



**New York
Northeast Center for Agricultural and
Occupational Health**

Summary Annual Report
Fiscal Year 2012

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Section I

Center Summary

The Northeast Center (NEC) is a NIOSH funded extramural Agriculture, Forestry and Fishing (AFF) Research Center, which is affiliated with the Bassett Healthcare Network in Cooperstown, NY. The mission of the NEC is to enhance the health of AFF workers by identifying priority health and safety issues and working with AFF communities and stakeholders to identify prevention solutions. Over the past year, NEC activities have largely focused on establishing the foundations for six R01-type projects and one evaluation project. The R01's are evenly divided between Research, Intervention/Prevention and Education/Translation. These encompass expertise in engineering, occupational medicine, public health, and education. Several emerging issues mini-grants have also been funded over the past year and have expanded NEC knowledge of emerging issues and novel research and intervention methods. These efforts capitalize on long-established partnerships with other health research institutions in the Northeast, such as Harvard University, Pennsylvania State University, Yale University, the University of Massachusetts at Lowell, the University of Vermont, Farm Bureau, State Departments of Agriculture, Labor and Health, the National Oceanic and Atmospheric Administration, the U.S. Coast Guard and the Sea Grant Program.

Center Aims and Priorities:

Priorities	<i>Maximize Center Resources</i>		<i>Research to Practice</i>	<i>Emphasize Impact</i>	
Aims	#1-Improve Surveillance-Identify Priority Issues	#2-Focus on Vulnerable and High-Risk Workers	#3-Move proven prevention strategies into workplaces	#4-Reduce traumatic injuries and death in agriculture	#5-Reduce traumatic injuries and death in fishing

Relevance

AFF workers have a significantly higher risk of occupational death and injury than workers in other U.S. industries. However, addressing these issues in the Northeast is particularly challenging due to the considerable diversity in AFF work environments and populations. As a result, NEC activities have largely focused on identifying and monitoring risk factors, in order to develop multiple strategies for addressing them. In the area of agricultural safety and health, a surveillance system is being developed to capture both injury and fatality data from multiple health data sources. This information is being used to prioritize intervention and outreach activities and to strategically develop partnerships within the community that can help to address priority health issues and identify emerging issues.

In addition to surveillance, NEC activities have focused on different facets of the injury process, from education on risks, to interventions that mitigate risks (i.e. increasing access to safety products, developing standards for safer working conditions, conducting on-farm safety audits, promoting the use of safety products, etc...), to strategies for improving outcomes should injuries or illnesses occur (i.e. first-aid training, case-management and treatment, provider occupational health training tailored to agricultural issues). Similar activities are also being conducted in the

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area of fishing and logging safety, with the aim of reducing injuries and illnesses and improving outcomes for those injuries and illnesses that do occur.

Key Personnel:

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Section II

PROGRAM HIGHLIGHTS

Center-Wide Activities

Over the past year, the NEC has worked to identify several priority activities which will serve to establish a firm foundation for R01 projects and ensure that Center activities are responsive to the original priorities and aims laid out in the Center application. In October, NEC administrators organized a two-day retreat for R01 and emerging issues mini-grant principal investigators. The focus of the retreat was to review progress, identify areas of weakness and discuss solutions for funded research activities. In addition, attendees discussed areas of potential improvement for the Center (both short and long-term) and long range planning for Center efforts and activities, as well as possibilities for increasing collaboration between Center PIs and improving NEC evaluation efforts. In December, the NEC's fishing advisory board was also assembled for a one day retreat to identify priority fishing issues and review current NEC fishing health and safety activities. In addition to these retreats, the NEC has spent considerable energy improving and streamlining information databases and reporting mechanisms. NEC administrators have also outlined plans for developing new and novel partnerships with an emphasis on identifying and recruiting young agricultural safety and health investigators.

Changes in Personnel

There have been two significant changes in NEC personnel in 2012. The first relates to the Deputy Director position, which was formerly held by Dr. Giulia Earle-Richardson. Dr. Earle-Richardson chose to relinquish her role as an NEC administrator, in favor of continuing her research and grant-work activities with the Center on a contractual basis. The Deputy Director

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position is now being filled by Dr. Julie Sorensen, a social epidemiologist who has worked with the NEC for over ten years. The second personnel change relates to the replacement of Dr. Jack Dennerlein who was the former principal investigator listed on the The Northeast Fisheries Winch Improvement Project. Dr. Dennerlein left his position at Harvard University and was replaced in his role as PI for the winch project by Ann Backus, who has a long established career in fishing health and safety in the Northeast. Dr. Dennerlein will continue to work on the project as an advisor, however.

Presentations, Outreach Activities and Publications

Over the past year, 15 presentations have been made at national epidemiology, safety and health conferences. There have been 8 manuscripts published or accepted for publication in the peer-reviewed literature.

A total of 395 educational / outreach sessions have been conducted throughout the Northeast, reaching over 10,000 AFF workers. Many of these educational sessions were given in Spanish. Forty-six on-farm safety surveys were conducted, reaching 117 members of the farm community. Forty-four on-farm safety trainings were given for 788 farm owners and their employees in English and an additional 267 on-farm safety trainings were given in Spanish, insuring the appropriate safety training of over 1000 Spanish-speaking workers. Fifty youth safety trainings were also conducted with nearly 1,000 farm youths in attendance. A total of 670 individuals were trained in first aid and CPR and 33 articles were published in agricultural magazines and on the NEC website. Some of these activities were directly supported with NEC outreach funds and some leveraged with other funding sources.

Research Core

The New Surveillance Strategy for Farming and Forestry Injury Project uses standard variables in newly available electronic administrative datasets to identify agricultural and forestry injury and fatality events. Inpatient and emergency department hospital records, along with pre-hospital care reports (ambulance reports) and death certificates allow researchers to glean important incident information, as well as information on subsequent medical care. These records are case matched in order to eliminate duplicate records and to allow researchers to follow the continuum of care for a particular patient. Ideally, this will provide more information on an incident that only one type of record would allow. An additional benefit of this research is exploring the use of these datasets for purposes beyond those initially imagined. Fellow researchers have voiced interest in using our method to further explore other occupational injury in their respective states. Initial analysis of New York hospitalization data (inpatient and emergency department) has produced over 4,000 farm related injury cases from 2007-2009. Of these cases, agricultural machines (22%), animals (18.2%) and falls (14.7%) comprised the top causes of injury. While the data application process has proven more time consuming than initially expected, strides are being made in creating new partnerships and facilitating novel data linkages.

The Musculoskeletal Disorder Rates in Northeast Lobster Fishermen project is a surveillance research project whose impact is a regional piece to a national puzzle. NIOSH has done exemplary work in the general fishing industry with respect to the practical purpose of preventing injury and illness to fishermen. However, historically, neither numerator nor denominator

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numbers have been reliably collected in this country. Consequently, NIOSH focused its resources and utilized federally managed fishery data to determine valid fatality rates for the first decade of the 21st century, information that allowed researchers and industry personnel to evaluate expected impact of interventions.

The Northeast Ag Center is fulfilling a regional need for estimating injury and fatality rates among lobster fishermen, data that have not been previously captured by NIOSH. We have begun a multi-year effort to specifically quantify the denominator population, in man-hours, of the lobster-harvesting sector. Injury numerator data is also being collected by phone once every three months to 287 “captains”. These phone surveys allow lobstermen to report any acute injuries over the previous months. Data is also being collected once per year, in face to face interviews that include crew members as well. Establishing this cohort, and maintaining personal contact with subjects quarterly via phone and annually via face to face interview, has been the most important outcome thus far. Soon, we will have enough data to compare preliminary results to our hypotheses and to better understand some of the musculo-skeletal problems experienced by this population. Qualitative information, in many cases, has already offered a valuable glimpse into important health and community concerns that lobstermen are facing. These outcomes are vital to shaping future work in reducing outcomes of injury and illness for the lobstermen.

Intervention/Prevention Core

Social Marketing of Machinery Safety Shields

Machinery entanglement incidents are unfortunately a relatively common cause of farm fatalities and serious injury in the Northeast. Detailed fatality data for New York and Pennsylvania (representing 66% of the Northeast farm population) indicate that machinery entanglement fatalities are among the top three causes of death (Harshman, 2009; NYCAMH, 2010). Fortunately, the installation of power-take off (PTO) shielding can considerably reduce, if not eliminate the risk of injury or death from PTO entanglements.

Using an intervention framework that has proven successful for increasing the installation of ROPS on unprotected tractors, project researchers have laid the groundwork for launching a PTO social-marketing campaign in NY. Although only a year into the project timeline, important discoveries and encouraging progress have already been made. One of the most noteworthy discoveries relates to the validity of farmer self-report data. In the initial year of the program, project researchers collaborated with NASS to collect data on the proportion of rotating machinery shafts with shields via phone. After surveying 2,000 randomly selected NY farmers, survey data indicated that 90%-95% of rotating shafts in NY are shielded. Based on skepticism from the project’s Farmer Advisory Board and key informants, on-farm audits are now being conducted to assess the accuracy of this data. Although researchers have completed only half of these audits, preliminary data indicate that only 50%-60% of rotating shafts are shielded. This discovery provides considerable cause for concern in relation to farmer self-report data on shielding behaviors. In addition to this discovery, project researchers have created significant and productive project partnerships. In particular, an advisory board consisting of engineers, researchers, manufacturers and insurers has already been convened and will continue to work together to improve shielding designs and distribution, as well as to promote shielding in the coming years. We are most encouraged by the participation of manufacturers in this effort.

Farm Tractor Stability Systems

We are grateful that funds have become available for this important project. Dr. Murphy and colleagues will be investigating the human factors and related engineering issues associated with application of a small, inexpensive on-board tractor stability monitoring device developed in previous NEC work. At the beginning of NEC year 2, students have been recruited and the project team has begun work on an accelerated timeline to compensate for the loss of the initial year planned for this work.

Education/Translation Core

On-Line Tool for Designing Ventilation Systems to Reduce Manure Pit Entry Risk

In 2012, project researchers conducted a survey of dairy and swine farms in U.S. states with the highest numbers of confined-space manure pits. The purpose of the survey was to identify current knowledge about and current use of properly designed manure pit ventilation systems. Baseline data have offered very helpful information for assessing the future success of design tools, such as engineering standards and on-line simulation programs. In addition to this survey, SolidWorks Flow Simulation software is being developed to adequately model and simulate the ventilation of confined-space manure pits. This software will allow researchers to develop a user-friendly on-line tool for designing manure pit ventilation systems, which will eliminate worker exposures to toxic and asphyxiating gases.

Northeast Fisheries Winch Improvement Project

Issues related to IRB delays and Dr. Dennerlein's departure from Harvard have resulted in significant delays in this project. After identification of this issue by the NEC evaluation team, NEC leadership has met repeatedly with Ms. Backus to assure progress. The initial steps of this project involve gathering of both interview and questionnaire data on current practices. Professional staff from the NIOSH Alaska Pacific Office and the NEC met with local fishing industry representatives in the fall of 2012 to organize the collection of baseline fishing safety data for Northeast fisheries. Considerable strides were made in the development of a survey instrument which incorporates the correct fishing terminology and data collection methods for gathering data on fishing practices and winch safety issues. This survey has since been piloted with the trawler fishing community to provide further improvements and subsequent changes have underscored the importance of involving "the community" in fishing safety research efforts. The team has hired additional personnel to assist in moving the interview schedule forward and Ms. Backus predicts that by early summer they will be close to the original timeline. Dr. Dennerlein will be actively engaged in this project as it enters the engineering phase.

Evaluation Core

Center Evaluation

To date the NEC Evaluation Core has achieved four of its ten stated specific aims. Five other specific aims are underway, but involve ongoing collection of data across the entire five-year cycle. A remaining aim (#5 - "Assess impact of NEC scientific projects on target audiences using mixed methods approaches") has not yet begun. Most noteworthy accomplishments for the Evaluation Core: 1) clear logic models for the NEC and individual R01 projects have been fully developed; 2) tracking of all projects (outputs, impacts, and progress relative to timeline) is in place and ongoing; 3) this process has identified, two projects needing particular attention due to

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changes in strategy or substantial deviation from the timeline. In one case a new timeline has been devised by the PI that will catch the project up by the end of year 2. In a second case, a new division of labor had been devised to assure data gathering in a timely fashion; 4) Evolution of collaboration and relationships between and among center staff/administration and extramural partners is ongoing using yearly social network analysis.

NEC-Related Activities

Though not supported as part of the 2011-2016 NEC funding, two other NIOSH funded projects are functioning as part of the overall NEC initiative and should be mentioned to more clearly describe the overall NEC effort at the New York Center for Agricultural Medicine and Health.

Tractor Rollover Protection Social Marketing

Though no longer funded with NEC dollars, the Northeast ROPS initiative continues to be active, in part with NIOSH R01 support. In NY, the project has continued to benefit from support by the NY legislature. In 2012, the NY ROPS program passed the 1000 mark, insuring the safety of over 1,000 previously at-risk farm families. Follow up survey data has enabled NEC to identify at least 14 cases in which fatalities or serious injuries have been prevented. Economic analysis of this program demonstrates that it is clearly cost effective.

Similar programs have also been established in PA, VT and NH. These are progressing with variable success based upon local funding availability. NEC has also been approached by Wisconsin, which will be using the NY ROPS project hotline and administrative resources to launch a WI ROPS project in February. There is active interest in establishing ROPS programs in other states, as well.

Generating Structural and Financial Support for Tractor Retrofitting Initiatives

This new R21 research project will begin to address the issue of cost as it relates to the installation of rollover protective structures (ROPS) on unprotected tractors. It involves identifying key stakeholders in a tractor rollover intervention effort. To date key opinion leaders in this field have been identified and a social network map constructed, which notes the individuals/organizations with highest levels of interactivity and greatest access to financial and structural resources. Interviews have already been conducted with individuals at these organizations to assess ways in which both stakeholders and state-based retrofitting initiatives can develop mutually beneficial partnerships. A very successful fall 2012 meeting with industry, Farm Bureau and other representatives affirmed broad support for a national ROPS initiative and willingness to form a committee to advance this goal.

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