PACIFIC NORTHWEST AGRICULTURAL SAFETY AND HEALTH (PNASH) CENTER
fishing • farming • forestry
Promoting Safe and Sustainable Agricultural Workplaces and Communities

Accomplishments and New Directions
Richard Fenske, PhD, MPH
Professor and Center Director
September 17, 2012

http://depts.washington.edu/pnash (800) 330-0827
University of Washington School of Public Health
Who is PNASH? ¿Quién es PNASH?
University of Washington School of Public Health
National Institute for Occupational Safety and Health

NIOSH Centers for Agricultural Disease and Injury Research, Education, and Prevention
December 2011

1. University of Nebraska Medical Center, Omaha
2. University of Iowa, Iowa City
3. Colorado State University, Ft. Collins
4. National Farm Medicine Center, Marshfield, WI
5. Bassett Healthcare, Cooperstown, NY
6. University of Kentucky, Lexington
7. University of Washington, Seattle
8. University of Texas Health Science Center, Tyler
9. University of Minnesota, Minneapolis
10. University of California, Davis
A Regional Center for the Northwest

Research Partners

**Alaska**
- NIOSH Alaska Field Station

**Idaho/Montana**
- Idaho Mountain States Group
- University of Montana

**Oregon**
- OR Health & Science Univ.
- OR State University
- Alliance of Forest Workers and Harvesters
- Garland and Associates
- U.S. Coast Guard

**Washington**
- Washington State University
- Seattle University
- Heritage University
- UW Schools of Public Health/Medicine
- WA Tree Fruit Research Commission
- NW Horticultural Council
- Yakima Valley Farm Workers Clinic
- Central WA Occupational Medicine
- WA Dept of Health
- WA Dept of Agriculture
- WA Dept of Labor & Industries
A Regional Center for the Northwest

Community Collaborations

Northwest
- NW Regional Primary Care Association
- NW Communities Education Center/Radio KDNA

Alaska
- Alaska Marine Safety Education Association

Idaho/Montana
- Partnership for Hispanic Health

Oregon
- Hood River Community Advisory Board
- Promotora Program for Forestry Workers
- Associated OR Loggers
- OR Growers/Shipper's Assoc.

Washington
- El Proyecto Bienestar
- Yakama Indian Nation
- ConneX Program at Heritage University
- WA Assoc. Community/Migrant Health Ctrs
- WA Contract Loggers Association
Our Work  Nuestro Trabajo

How We Work  Cómo Trabajamos

What is the problem?  ¿Cuál es el problema?
What is the cause?  ¿Cuál es la causa?
What are the solutions?  ¿Cuáles son las soluciones?
Does it work?  ¿Funciona?

Put it to Practice!  ¡Póngalo en práctica!
Pesticide Exposure in Washington State

Integrated Research: from Bench to Field

- Pesticide Adducts
- Cholinesterase Monitoring In Washington State
- Practical Solutions for Pesticide Safety
- Community Air Monitoring
- Risk Factors for Pesticide Handlers

Integrated Research: from Bench to Field
WA State Cholinesterase Monitoring Program

**Challenge**
High exposures due to airblast spraying

**Response**
PNASH serves as scientific advisor
Epidemiologic investigation

**Partners**
WA Dept of Labor & Industries
WA Dept of Health
Central WA Occupational Medicine

**Impact**
Identification of key risk factors
New knowledge for state training and consultation
Cholinesterase Monitoring: A Success Story

Reduction of ChE Depression in WA Pesticide Handlers

Number of Handlers

- Green line: Handlers with ChE Depression to Work Evaluation Level
- Red line:Handlers with ChE Depression to Removal Level


**Challenge**  Cholinesterase testing is expensive and inherently variable

**Response**  Develop new assessment tools

**Partners**  CDC; UW Dept of Genome Sciences

**Impact**  New assay to measure protein adducts
-- increased accuracy, sensitivity, specificity
Validation of portable ChE test kit
-- inexpensive and easy to use
New Applicator Training to Minimize Pesticide Exposure

**Challenge**
Traditional training methods ineffective with farm worker population

**Response**
Implement and evaluate novel training

**Partners**
WA Dept of Agriculture; WSU Extension

**Impact**
Hands-on Training Program
-- 200 applicators trained per year
Fluorescent Tracer Manual
-- on-line training accessed by 500 persons/yr
Children’s Neurobehavioral Performance and Pesticide Exposure

**Challenge**  Families living in agricultural community at higher risk of exposure – children more vulnerable


**Partners** Columbia Gorge Fruit Growers

**Impact** Family education and assessments – 300 families

Computer-based training *Safe Workplace, Safe Home/Sitio de Trabajo Seguro, Hogar Seguro*
# Pesticide Safety Education for Agricultural Workers

**Challenge**  
Provide science-based information to broader agricultural worker population

**Response**  
Resources conveyed by promatoras and other trusted communication channels

**Partners**  
WA Dept of Agriculture; WSU Extension

**Impact**  
WA Community Health Workers Network  
-- reaches >300 workers/yr  
Governor’s Ag Safety Day (annual)  
-- 200+ attendees visit educational booth and participate in demonstrations
### Medical Education Database for Pesticide Health Effects

<table>
<thead>
<tr>
<th><strong>Challenge</strong></th>
<th>Pesticide health effects absent from medical student &amp; nursing student training</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response</strong></td>
<td>Create medical education materials suitable for classroom instruction</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td>UW Medical School; UW School of Nursing; Seattle University Nursing Program</td>
</tr>
<tr>
<td><strong>Impact</strong></td>
<td>On-line toolbox of case-based training and database of pesticide health effects</td>
</tr>
</tbody>
</table>
Farm-Tested Strategies to Minimize Pesticide Exposure

**Challenge**
Need to change practices on the farm

**Response**
Work with farm managers and workers (‘experts’) to identify practical solutions

**Partners**
WA Dept of Agriculture; WSU Extension

**Impact**
‘Practical Solutions for Pesticide Safety’
-- 1,000 copies requested since Jan 2012
-- SAIF Corporation (Workers Comp of OR) will print and distribute additional 1,000 copies
-- OXARC Safety Supplies promoting with in-store displays
SOLUTION:
Metal Mixing Table

This table is constructed out of metal with an expanded metal top and cannot absorb pesticides like wooden apple bins or tables. Handlers find it easier to use because it is taller and they don't need to bend over when measuring.

Install a spill containment tray under the table top to catch possible spills so concentrated pesticides do not soak into the ground. Slope the tray toward a drainage plug.

Alert!

A farm manager built this mixing table ...

... because he wanted a sturdy table that weathered well and did not absorb pesticides. He was also concerned that when his handlers used apple bins, they needed to bend over to look closely at marks of the measuring cups, resulting in increased chance of face splashes and back strain.

“I like this table also for its height...
It can prevent back injuries during pesticide handling.”

Mr. Escareño

Evaluation Finding

Nearly 75% of 199 handlers and managers surveyed said they would use the table if it were available and thought it would make handling easier.

Tip

Open the containment tray valve when not using the table, so that rainwater can drain.

Setup & Use

- Design dimensions for handler comfort while measuring. Paint with rust-resistant paint
- Size to ensure vehicles and machinery can go around tables and enter the next row
- Dispose of spilled material in containment tray according to your farm’s spill response plan
Safety Training in the Fishing Industry

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Need for information on frequency of safety training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>Safety knowledge testing and evaluation</td>
</tr>
<tr>
<td>Partners</td>
<td>Alaska Marine Safety Education Association</td>
</tr>
<tr>
<td>Impact</td>
<td>Identified need for monthly refresher training for Drill Coordinators</td>
</tr>
<tr>
<td></td>
<td>Findings became part of U.S. Coast Guard rulemaking</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>Personal flotation device (PDF) use low in West Coast crab fishing</td>
</tr>
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<tr>
<td><strong>Response</strong></td>
<td>Field testing and promotion of PFDs</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td>NIOSH Alaska Field Station; UW Field Research; Coast Guard (13th District); OR Health &amp; Science University</td>
</tr>
<tr>
<td><strong>Impact</strong></td>
<td>Identified risk factors and user experience Brochure on PDF safety made available to entire West Coast fleet</td>
</tr>
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### Forestry Worker Safety

<table>
<thead>
<tr>
<th><strong>Challenge</strong></th>
<th>High injury &amp; illness rates; small companies with high worker turnover; immigrants with no reliable sources of safety information</th>
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<tbody>
<tr>
<td><strong>Response</strong></td>
<td>Characterize workers, tasks and needs Provide culturally appropriate and science-based resources and delivery</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td>Alliance of Forest Workers and Harvesters; Forks Comm. Hospital; PNASH Network</td>
</tr>
<tr>
<td><strong>Impact</strong></td>
<td>OR Forestry Promotora Program NW Forestry Worker Safety Review -- 250 subscribers; &gt;800 access on-line/year</td>
</tr>
</tbody>
</table>
### Logging Safety

**Challenge**

50% of NW loggers are now at least 45 y/o. Logging is strenuous with a high rate of musculoskeletal strains and injuries.

**Response**

Substitute synthetic rope for steel wire.

**Partners**

Garland & Associates; Oregon State University; OR & WA contract loggers assoc.

**Impact**

Widespread synthetic rope adoption.

-- Weight is 1/9 weight of steel wire.

-- Managers and workers view synthetic rope as easier to use and safer.
**Challenge**  
Traditional safety messages fail to reach most agricultural workers

**Response**  
Collect and broadcast first-person stories of injury, asthma, heat-related illness and workplace abuse

**Partners**  
- StoryCorps™ (National Public Radio)  
- Radio KDNA (Spanish Public Radio, 1st of its kind in U.S.)

**Impact**  
Audio Library – Listen and Learn!  
-- Web access to stories in Spanish/English
## Ergonomics of Mobile Work Platforms in Orchards

<table>
<thead>
<tr>
<th><strong>Challenge</strong></th>
<th>Repetitive motion during pruning</th>
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<tbody>
<tr>
<td><strong>Response</strong></td>
<td>Measurement of ergonomic stressors</td>
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</tbody>
</table>
| **Partners**  | WA Tree Fruit Research Commission  
                      WSU Extension  
                      Equipment manufacturers |
| **Impact**    | *Prevention through Design*  
                      -- Ensures work practices that minimize MSD risks |
**Challenge**
Foster education and research capacity of NW agricultural worker community

**Response**
Help establish independent non-profit capable of community research

**Partners**
NW Communities Education Center; Radio KDNA; Heritage University; YVFWC

**Impact**
*El Proyecto Bienestar*

-- EPA cooperative agreement: “Community Action for a Renewed Environment”

-- NIEHS R21: “Aggravating Factors of Asthma in a Rural Environment”
Safety is the “work of changing minds, And it’s not done overnight.”

~ ‘Practical Solutions’ project participant