospective Study of occupational Lung Disease and Endotoxin Exposure in Naïve (new) Dairy Workers
NEC	Occupational Risk of Infection Among Poultry Workers
NEC	Assessment of Occupational Respiratory Exposure to Human Pathogens in Airborne Dust Among Workers of a Large Community Cattle Farm on Eastern Shore of Maryland
NEC	Increasing the Use of Personal Protective Equipment for Reducing Occupational Eye Injuries and Preventing Noise-Induced Hearing Loss among Workers in U.S.
WSC	Rapid Assays for Human and Environmental Exposure Assessment
NEC	Assessing Hearing hazards in Farm Youth
PNC	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers
PNC	Research 3: Enhancements to Cholinesterase Monitoring: Oxime Reactivation & OP – ChE Adducts
PNC	Education 1: Introducing a Cholinesterase Test Kit into Clinical Practice
PNC	Pilot 3: Inhibition of Cholinestrase by Pharmacological and Dietary Agents
PNC	Pilot 8: Investigation of the Apparent Discrepancy between Observed Cholinestrase Depression among Pesticide handlers

NORA Goal**Center Project Title**

SEC Linkage of Atrazine Exposure and Birth Data in Kentucky: Assessment of Data Sources and Needs (2008-2009 Feasibility Study)

SEC Pesticide Biomonitoring in Florida Agricultural Workers

Intermediate Goal 5.4 - Reduce illness and disease due to environmental and infectious exposures in agriculture such as ultraviolet radiation, heat and cold, noise and zoonoses.

NEC Assessing Hearing Hazards in Farm Youth

NEC Assessing the Noise-Induce Hearing Loss of Maine Potato Farmers

NEC Assessment of Occupational Respiratory Exposure to Human Pathogens in Airborne Dust Among Workers of a large Community Cattle Farm on Eastern Shore of Maryland

NEC Task based Assessment of Occupation Noise Exposures in Migrant and Seasonal Agricultural Workers

PNC Research 5: Assessment of Job-related Exposures for Diarrheal Illness in Farmworker Families

Strategic Goal 6 – Forestry Safety – Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of forestry

Intermediate Goal 6.1 – Reduce logging-related deaths and traumatic injuries by 50% by 2018, through collection and analysis of injury data and evidence-based safety improvements

PNC Pilot 4: Point-of-view Video Analysis of the Impact of a Faller Safety training Program

PNC Pilot 5: Safety and Health of Immigrant Forest workers on the Olympic Peninsula

SEC An Analysis of Timber Harvesting Injuries and Prevention mechanisms in the Southeaster US, 1996-2006

Strategic Goal 8 – Fishing Safety - Reduce the number, rate and severity of traumatic injuries (including deaths) involving hazards of commercial fishing.

SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast

PNC Pilot 1: Skills Retention in Fishing Safety Training

PNC Pilot 6: Further Skills Retention in Commercial Fishing Safety Training

SEC Aquaculture Safety and Health

Intermediate Goal 8.1 - Reduce the vessel sinking and fatality rate due to vessel sinking by 50% by 2018.

SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast

Strategic Goal 9 – Fishing Health - To improve the health of commercial fishermen by reducing occupation causes or contributing factors to illness and disease.

SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast

SWC Risk Factors for Musculoskeletal Symptoms Among Louisiana Crawfishermen

SWC Migrant Adolescent Health Research Study

SEC Aquaculture Safety and Health

NORA Goal

Intermediate Goal 9.1 - Measure and reduce work – related musculoskeletal disease due to acute and chronic exposures and ergonomic factors.

Intermediate Goal 9.2 - Measure and reduce illnesses and disease due to exposures to physical factors such as noise, cold, heat and ultraviolet radiation.

Center Project Title

SWC	Risk Factors for Musculoskeletal Symptoms Among Louisiana Crawfishermen
SWC	Migrant Adolescent Health Research Study
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast
SWC	Migrant Adolescent Health Research Study

Center Projects by Core

Core	Project Title	Center	Contact
Administrative	Pilot 6: Further Skills Retention in Commercial Fishing Safety Training	PNC	Jerry Duzgan
	Professional Education	HIC	Steve Reynolds
	Refinement and Enhancement of Agricultural Safety Curricula for Children (REACCH)	SEC	Deborah Reed
	Rural Roadway Safety Optional Drivers Education Module	GPC	Dan Neenan
	ACE Project	HIC	Vicky Buchan
	ACE Team Collaboration and Data Collection	SWC	Sara Shepherd
	Administration-Core	WC	Sandra Freeland
	Administration-Core	SEC	Robert McKnight
	Administrative Core - SW Center for Agricultural Health, Injury Prevention, and Education	SWC	Matt Nonnenmann
	Administrative Planning and Outreach Core	GPC	Wayne Sanderson
	Administrative Planning and Outreach Core	PNC	Marcy Harrington
	Agricultural Center Outreach and Education Projects	SWC	Amanda Wickman
	An analysis of timber harvesting injuries and prevention mechanisms in the southeastern US, 1996-2006	SEC	Chad Bolding
	Assessment of Pesticide Exposure Prevention Programs in the Border Region of NM	SWC	Stephanie Moraga-McHaley
	Bio-Cultural Assessment of Perceptions of Pesticide Exposure Among Mexican Immigrant Farmworkers	SWC	S. Amy Snipes
	Center Administration – General	HIC	Steve Reynolds

Core	Project Title	Center	Contact
Administrative	Developing and Testing Interactive Agricultural Health and Safety Curricula for 4-H Youth (sub award through CSU-HICAHS)	SEC	Teresa Donovan
	Development of a Task-based Noise Exposure Database for Agricultural Grain Farming Operations	GPC	Michael Humann
	Do Farm Crisis Services Affect Farmer Suicide: A Comprehensive Evaluation	GPC	Michael Rosmann
	Evaluating Noise Exposures of Rural Youth	GPC	Michael Humann
	Pilot 1: Evaluating the Presence of CTX-M ESBLs in Colorado Dairy Workers	HIC	Larry Goodridge
	Expansion of the Rural Health Initiative: Incorporating Occupational Health Interventions in a Community Based Participatory Preventative Health Program Farm Families	GPC	Lisa Schiller
	Pilot 2: Full-Shift Direct Exposure Assessment of Postural Loads of the Upper Extremity Among Large-Herd Dairy Parlor Workers	HIC	David Douphrate
	Pilot 3: Inflammatory Relationship of Gram Positive and Negative Bacteria in Occupational and Agricultural Environments	HIC	Jill Poole
	Injury Risk in Part Time Farming - Linkage of 2007 Ag Census and New Injury Survey Data in Iowa and Missouri	GPC	Risto Rautiainen
	Kentucky Migrant Farmworkers Outreach: Kentucky Children's Health Insurance Program (KCHIP)	SEC	Julia Venzke
	Linkage of Atrazine Exposure and Birth Data in Kentucky: Assessment of Data Sources and Needs (2008-2009 feasibility study)	SEC	LaMar Grafft
	Maintain Associations	HIC	Steve Reynolds
	Pesticide Biomonitoring in Florida Agricultural Workers	SEC	Giffe Johnson

Core	Project Title	Center	Contact
Administrative	Prevalence of Methicillin-resistant Staphylococcus Aureus (MRSA) Colonization in Rural Iowa	GPC	Tara Smith
	Project Development	HIC	Steve Reynolds
	Proyecto de Salud de los Trabajadores del Campo: Latino Farmworker Health Project	SEC	Ralph Altmaire
	TSI - Ag Center Tractor Initiative	HIC	Steve Reynolds
	Worklife Assessment of Agricultural Aviators	SWC	Tim Struttman
Education	A Bilingual Skid Steer Loader Safety Training Tool for Vermont Dairy Producers	NEC	Louise Waterman
	AgHealth Monthly Seminar Series	WC	Sandra Freeland
	Agricultural Safety & Health Training for Public Health Graduate Students (HAP-TPG)	SEC	Robert McKnight
	Assessing the Noise-Induce Hearing Loss of Maine Potato Farmers	NEC	Steven Johnson
	Building Capacity of Health and Safety Professionals	GPC	Kelley Donham
	Developing and Testing Interactive CD Health and Safety Curricula for 4-H Youth	HIC	Vicky Buchan
	Developing and testing interactive CD health and safety curricula for 4-H youth	SWC	Karen Gilmore
	Education 1: Introducing a Cholinesterase Test Kit into Clinical Practice	PNC	Matthew Keifer
	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research	PNC	Helen Murphy-Robinson
	Education and Outreach	WC	Stephen McCurdy
	Engaging High School Students in Activities to Prevent Tractor-Related Injuries(Stakeholder's Project supplemental)	SEC	Henry Cole
	Enhancing Translation and Dissemination through Agricultural Partnership	HIC	Darla Borges

Core	Project Title	Center	Contact
Education	Fluorescent Tracer Component for Hands-on Pesticide Handler Training	PNC	Kit Galvin
	Health of Agricultural Populations	SEC	Robert McKnight
	Increasing the Use of Personal Protective Equipment for Reducing Occupational Eye Injuries and Preventing Noise-Induced Hearing Loss among Workers in the U.S. Landscaping Services Sector (NAICS 561730)	NEC	Sam Steel
	Model Farmers Dissemination Project	SWC	Deborah Helitzer
	Nurse Agricultural Education Project	SEC	Deborah Reed
	Pesticide Record Keeping Education for Restricted-Use Pesticide Applicators	NEC	Kay Moyer
	Pilot 7: Responding to Uncertain Results in Research: A pilot study of pesticide handlers responses to PON1 status	PNC	Kelly Freyer-Edwards
	Previous Publications	HIC	Angi Buchanan
	Safety Training Tools for Vermont Dairy Producers	NEC	Louise Waterman
	Teaching Public Health Students about Agricultural Safety and Health	SEC	Robert McKnight
	Theses/Dissertations	HIC	Steve Reynolds
	Tractor Safety Initiative project- Designing Community Based Social Marketing Programs for Tractor Safety	WC	Stephen McCurdy
	Vermont Farm Safety Program	NEC	George Cook
	Visual Impairment and Eye Symptoms in Latino Farmworkers	NEC	Tom Arcury
	Worker Occupational Safety & Health Training & Education Project	WC	Teresa Andrews
Multi – Disciplinary Research	Assessing Hearing Hazards in Farm Youth	NEC	Melissa Perry

Core	Project Title	Center	Contact
Multi – Disciplinary Research	Assessment of Occupational Respiratory Exposure to Human Pathogens in Airborne Dust Among Workers of a Large Commercial Cattle Farm on the Eastern Shore of Maryland	NEC	Thaddeus Graczyk
	Characterizing WMSD's through Direct Postural Measurements in a Nursery Population	NEC	Donald Peterson
	Community Collaboration for Farmworker Health and Safety Project: Assessing the Capacity and Needs Within Maine's Broccoli Harvest	NEC	Mike Rowland
	Community Health Intervention with Yakima Agricultural Workers	PNC	Matthew Keifer
	Developing a Smart ROPS Decision-Making Guide	SEC	Mark Purschwitz
	Farm Worker Health Research Program (MICASA)	WC	Elva Linares
	Health Effects of Airborne Ag Particles from the Sacramento/San Joaquin Valley	WC	Kent Pinkerton
	Horticulture Ergonomics and Safety Training Program	NEC	Andris Freivalds
	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury	GPC	James Merchant
	Migrant Adolescent Health Research Study	SWC	Sharon Cooper
	Migrant Farmworker Health Care Utilization Survey	NEC	Melissa Brower
	Occupational Risk of Infection among Poultry Workers	NEC	Peter Rabinowitz
	Pilot 2: Characterization of Bioaerosols in Washington Dairy Barns	PNC	John Scott Meschke
	Pilot 3: Inhibition of Cholinesterase by Pharmacological and Dietary Agents	PNC	Chris Simpson
	Pilot 5: Safety and Health of Immigrant Forest Workers on the Olympic Peninsula	PNC	Matthew Keifer
	Pilot 8: Investigation of the Apparent Discrepancy between Observed Cholinesterase Depression among Pesticide Handlers in Washington and Regulatory Estimates of Exposure	PNC	John Kissel
	Pilot Testing Direct Postural Measurement Instrumentation in a Nursery Population	NEC	Nick Warren
	Poison Center Surveillance of Agricultural Poisonings	SEC	Robert McKnight
	Prospective Study of Occupational Lung Disease and Endotoxin Exposure in Nad'Ve (New) Dairy Workers	HIC	Steve Reynolds

Core	Project Title	Center	Contact
Multi – Disciplinary Research	Rapid Assays for Human and Environmental Exposure Assessment	WC	Bruce Hammock
	Reducing Occupational Injuries and Illnesses in migrant and seasonal tobacco farmworkers through Coalition of a Community Health Program and a Research Team	NEC	Sherry Wyckoff
	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers	PNC	Matthew Keifer
	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children	PNC	Diane Rohlman
	Research 3: Enhancements to Cholinesterase Monitoring: Oxime Reactivation & OP-ChE Adducts	PNC	Chris Simpson
	Research to Practice for Safe Entry into Confined-Space Manure Storages	NEC	Harvey Manbeck
	Risk Factors for Musculoskeletal Symptoms Among Louisiana Crawfishermen	SWC	Matthew Nonnenmann
	Statewide Surveillance of New York State Farm Injuries	NEC	Erika Scott
	Sustained Work Indicators of Older Farmers	SEC	Deborah Reed
	Task Based Assessment of Occupation Noise Exposures in Migrant and Seasonal Agricultural Workers	NEC	John Myer
	TSI: National Agricultural Tractor Safety Initiative	SEC	Henry Cole
	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast	SWC	Jeffrey Levin
Prevention	Aquaculture Safety and Health	SEC	Mel Myers
	Community Collaboration for Farmworker Health	NEC	Lynae Hawkes
	Determinants of Gas and Dust Exposures Among Swine Workers	GPC	Patrick O’Shaughnessy
	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers	SEC	Joan Mazur
	Evaluation of an Ergonomically Improved Apple Bag	NEC	Suzanne Stack
	Injury Risk Analysis in Large-Herd Dairy Parlors	HIC	John Rosecrance
	Partnering with Stakeholders for Prevention	SEC	Henry Cole
	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)	SEC	Henry Cole
	Pilot 1: Skills Retention in Fishing Safety Training	PNC	Jerry Duzgan

Core	Project Title	Center	Contact
Prevention	Pilot 4: Point-of-view Video Analysis of the Impact of a Faller Safety Training Program	PNC	Gary Rischitelli
	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures	PNC	Richard Fenske
	Promoviendo Farmworker Safety	SWC	Sylvia Partida
	Research 5: Assessment of Job-related Exposures for Diarrheal Illness in Farmworker Families	PNC	John Scott Meschke
	Respiratory Health and Exposures on Large Californian Dairies	WC	Frank Mitloehner
	The Social Marketing of Tractor Rollover Protective Structures in New York	NEC	Julie Sorensen
	TSI: Tractor Safety Initiative: Costs of Tractor Operator Injuries from Overturns and Highway Collisions	SEC	Henry Cole
	TSI: Tractor Safety Initiative: Designing Community-based Social Marketing Programs for Tractor Safety (1 R25-04-008542-01)	SEC	Chike Anyaegbunam

2009 Product List

Product Type	Product Title	Center
Abstract	Applying Community-based Participatory Research Principles: Cultural SWC Considerations	SWC
	Assessment of Safety Climate on Colorado Farms	HIC
	Case-control study of risk factors for all-terrain vehicle injuries on SEC Kentucky Farms	SEC
	Farm work-related injuries in a cohort of older farmers in Kentucky and SEC South Carolina [For background, see Reed DB. Final report to NIOSH: Sustained work indicators of older farmers, R01 OH 004157]	SEC
	Noise Induced Hearing Loss	NEC
	Public health and safety in public schools: Training pre-service teachers in the economics of injury prevention in rural areas	SEC
	Sleep quality and quantity and associated factors among high school SWC students from south Texas	SWC
Analysis of Data	Adolescent Noise Exposure	GPC
	Atrazine Levels inside Rural Iowa Farm Homes	GPC
	Children's Play Areas on Farms	GPC
	Respiratory Function and Farming Exposures in a Rural US Cohort	GPC
	Risk Behaviors and Mental Health of Adolescents	GPC
Annual Report	2008-2009 Progress Report	WC
	2009-2010 Non-competitive Renewal/Progress Report	WC
	Colorado Farm Bureau Safety & Health Trailer Project Final Report	HIC
	Great Plains Center for Agricultural Health and Safety Annual Report	GPC
	NIOSH Agricultural Centers FY 2007-2008 Annual Report	WC

Product Type	Product Title	Center
Article published, feature (trade publication)	Aches, pains, and strains *	PNC
	Avoiding ladder injuries *	PNC
	Cholinesterase inhibition *	PNC
	Ergonomics needs assessment of large-herd dairy parlor operations	HIC
	Free Hearing Screening Will Be Offered	NEC
	Hearing Screening to be offered	NEC
	Hearing Screening to be Offered at Annual Meeting	NEC
	Immigrant Workers Deserve Equal Workplace Health and Safety *	WC
	It's just seconds to a grain bin entrapment *	PNC
	New workforce, new issues	PNC
	New York State Tractor Rollover Protection Rebate Program	NEC
	Recognizing the perils of pesticide exposure	PNC
	Retention of learned survival skills studied	PNC
	ROPS advertisements and updates on the program	NEC
	Talking with your work force *	PNC
	The agricultural safety and health challenge.	SEC
	The New York Sate Tractor Rollover Protection Rebate Program	NEC
	Understanding Hearing Loss	NEC
	Western Ag Center Honors Berry Grower	WC

Product Type	Product Title	Center
	Workers tell of ladder injuries	PNC
Article Published, professional (juried publication)	A cohort study of pesticide poisoning and depression in Colorado farm residents	HIC
	A comparison of workplace safety perceptions among financial decision-makers among rural youth. [Product of PFIRY project]	HIC
	A Spanish language narrative simulation to prevent horseback riding injury among rural youth	SEC
	A Spanish language narrative simulation to prevent horseback riding injury among rural youth [Product of PFIRY project]	SEC
	A Task Based Assessment of Swine Worker Exposure to Airborne Dust	GPC
	Acute Traumatic Injuries in Rural Populations	HIC
	Agricultural work-related injuries among farmers in Hubei, People's Republic of China	HIC
	Alcohol consumption patterns and work-related injuries among Colorado farm residents	HIC
	Article describing pilot results and job exposure matrix in preparation with planned submission to Journal of Agromedicine	NEC
	Behavior change, environmental hazards and respiratory protection among a southern farm community	SEC
	Building capacity of community stakeholders to prevent agricultural injury: A case example with Navajo farmers and ranchers	SWC
	California wildfires of 2008: Course and fine particle matter toxicity.	WC
	Central neuroplasticity and decreased heart rate variability following particulate matter exposure in mice	WC
	Chronic back pain among migrant farm worker families from Starr County, TX	SWC
	Comparisons of Colorado women's cancer screening practices by residence: metropolitan, non-metropolitan, and farm	HIC
	Continuous overturn control of compactors/rollers by rollover protective structures	SEC
	Cost effectiveness of ROPS Social Marketing Campaign	NEC
	Cost effectiveness of wearing head protection on ATVs	SEC

Product Type	Product Title	Center
Article published, professional (juried publication)	Creatinine measurements in 24-hour urine by liquid chromatography-tandem mass spectrometry.	WC
	Depression and Pesticide Exposures among Private Pesticide Applicators Enrolled in the Agricultural Health Study	HIC
	Depression and Somatic Symptoms within the Farming Community	HIC
	Designing Convincing Tractor Safety Messages: A Concept Development Project	NEC
	Development of a life events/icon calendar questionnaire to ascertain occupational histories and other characteristics of migrant farm workers	HIC
	Environmental exposure and health effects in concentrated animal feeding operations	WC
	Epidemiology, surveillance, and prevention of farm tractor overturn fatalities	SEC
	Ergonomics in industrialized dairy operations	HIC
	Evaluation of clinic-based cholinesterase test kit for the Washington state cholinesterase monitoring program	PNC
	Farm work practices and farm injuries in Colorado	HIC
	Farm work-related injury among middle school students in rural China	HIC
	Farm youth exposure to noise	NEC
	Farm workers at the border: A bilingual initiative for occupational health and safety	SWC
	Fatal head injuries among Hispanic farm workers and farmers in Colorado	HIC
	FS4JK Farm safety day camps: Who learns the most?	SEC
	Hand problems in migrant farm workers	SWC
	Health care delay of farmers 50 years and older in Kentucky and South Carolina	SEC
	High-throughput method for ranking the affinity of pesticide ligands selected from phage display libraries	WC

Product Type	Product Title	Center
Article published, professional (juried publication)	Identifying variables that predict falling asleep at the wheel in long-haul truck drivers. [Work on article supported in part through NAEP Fellowship]	SEC
	Injury severity related to overturn characteristics of tractors	SEC
	Intervening to improve health indicators among Australian farm families	SEC
	Land-Grant System, U.S.	HIC
	Livestock-handling injuries in agriculture: An analysis of Colorado workers' compensation data	HIC
	Magnetic bead-based phage anti-immunocomplex assay (PHAIA) for detection of the urinary biomarker 3-phenoxybenzoic acid to assess human exposure to pyrethroid insecticides	WC
	Mechanisms of particle matter toxicity in neonatal and young adult rat lungs	WC
	News Clippings Offer Intriguing Injury Prevention Possibilities (Invited Editorial)	HIC
	Occupational paraquat exposure of agricultural workers in large Costa Rica farms *	WC
	Occupational safety: The role of workplace sleepiness	HIC
	Perceptions of environmental and occupational health hazards among agricultural workers in Washington state.	PNC
	Perspectives on safety and health from hired farm workers in Colorado and Mexico: A qualitative field study	HIC
	Pesticide illness, farm practices, and neurological symptoms among farm residents in Colorado	HIC
	Pesticide poisoning and depressive symptoms among farm residents	HIC
	Phage-borne peptidomimetics accelerate the development of polyclonal antibody based heterologous immunoassays for the detection of pesticide metabolites	WC
	Pneumoconiosis from agricultural dust exposure among young California farm workers	WC
	Prevalence of ROPS-equipped tractors in U. S. aquaculture	SEC
	Proportionate mortality among U.S. migrant and seasonal farm workers in twenty-four states	HIC

Product Type	Product Title	Center
Article published, professional (juried publication)	Recruiting strategy and 24-hour biomonitoring of paraquat in agricultural workers	WC
	Reliability of assessing upper limb postures among workers performing manufacturing tasks	HIC
	Safety practices and depression among farm residents	HIC
	Safety practices, neurological symptoms, and pesticide poisoning	HIC
	Safety status of farm tractors that operate on public highways in four rural Kentucky counties	SEC
	Self-reported back pain among farm women in southeast Louisiana	SWC
	Serum cholinesterase inhibition in relation to paraoxonase (PON1) status among organophosphate-exposed agricultural pesticide handlers	PNC
	Simple solutions for reduced fish farm hazards	SEC
	Sleep patterns and risk of injury among adolescent farm residents	HIC
	Structural equation modeling of the relationships between pesticide poisoning, depressive symptoms, and safety behaviors among Colorado farm residents	HIC
	Suicide and occupation in New Zealand (2001-2005)	HIC
	Suicide and potential occupational exposure to pesticides, Colorado 1990-1999	HIC
	Suicides among farmers in three southeastern states, 1990-1998	SEC
	Symptoms of neurotoxicity and injury among adolescent farm workers in Starr County: A pilot study	SWC
	The media in rural America	HIC
	The prevalence of depressive symptoms and risk factors among Iowa and Colorado farmers	HIC
	The Social Marketing of Safety Behaviors: A quasi-randomized controlled trial of tractor retrofitting incentives	NEC
	Tractor-related injuries: An analysis of workers' compensation data	HIC

Product Type	Product Title	Center
Article published, professional (juried publication)	Translational Research	HIC
	Using logic models in a community-based agricultural injury prevention project	SWC
	Using participant event monitoring in a cohort study of unintentional injuries among children and adolescents	HIC
	Worker health and safety in concentrated animal feeding operations	WC
Award	Computational fluid dynamics modeling of ventilation of confined-space manure storage facilities	NEC
Brochure	Advanced education and training in the health of agricultural populations (Center brochure, 2009 update)	SEC
	New York stakeholders brochure	NEC
	Spanish language version of NIOSH agricultural NIHL brochure, "Can you hear me?" *	PNC
CD-ROM	"Reality Tales" story corps reading	PNC
	2 modules for 4-H CD 2	HIC
	4-H CD 2	HIC
	Interview with a farmer who was injured in a tractor overturn	NEC
Conference	FEMVCPC conference	GPC
Conference paper	Hazard assessment of aquaculture operations	SEC
	Safety technologies developed by fish farmers	SEC
	Systematic review of occupational hazards associated with aquaculture [Paper No. 09-05, Annual meeting NIFS 2009]	SEC
Course manual	Fluorescent tracer manual: An educational tool for pesticide safety educators *	PNC
	Immunoassay for monitoring human and environmental exposure to environmental toxicants	WC
Curriculum (short course)	Fluorescent tracer kit – containing instructions and materials to conduct FT training	PNC

Product Type	Product Title	Center
	Immunoassay development and validation for the Department of Quality Standard & Food Safety, Oil Crops Research Institute	WC
Curriculum (training)	Entrenamiento Basico de Ergonomia en Horticultura for workers*	NEC
	Ergonomics and safety in horticulture – for manager	NEC
Curriculum (training)	Ergonomics awareness in horticulture – for workers	NEC
	Initiated efforts to design educational materials for training farm families, manure storage designers, suppliers, installers, and regulators about ventilation requirements	NEC
Data analysis	Exposure assessment surveys of rural Iowa farm homes	GPC
	2008 PNASH Center evaluation data report	PNC
Engineering Safety Standard	ASABE X607, “Fan ventilation of confined-space manure storages for safe entry”	NEC
Evaluation instrument/tool	Faller "helmet cam" Point-of-view video recorder	PNC
	Financial Impact of Safety	WC
	Needs Assessment Instrument developed	HIC
	Practical solutions interview questionnaire *	PNC
	Schematic prototype model for a shield to protect mixers from splash	PNC
	SOP for analyzing Uvitex OB with fluoro-spectrophotometry	PNC
	SOP: ChE determination using 96-well plate assay	PNC
	SOP: In vivo studies with rats and OP pesticides	PNC
Exhibit material	Aquaculture Safety and Health	SEC
	ATVs, Horses and iPods: Case Simulations for Economics in Civics Classrooms	SEC
	Interactive exhibit on the 4-year multi-state project, Economics of preventing Injuries to Adolescent and Adult Farmers	SEC

Product Type	Product Title	Center
Exhibit material	Posters, fact sheets, flyers, displays, and radio announcements	PNC
	Project Goals and Interventions, general NYCAMH	NEC
	Simple solutions for safety	SEC
	Testimony regarding Occupational and Agricultural Health	HIC
Fact Sheet	GPCAH Impact Sheet	GPC
	H1N1 Bilingual Fact Sheet *	SEC
	H1N1 Fact Sheet *	NEC
	New York State Legislator Fact Sheet	NEC
	PPE Storage Guidelines-Hearing Protectors and Eye Protection	NEC
	Preventing Hearing Loss from Loud Noise	NEC
	Preventing Serious Eye Injuries from Flying Objects and Debris	NEC
	Project sector definitions for eye injuries	NEC
	Project sector definitions for hearing loss	NEC
	Sintomas y senales de ataque de calor y agotamiento de calor *	PNC
	Southeast Center for Agricultural Health and Injury Prevention (2009 Fact Sheet)	SEC
	SW Ag Center Fact Sheet	SWC
Grant Application	Studying Swine, swine workers and influenza	NEC
Incentives	Work gloves, safety glasses, eye drops, sunscreen, sweat bands	NEC
Manuscript	'A changing mindset' - Describing what it takes to keep agricultural pesticide handlers safe	PNC

Product Type	Product Title	Center
Manuscript	ASABE Proposed Standard C607: Fan Ventilation of Confined-Space Manure Storage for Safe Entry	NEC
	Biomarkers of sensitivity and Exposure in Washington state pesticide handlers	PNC
	Biomonitoring state of the science. A report on a panel presentation and roundtable discussion	PNC
	New paths for occupational health and safety in sustainable agricultural systems	PNC
	New technologies and worker safety in western agriculture	PNC
	Occupational determinants of serum cholinesterase inhibition among organophosphate-exposed agricultural pesticide handlers in Washington state	PNC
	The emerging field of aquacultural safety and health.	SEC
	Work of retired farmers over age 50	SEC
Newsletter	Cultivation	SWC
	EI Melon Rondero *	WC
	Fall 2008 AgHealth News	WC
	NW Forest Worker Safety Review	PNC
	PNASH quarterly e-news	PNC
	Project Newsletter/Study Update	NEC
	ROPS advertisements	NEC
	Spring 2009 AgHealth News	WC
	Study Update	NEC
	Summer 2009 AgHealth News	WC
	Winter 2009 AgHealth News	WC

Product Type	Product Title	Center
Poster	3 new Social Marketing Ads for dissemination at farm and trade shows, other events	NEC
	Acetaminophen interference in organophosphate pesticide testing	PNC
	Agricultural and Work Characteristics Among Children of Hispanic farm workers	WC
	Aquaculture safety and health	SEC
	Aquaculture safety and health [poster]	SEC
	Aquaculture safety in Kentucky	SEC
	ASABE Proposed Standard X607: Fan Ventilation of Confined-Space Manure Storages for Safe Entry	NEC
	Assessment of chlorpyrifos exposure in agricultural workers during airblast applications	PNC
	Assessment of chronic pesticide exposure in children	PNC
	Assessment of pesticide exposure in children	PNC
	Atrazine exposure and rates of preterm births in Kentucky	SEC
	Bilingual narrative simulation exercises for risk/hazard reduction and surveillance*	SEC
	Characteristics of US farms at high risk for tractor overturn deaths [poster]	SEC
	Communicating occupational and genetic risk factors research results to agricultural pesticide handlers in Washington state	PNC
	Cultural Influences On Safety Education and Occupational Health Screenings and among Vietnamese Fishermen	SWC
	Developing & Testing Interactive CD Health & Safety for 4-H Youth	HIC
	Development of a farm safety survey of aquaculture production	SEC
	Development of a sensitive and specific exposure biomarker assay for organophosphate pesticides using HPLC and tandem mass spectrometry	PNC

Product Type	Product Title	Center
Poster	Economics of preventing agricultural injuries to adolescent and adult farm workers: surveillance, exposure and intervention effectiveness data for public school teachers trained to be safety advocates in rural Kentucky school districts	SEC
	Educating through games	PNC
	Evaluation of the NIOSH Ag Center Initiative: Ten Years of Collaborative Accountability	HIC
	Expert working group model for informing pesticide safety research	PNC
	Implementation of a portable cholinesterase monitoring kit in a clinical setting: A normalization process approach	PNC
	Interventions to minimize worker and family pesticides	PNC
	Migrant Adolescent WorkLife Study	SWC
	Migrant Outreach Project: Kentucky Children's Health Insurance Program (KCHIP) [poster]	SEC
	Musculoskeletal Strain Among Louisiana Craw fishermen	SWC
	Observations from Forestry and Logging Stakeholders Meeting in the Southwest Region	SWC
	Obstructive sleep apnea indicators and injury in older farmers. [Poster won 1st place in clinical and translational research category - \$250 prize. Work funded through NAEP Fellowship]	SEC
	Occupational health and safety of cedar block cutters on the Olympic Peninsula	PNC
	Over age 50 and still in the field	SEC
	Pesticide Exposure Assessment of Farm Worker Families in Mendota, CA	WC
	Pilot Organophosphorus Pesticide Air Monitoring Project	PNS
	Poison center surveillance of agricultural poisonings	SEC
	Poster Presentation: Agriculture injuries in Colorado: An analysis of workers' compensation claims	HIC
	Prevalence, exposure, and perceived risk of all-terrain vehicles on Kentucky farms [poster]	SEC

Product Type	Product Title	Center
Poster	Promoviendo Farm worker Safety: A Sun and Heat Intervention for Migrant and Seasonal Farm workers	SWC
	Relationship Between Untreated Caries in Mothers and Their Children	WC
	Safety and Health in Commercial Shrimp Fishing Along the Louisiana/Texas Gulf Coast- Cultural Factors and Occupational Risks	SWC
	Safety Training Evaluation: Montana State Fund Ag Safety Workshop	HIC
	Serum cholinesterase inhibition in relation to paraoxonase (PON1) status among organophosphate-exposed agricultural pesticide handlers	PNC
	Serum cholinesterase inhibition in relation to paraoxonase 1 status among organophosphate-exposed agricultural pesticide handlers	PNC
	Symptoms of Depression and Levels of Perceived Stress in Hispanic farm workers who Smoke	WC
	The Association of Agricultural Work with Chronic Musculoskeletal Pain in Hispanic Farm Workers	WCF
	The Kentucky ROPS Guide	SEC
	Trees kill: Key factors in logging safety	PNC
	Update on the Nurse Agriculture Education Project (NAEP)	SEC
	Validation of Microbial Recovery from Surfaces by Various Sampling Methods	PNC
PowerPoint Presentation (for distribution)	4-H CD Presentation	HIC
	ACE presentation	HIC
	Airborne Particles and Respiratory Health	WC
	Airborne Particles: Laboratory Applications	WC
	Assessment of Safety Climate on Colorado Farms	HIC
	Association of Acculturation with Asthma and Atopy in Hispanic Farm workers. The Influence of Migration-Related Factors on Asthma and Atopy in California Farm workers	WC

Product Type	Product Title	Center
PowerPoint Presentation (for distribution)	Biological Plausibility of the Respiratory Effects of Ultrafine Particles	WC
	Biomarkers of sensitivity and exposure in Washington State pesticide handlers	PNC
	Determinants of cholinesterase inhibition in pesticide handlers	PNC
	Development Basis of Health: Effects of ETS on the Developing Pulmonary and Immune System of Infant Monkeys	WC
	Effects of Air Pollution on Lungs of Individuals with Different Age Groups	WC
	Engaging a Hard-To-Reach Population in Environmental Epidemiology Research: Sampling and Recruitment of California's Hired Farm Workers	WC
	Environmental Impacts on the Respiratory System	WC
	Environmental Influences on Early Lung, Immune and Cognitive Development	WC
	Farm workers Beliefs, Practices, and Perceptions of Sun/Heat Safety in the Field	SWC
	Fluorescent tracer technique: research to practice	PNC
	Health Effects of Inhaled Engineered and Incidental Nanoparticles	WC
	Life events calendar	PNC
	Needs Assessment Presentation	HIC
	Occupational Risk Factors for Infection in Northeastern Poultry Workers	NEC
	Outreach Education Evaluation	HIC
	Pilot testing direct postural measurement instrumentation in a nursery population	NEC
	Platform Presentation: Dairy farm injuries: An analysis of workers' compensation data	HIC
	Platform Presentation: Ergonomics and large herd dairy operations	HIC

Product Type	Product Title	Center
PowerPoint Presentation (for distribution)	Platform Presentation: Tractor-related injuries on farms: An analysis workers' compensation data	HIC
	Platform Presentation: What can workers' compensation data tell us about livestock-handling injuries in agriculture?	HIC
	Project goals and Interventions *	NEC
	Promoting LID through community-based social marketing	HIC
	Promoviendo Farm worker Safety	SWC
	Promoviendo Farm worker Safety Program: An Introspective Look at Intervention Development	SWC
	Risk factors for occupational pesticide exposure	PNC
	Serum cholinesterase inhibition in relation to paraoxonase status among agricultural pesticide handlers	PNC
	Serum cholinesterase inhibition in relation to paraoxonase (PON1) status among organophosphate organophosphate- exposed Agricultural Pesticide Handlers in Washington state	PNC
	Social Marketing: A Promising Strategy for Injury Prevention in Farm Communities	NEC
	Symposium: Closing the gap between research discovery and service delivery	HIC
	The Kentucky Community Partners for Healthy Farming ROPS [Project PowerPoint also describes contemporary proposals for the epidemiology, surveillance, and prevention of farm tractor overturn]	SEC
	The Science and Process of Community-Based Research	SWC
	Visual Impairment & Eye Symptoms in Latino Farm workers	NEC
	What are the Combined Effects of Multiple Pollutants, e.g. Synergistic, Additive, Antagonistic?	WC
Questionnaire or survey instrument	Fish Farm Surveys (catfish, trout, draft National Fish Farm Survey tool)	SEC
	Montana Agriculture Safety Program	HIC
	Pesticide exposure history questionnaire	PNC

Product Type	Product Title	Center
	Year 3 Survey Instruments *	SWC
Report (unpublished)	Agriculture, Forestry, Fishing, Safety & Health: NIOSH Agricultural Center Initiative Evaluation Project. Fiscal Year 2008 Report.	SEC
	Aquaculture Safety and Health [interim progress report, 2009 Jul 17]	SEC
	ConneX summer college course	PNC
	Fallers point-of-view video observation study - Final report	PNC
	FEDCAP's role in providing data for the surveillance study	NEC
	Good Fruit Grower Magazine reader 2008 survey results	PNC
	Manual of Procedures-Year 3	SWC
	Point-of-view video analysis protocol	PNC
	Results of research: Drill conductor refresher training intervals	PNC
	Update for Researchers from DOH, with input back from group	NEC
Report to NIOSH (year end or continuation)	ACE Report for Ag Center Initiative Accomplishments for FY 2008	HIC
	Grant Progress Report to NIOSH	SWC
	NIOSH Insight Update	NEC
	Report on Smart ROPS Decision Guide [interim progress report, 2009 July 21]	SEC
Table top model	Table top model to demonstrate hazards associated with entry, evacuation of gases, and steps to assure safety	NEC
Thesis or dissertation	A composite risk score system for predicting agricultural injury among Colorado farmers	HIC
	An investigative protocol for the evaluation of safety and health hazards, hearing loss, and lung function among Colorado family farms	HIC

Product Type	Product Title	Center
Thesis or dissertation	Characterization of Bioaerosols and Bacterial Surface Contamination at a Large Washington Dairy Operation	PNC
	Determinants of serum cholinesterase inhibition among Washington state pesticide handlers	ONC
	Hazardous exposures among children living on farms in Colorado, 1998	HIC
	Menstrual Cycle Characteristics in Women Exposed to Atrazine in Drinking Water	HIC
	Montana Agriculture Safety Program	HIC
	Noise induced hearing loss in a farming population in Northeastern Colorado	HIC
	Northeast Colorado farm operators: Personal use of pesticides and characteristics of farms and farm operators	HIC
	Occupational safety and health hazards among farm owners and operators	HIC
	Pulmonary lung function among farmers in Northeastern Colorado	HIC
	Sleep quality and quantity and associated factors among high school students from south Texas	SWC
	Social Marketing for Injury Prevention: Changing Risk Perceptions and Safety-related Behaviors Among New York Farmers ▪	NEC
	The association of safety knowledge and behavior with injuries in a farming population in Northeastern Colorado	HIC
Video/DVD	CHAMACOS: A community/university partnership to assess environmental exposures and their health effects on young children.	WC
	Cost of Occupational Injuries and Illness - Combining all Industries	WC
	Environmental Exposures among Farm workers	WC
	Fluorescent tracer kit DVD	PNC
	Heat Related Illness Interventions	WC
	Immigration	WC

Product Type	Product Title	Center
Video/DVD	Skid Steer Safety Kit, which includes a DVD in English and Spanish, Safety tips in English and Spanish, and a Teaching/Resource Guide *	NWC
	Sustainable Food & the Promise of Improved Farm worker Conditions	WC
	The Well Being of Mexican Indigenous Farm worker Communities: Defining the Problem	WC
	Una guía para la salud y la seguridad del trabajador del bosque *	PNC
	Workers talk about PON1	PNC
Website or webpage established	http://itsharepoint.uchc.edu	NEC
	New York State ROPS Rebate Program; http://ropstr4u.com	NEC
	Pesticides and Health	PNC
	Proceedings: Health and Safety in Western Agriculture: New Paths	PNC
Year-end report to NIOSH	2008 PNASH Center annual report	PNC
	Progress Report	SWC

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