Reduced rates of occupational injuries and fatalities in specific production sectors, geographic regions, and populations testify to the impact of the NIOSH Agriculture, Forestry, and Fishing program. According to the Department of Labor’s annual Census of Fatal Occupational Injuries, fatal injuries among private sector workers in agriculture, forestry, and fishing dropped 18 percent between 2008 and 2009. The rate of childhood agricultural injuries per 1,000 farms dropped by 59 percent between 1998 and 2006.

Occupational injuries and fatalities are often studied in the aggregate, but as this issue of AgConnections reminds us, they are experienced -- or prevented -- one worker at a time. In this issue, we salute each of the grassroots partners and industry stakeholders who have collaborated with the NIOSH AFF program. We share the compelling accounts of men, women, and youth who have been affected by agricultural injuries, as well as the testimonies of individuals who have benefitted from control technologies and safe practices developed, tested, and/or promoted through the NIOSH Agricultural Centers.

Life-changing agricultural injury stories. Our lives are a grand collection of stories, and the telling of stories endures as one of the best means to pass on knowledge, wisdom, and know-how. Take work safety. Sure, there are instructions. How often do we sit down and read instructions or have a message sink in after hearing an instructor tell us what (not) to do? Probably not very often. But what if someone you know or can personally identify with is involved in an incident that results in serious illness or injury? Chances are, the message hits home.

The scientific literature affirms the power of narrative in transmitting knowledge and shaping attitudes and behaviors with regard to safety [for example, Cole HP. Cognitive-behavioral approaches to farm safety education: a conceptual analysis. J Agric Saf Health. 2002;8(2):145-59]. The Pacific Northwest Agricultural Safety and Health (PNASH) Center uses the power of storytelling as an educational tool in a project called Reality Tales. Here is a quick review of some of the stories we’ve heard and shared:

- Isabela breaks down in tears describing how she can never work again after falling from a ladder while trying to pick one last piece of fruit.
- Chris describes being saved by his 4-post cab when his tractor rolled over.
- Russell found his farmer brother 10 days after an ATV overturn, crushed by the vehicle, and then describes his own rollover one year later.
- Diana, a mother who lost her arm to a combine, urges listeners: “Don’t wear jewelry when you are working around farm equipment.”
- Wade, reflecting on a neck fracture caused by falling hay bales, observes: “Sometimes we get in a hurry and don’t think about what we’re doing and that’s when we get into trouble.”

Such moving accounts from farm workers and farm family members are being aired to promote safe farm practices. Listen to and/or download audio recordings and transcripts at no cost from the PNASH Web site: http://depts.washington.edu/pnash/listening_library

Richard Fenske, PhD, MPH
Director, PNASH
“People in the workplace are the experts.” This is the philosophy of the Pacific Northwest Agricultural Safety and Health (PNASH) Center.

With this philosophy in mind, PNASH has conducted a series of research projects with innovative workers, educators, employers, and safety and health professionals in Washington State’s tree fruit industry. These projects included 25 farms and several hundred individuals who have helped to identify solutions that can reduce handlers’ exposures to pesticides. A new guide developed as a result of this collaboration, **Practical Solutions for Pesticide Safety**, describes simple strategies that have been shown to be effective through on-farm research and practice.

Farmers and farmworkers are concerned about exposure to pesticides, and rightly so in light of the growing body of evidence that some pesticides, such as the organophosphates, have long-term health effects on adults and children. PNASH research among pesticide handlers participating in the Washington State Cholinesterase Monitoring Program shows that handlers are at greater risk for exposure when they

- mix and load pesticides, and
- decontaminate equipment.

Simple solutions identified by regional stakeholders together with PNASH address these and other hazardous tasks.

_Sneak-peek at some practical solutions found in the new guide:_

- Mixing table attached to pesticide trailer
- Splash shield for mixing pesticides
- Bucket with measurement markers for mixing and loading
- Thermo-wind meter to check local temperature and wind speeds
- Ammunition box for storing emergency eyewash

_Pictured here, left to right: bucket with push-pin measurement markers; ammo box for storing emergency eyewash, thermo-wind meter for checking local temperature and wind speeds_

_The ideas in the guide speak to the inventiveness of the farming community, and we hope that the practical solutions found on Washington’s farms will inspire others._

_Pacific Northwest Agricultural Safety and Health (PNASH) Center  
Practical Solutions for Pesticide Safety: Guide available in Fall 2011_  

*AgConnections, Vol. 5, No. 4, Summer 2011*

Produced by the Southeast Center for Agricultural Health and Injury Prevention, University of Kentucky, under CDC/NIOSH Cooperative Agreement U50 OH007547-091S. POSTMASTER: Send address changes to Editor, AgConnections, Southeast Center for Agricultural Health and Injury Prevention, University of Kentucky, College of Public Health, Suite 1A, 342 Waller Avenue, Lexington, KY, 40504.

Cover photo credits, counterclockwise from top right: No-till planting of corn into cover crop of barley, Jeff Vanuga, USDA; logging road, Robert McKnight, University of Kentucky; Applying weed control to soybeans, Keith Weller, USDA; South Carolina clam harvest, Robert Durborow, Kentucky State University; Tractor with 4-post ROPS, Peggy Greb, USDA; Inspecting cattle for ticks, Scott Bauer, USDA; Dairy research technician, Keith Weller, USDA; Sheep shearer, Teresa Donovan, University of Kentucky; Young woman showing holstein, Ken Hammond USDA; Feeding hay to cattle in deep snow conditions, Jeff Vanuga USDA. Page 4: Monte Vista Dairy, photo by Evelyn te Velde.
The Southwest Center for Agricultural Health, Injury Prevention, and Education serves stakeholders in Texas, Arkansas, Louisiana, New Mexico, and Oklahoma. Diversity of commodity production, workforce characteristics, and economic conditions throughout the region contribute to varied injury and health risks for workers in production agriculture, forestry, and commercial fishing. The Southwest Center addresses priority concerns by working in partnership with owners, employees, and sector leaders at the state and local levels.

New Mexico

The Southwest ranks 2nd nationally for dairy production. A Spanish language DVD, Considering Human and Animal Safety, was recently developed with the Southern Great Plains Dairy Consortium. “We have been able to obtain information through the NIOSH Ag Centers that is not available anywhere else. The SW Center is a key ally for us to continue to work on dairy safety and training issues key for a sustainable future of dairy in New Mexico and the Southwest.”

-- R. Hagevoort, PhD, NM Extension Dairy Specialist

Oklahoma

Many ag students and new producers lack practical experience using tractors and other machinery. A self-sustaining program has been implemented to support Cooperative Extension agents and ag science teachers to certify youth for agricultural employment.

“As the NAAE Region 2 Vice President, I plan on using the SW Ag Center in the future to provide professional development to OK, KS, NM, AR agriculture teachers. The service they [SW Ag Center] provide is needed and must be taken back to our local communities.”

-- Kevin Stacy, National Association of Agricultural Educators, Region 2

Arkansas

Loggers and logging truckers recognize the importance of work safety education.

“Our family-owned company, Talbert Timber, is grateful for the opportunity to be involved in your efforts to increase safety in the Forestry and Lumber/Woods Industry. We believe safety is crucial to maintaining a sustainable worksite and a successful business.”

-- Edward Talbert
Co-owner, Talbert Timber

Louisiana

A research project with farm women raised the concern that a child would be first on the scene of an injury or health crisis. Project participants asked for materials to prepare children to respond appropriately to an emergency situation. Materials developed for national distribution include First Aid for Rural Medical Emergencies (FARME), a curriculum for rural health providers to teach farm families hazard risk reduction and appropriate first-on-the-scene actions, and First Aid Farm Quest, an interactive CD to teach students to recognize, avoid, and correct farm hazards.

“The class helped me to recognize potential dangers that are always present in my environment and the appropriate steps to take in the event of an emergency.”

-- Southeastern Louisiana University nursing student

Texas

From inception the Shrimper Safety Project delivered training and materials in Vietnamese to Gulf Coast shrimpers with limited English proficiency.

“During vessel safety examinations captains are repeating what they have learned and are asking to be included in future training classes. Before, it was the expense of the equipment, and now it’s, How do I put the life raft in the water? And they understand it’s to help them. I want to express my thanks and appreciation... for your expertise in translation, teaching skills, and for supporting Vietnamese fishermen. It’s about saving their lives.”

-- Gilbert Gallardo
USCG Marine Safety Unit, Texas City
Committed to maintaining an industry-relevant research agenda, the High Plains and Intermountain Center for Agricultural Health and Safety (HICAHS) convened a meeting of its newly formed Dairy Advisory Board in April 2011. The Board serves to guide, facilitate, and evaluate HICAHS research and outreach efforts aimed at reducing injuries and illnesses among dairy workers. The board consists of 25 members representing 12 states. Members include dairy owners/managers, state extension specialists, producer organizations, workers’ compensation insurers, dairy veterinarians, equipment manufacturers, and researchers from partnering NIOSH Agricultural Centers. The 2-day April workshop in Fort Collins, CO, provided a forum for members to identify, prioritize, and discuss issues related to dairy worker health and safety.

Years of partnership building has resulted in HICAHS being recognized as a trustworthy partner to address occupational hazards. HICAHS incorporates worker health and safety into a farm’s business strategy and sustainability program -- an approach welcomed with enthusiasm by producers. To date, HICAHS has formed partnerships with more than 150 dairy operations in 10 states.

The Board cautioned that, due to an increasing regulatory environment, many producers will continue to be wary when invited to participate in research or outreach activities. The Board complimented HICAHS personnel on their stakeholder engagement efforts and recommended that HICAHS continue to include stakeholders in project planning and design, as well as execution. The key take-away message was the need to develop tools and programs to assist managers with pertinent issues such as immigration, communication, and regulatory compliance.

Board members were presented with findings from recent HICAHS activities and with future plans. For example, Dr. Cheryl Beseler has submitted a proposal to address the problem of underutilization of health care services by farm workers, even those who are insured. Drawing from the well-established theory of planned behavior, Dr. Beseler intends to (1) address the reasons why workers don’t use health services, (2) help bring health care services directly to farms, and (3) measure whether promotion of services has an impact.

Another HICAHS project will examine the ergonomic health of dairy parlor arrangements. Lifting and attaching 12-pound milking units can put unnecessary strain on workers’ bodies, depending on the angle, force, and motions that are used. Researchers will be working closely with market leaders in dairy equipment and supplies to design milking tools that will enable workers to perform more efficiently, productively, and with less risk of developing musculoskeletal disorders. Two other HICAHS proposals aim to better understand the causes of respiratory disease associated with exposure to dust on farms.

In July HICAHS will host the inaugural meeting of the International Dairy Research Consortium, with participants from Sweden, Australia, Canada, New Zealand, Brazil, Germany and Italy. As it marks 20 years of service in 2011, HICAHS also will continue to collaborate with other Ag Centers interested in the dairy sector, such as the Southwest Center, the Great Plains Center for Agricultural Health, the National Farm Medicine Center in Marshfield, Wisconsin, and the Western Center for Agricultural Health and Safety. For more details contact Allison DeVries, HICAHS Coordinator, at 970-491-6152. Allison.DeVries@colostate.edu.

Western Center for Agricultural Health and Safety (WCAHS)
University of California-Davis
New Dairy Training Tools in English and Spanish

In 2010 WCAHS Research Coordinator Frank Mitloehner, PhD, and WCAHS Education and Outreach Specialist Teresa Andrews, MS, led joint development and dissemination of the Dairy Worker Training Guide and Fotonovelas:

- Dairy Safety Training Guide
- Guía de Capacitación en Seguridad para Lecherías
- How Pablo Learned to Work Around Cattle
- Como Pablo Aprendió a Trabajar con el Ganado

These safety training tools were developed in both English and Spanish after it was discovered that most new dairy workers have no experience in working around large animals. Ms. Andrews and Dr. Mitloehner completed this project in collaboration with the

- Worker Occupational Safety and Health Training and Education Program (WOSHTEP), California Commission on Health and Safety and Workers’ Compensation (CHSWC/California Department of Industrial Relations)
- Labor Occupational Health Program, UC-Berkeley
- Labor and Occupational Safety and Health Program, UC-Los Angeles

In one of the first major studies of its kind, Melvin Myers, MPA, of the Southeast Center for Agricultural Health and Injury Prevention (University of Kentucky) and colleagues at Kentucky State University and the University of Mississippi have been identifying occupational hazards in fish farming as well as simple solutions to reduce or eliminate them. Simple solutions, often conceived and tested by farmers themselves, have been identified through visits to fish farms in AR, AL, PA, WV, MO and
- Mississippi (catfish in ponds),
- North Carolina (trout in raceways),
- South Carolina (clams in estuaries and bays),
- Kentucky (trout, bass, and catfish in ponds and raceways), and
- British Columbia (salmon in ponds and net pens).


**Drowning Hazard:** Potential for tractor overturns on obscured or eroded banks.

**Solution:** Install rollover protective structures (ROPS) on tractors.

**Hazard:** Top loading bins and unguarded ladders pose a potentially serious fall hazard.

**Solution:** Ladder guards and ground-level systems for opening hatches enhance the safety of farm workers and contractors.

**Hazard:** Electrocutation.

**Solution:** Lock-out tag-out when working on electrical equipment: every worker, every time.

**Hazard:** Bending and lifting during fish harvesting and other tasks can lead to back injuries and musculoskeletal disorders.

**Solution:** Provide mechanical assists where possible, e.g., pulley systems. Reduce weight of individual loads.

**Hazard:** Unsecured live tank lids can fall from an upright position and injure or sever fingers.

**Solution:** Install locking hinges
Owners of a North Carolina farm not only have incorporated Agritourism Health and Safety Guidelines for Children into their operation, they are also helping to make it easier for others to adopt the guidelines.

Tami and David Thompson, operators of Lazy O Farms in Johnson County, co-hosted an open house and training workshop in August 2010 with the North Carolina Agromedicine Institute. The event was attended by more than 40 farmers, insurance agents, university faculty members, Cooperative Extension agents, and staff from the Agritourism Office of the NC Department of Agriculture and Consumer Services, which also provides administrative oversight for the NC Agritourism Networking Association.

The workshop was made possible by a mini-grant from the National Children’s Center for Rural and Agricultural Health and Safety (Marshfield, WI) secured by Principal Investigator Robin Tutor of the NC Agromedicine Institute. Using the Agritourism Health and Safety Guidelines for Children, along with two companion guides, Policies and Procedures and Worksite, the Thompsons and Tutor identified issues that could affect the safety and health of more than 4,000 children visiting Lazy O Farms each year.

Many items necessary to make improvements on the farm were already on site, but needed to be put into use. Similarly, many safety and health practices were already in place but not formally documented as policies and procedures or included as part of employee training. The Thompsons also learned about many free resources available in the community and state. Tami observes that, most importantly, the project “has helped us to think differently about health and safety.”

Workshop participants took a safety and health walk-about on the farm. Participants were challenged to identify items in the Policies and Procedures and Worksite guides that had or had not been corrected. Findings were shared after lunch, as were comments regarding what participants liked best or least on the walk-about. All agreed that there was some lesson they could take away that could be used to help improve child health and safety on their own farms or on the farms with which they worked.

Snipes Insurance Service in Dunn, North Carolina, worked with the Thompsons to reduce their agritourism liability insurance premium by $300 per year and agreed to work with the Institute toward the possibility of developing a new insurance product for agritourism farms incorporating concepts from the Policies and Procedures and Worksite guides. This is particularly important because insurance costs are becoming prohibitive. “Trying to find someone to insure agritourism activities is next to impossible,” shared Tami. “All they can think of is, ‘You’re bringing children out here to stick their hands near a calf’s mouth.’ We take every precaution there is to keep everyone safe, but it still doesn’t help with getting insurance.”

Objectives for the NCCRHAS grant were met and exceeded. This project has laid a foundation for the improvement of child health and safety within the agritourism industry, and Tutor was able to articulate many lessons learned that can be applied to future projects.

New York ROPS Rebate Program Makes an Impact

In June 2010, Farm Bureau member David Huse was returning home after a day of mowing hay on a friend’s farm when he was struck by an oncoming car that hit his tractor and flipped the tractor on top of him. David’s death was a devastating blow to family, friends, and business partners, as well as to members of the larger agricultural community, who lost a passionate and outspoken advocate for sustainable farming in New York. David’s neighbor and business partner Judy Pangman wrote the following in a heartfelt letter to her local NY legislator in response to David’s death:

“For farmers, every day brings a new challenge. Getting to and from our fields safely should not be our most difficult and deadly challenge. We need to make farming safer to prevent the loss of our friends, children and other family members, and employees in such senseless accidents and request your assistance and support. We miss David terribly every day. Please help us make farming safer for everyone.”

The leading cause of fatal injuries on U.S. farms is tractor-related incidents. The Northeast has the highest rate of tractor overturn fatalities in the nation. Studies have shown that rollover protective structures (ROPS) on tractors, used in combination with seat belts, are 98% effective in preventing fatal injury in the event of a tractor overturn. In November 2006, the Northeast Center for Agricultural and Occupational Health launched the New York State ROPS Rebate Program. This program encourages the installation of retrofit ROPS on unguarded tractors. Farmers can call a toll free hotline for assistance in locating certified ROPS for their tractor and receive a 70% cost rebate up to $765.

To date, more than 900 New York farmers have retrofitted their tractors through the program and that number continues to climb. The success of the NY program has led to the initiation of similar programs in Vermont, New Hampshire and Pennsylvania. These efforts have been organized in collaboration with local institutions such as Pennsylvania State University, University of Vermont Extension, and the New Hampshire Department of Agriculture, Markets and Food. Nearly 500 inquiries have come in from these three additional states.

Through annual follow-up surveys, seven farmers reported experiencing an overturn with their newly retrofitted tractors and 66 farmers reported experiencing a close call (e.g., wheels coming off the ground, sliding down a hill, etc.). Many of these incidents testify to the effectiveness of ROPS in preventing injuries and deaths.

In addition to annual follow-up surveys, satisfaction surveys have been conducted on a continuous basis with program participants. According to these surveys, 99% of respondents would recommend the program to others and 85% said retrofitting their tractor with ROPS was affordable with the help of the rebate.

-- Barbara Bayes
ROPS Project Coordinator, NEC

Online information about the ROPS Retrofit Program at [http://ropsr4u.com](http://ropsr4u.com)

Pictured here: Three NY farmers who escaped close calls thanks to ROPS installed on their tractors.
The Centers for Agricultural Disease and Injury Research, Education, and Prevention represent a concerted effort of CDC/NIOSH to protect the health and safety of farm operators, hired farm workers, and their families. The Centers act by cooperative agreement to address urgent, persistent, and/or emerging problems related to occupational safety and health in agriculture, forestry, and fishing. The Centers are located in geographically diverse regions and respond to the unique needs of their stakeholder populations.

Great Plains Center for Agricultural Health
Director: Fred Gerr, MD
100 Oakdale Campus #120 IREH
University of Iowa
Iowa City, IA 52242-5000
Telephone: 319-335-4419
http://www.public-health.uiowa.edu/gpcah/

High Plains Intermountain Center for Agricultural Health and Safety
Director: Steve Reynolds, PhD, CIH
Department of Environmental and Radiological Health
133 Environmental Health Building
Colorado State University
Fort Collins, CO 80523-1681
Telephone: 970-491-6152
http://www.hicahs.colostate.edu/

National Children’s Center for Rural and Agricultural Health and Safety, Marshfield Clinic
Director: Barbara C. Lee, RN, PhD
1000 North Oak Avenue
Marshfield, WI 54449-5790
Toll-free: 800-662-6900
Telephone: 715-389-4999
http://www.marshfieldclinic.org/NCCRAHS

Northeast Center for Agricultural Medicine and Health
Director: John J. May, MD
1 Atwell Road
Cooperstown, NY 13326
Toll-free: 800-343-7527
Telephone: 607-547-6023
http://www.nycamh.com/

Pacific Northwest Agricultural Safety and Health Center
Director: Richard Fenske, PhD, MPH
Department of Environmental & Occupational Health Sciences
University of Washington
Box 357234
Seattle, WA 98195-7234
Toll free: 800-330-0827
Telephone: 206-616-1958
http://depts.washington.edu/pnash/

Southeast Center for Agricultural Health and Injury Prevention
Director: Robert McKnight, MPH, ScD
College of Public Health
Suite 1A, 342 Waller Avenue
Lexington, KY 40504-9842
Telephone: 859-323-6836
http://www.mc.uky.edu/scahip/

Southwest Center for Agricultural Health, Injury Prevention, and Education
Director: Jeffrey L. Levin, MD, MSPH
University of Texas Health Science Center
11937 US Hwy 271
Tyler, TX 75708-3154
Telephone: 903-877-5896
http://www.swagcenter.org

Western Center for Agricultural Health and Safety
Director: Marc Schenker, MD, MPH
One Shields Avenue
University of California
Davis, CA 95616-8757
Telephone: 530-752-4050
http://agcenter.ucdavis.edu

Note: National Children’s Center Special Project and Pilot Study Funds (mini grant program) 2011-2012
Application deadline August 19, 2011