High Plains Intermountain Center for Agricultural Health and Safety (HI-CAHS)

Colorado State University
Fort Collins, CO
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A. ACE Team List  
B. Bibliography of Center Products (10/1/00 – 9/30/01)
I. CENTER OVERVIEW

A. EXECUTIVE SUMMARY

HI-CAHS was extremely productive in FY 2001 with progress and success in fulfilling the mission of a NIOSH funded agricultural health and safety center. As Center Director, in my opinion HI-CAHS has achieved a mature status as a research, service, intervention, and educational center in the USPHS Region VIII. The Center has always aspired to be multi-dimensional and has attempted to achieve a balance of productivity in all areas, however the truth be known our most outstanding achievements have been in outreach intervention, evaluation, with the remainder balanced in research and education.

The Center has also aspired to be truly regional, rather than just being a Colorado Center. The external advisory committee now has membership from every State in our region. The other accomplishments have been the collaborative agreements with cooperative extension in every state in the region. Every Extension Safety Specialist in the region has received us with open arms by utilizing Center projects, but they have met with us and we have gone to every state to provide assistance. Each Cooperative Extension Safety office in the region received $7,000 from HI-CAHS to bolster their work in agricultural health and safety.

This short Center overview will report on Center wide objectives, (Table I) and highlight a few areas of special interest that are discussed in detail in the body of the report. Last but not least Center contacts this past year were the greatest in HI-CAHS's brief history for a total count of 632,726 contacts, a truly significant achievement considering our small staff.

TABLE I

CENTERWIDE OBJECTIVES

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Number Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>630,522</td>
</tr>
<tr>
<td>Research</td>
<td>87</td>
</tr>
<tr>
<td>Intervention</td>
<td>1,454</td>
</tr>
<tr>
<td>Evaluation</td>
<td>662</td>
</tr>
<tr>
<td>TOTAL</td>
<td>632,725</td>
</tr>
</tbody>
</table>
B. CENTER ACCOMPLISHMENTS FOR YEAR

1. Contacting a total of 632,736 through outreach, education, intervention, research and service activities. (See narrative to follow in the report.)

2. Regional Cooperative Extension Project. This was actually a two year feasibility study in developing cooperative agreements with every Extension Agency in every state in Region VIII. These agreements where money was sent to Cooperative Extension Safety Specialists was found to be exceptionally successful in stimulating more health and safety education in all of the states. This was very cost effective in that with a minimal amount of money from HI-CAHS there was synergistic output from agencies and staff already in place with funding from the USDA and the State Land Grant Universities in each state (refer to the body of the text of this report).

3. Engineering Control Strategies Based on Tractor Stability. This has been an ongoing project since 1991 when HI-CAHS was established. More than 300 people die each year due to tractor rollovers. Since 1991 the Center has focused on designing, testing, and manufacturing ROPS for retrofit of older tractors, those in most common use in today’s agricultural operations (70% of tractors in current use). Today there are such tractor retrofit ROPS available based upon our research. We are aware that at least 3 of these ROPS are now commercially available to farmers at a cost ranging from $300 to $600 depending on the tractor in question. Please refer to the research section of this report for the FY 2001 abstract of ROPS research.

4. Endotoxin Exposures in Corn Bin Clean-out on Farms and in Corn Handling Country Elevators. At the request of the Colorado Corn Growers Association we were asked to research air contamination in corn bin clean-out operations. Our initial findings based upon total dust sampling found excessive endotoxin concentrations as high as 1.7 million EU/m$^3$. Our research this past year to verify these alarming results did not find concentrations this high, however, concentrations were found in the range of a few thousand EU/m$^3$ to over 300,000 EU/m$^3$. To further exacerbate these results, the endotoxin exposures were sized by Cascade Impactors with an MMAD of 8.0 $\mu$m, a perfect size for deposition in the tubular airways according to ACGIH criteria. This finding is of concern as this region of respiratory system is the exact site for the development of Chronic Bronchitis, COPD and possibly ODTS. This research resulted in a warning sheet developed for the Corn Growers Association. An abstract was not included in this report as the research was started in the previous fiscal year, but was not finalized and accepted for publication in a refereed scientific journal until this fiscal year.

5. Survey of Pesticide Usage among Ranchers in Region VIII. The livestock industry in the western United States is an agricultural occupational sector that health and safety specialists have limited knowledge. A potential problem uncovered by HI-CAHS was the widespread use of Famfur, an organophosphate pesticide, used for cattle and sheep as a pour on for the control of ectoparasites. Thus it was undertaken to identify pesticide use (primarily Famfur since it passes through the skin) practices among ranchers who own or manage feedlots or ranches in the states of Colorado,
Montana, Wyoming, North Dakota, and South Dakota. Patterns of chemical use, selection factors, perceptions of risk, knowledge of pour on pesticides, and preference of sources of health and safety information was assessed. The results point to an expanded exposure/response and toxicology research endeavor in great need. Please review abstract under the Research section of this report.

C. TOTAL CENTER BUDGET

1. Center overall Operation = $498,338
   (some projects to follow show subsumed in which means this component of budget)

2. Education = $ 43,517
3. Outreach and Intervention = $ 61,925
4. ROPS Research = $ 43,564
5. Evaluation (PARD) = $133,460
6. Multi-Site Eval. (ACE) = $ 72,037

   Total NIOSH Expenditure = $ 852,851

   Other (see Leveraged Funds Table II) = $ 290,716

   TABLE II

   LEVERAGED FUNDS

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Contact Person</th>
<th>Leveraged Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin Adducts of Atrazine</td>
<td>Mel Andersen</td>
<td>$236,872</td>
</tr>
<tr>
<td>Colorado Assessment of Youth Agricultural Education</td>
<td>Glen Rask</td>
<td>$35,000</td>
</tr>
<tr>
<td>Corn Dust Endotoxin Research</td>
<td>Roy Buchan</td>
<td>$32,000</td>
</tr>
<tr>
<td>Cooperative Extension Regionalization</td>
<td>Brit Todd</td>
<td>$13,644</td>
</tr>
<tr>
<td>ACE Team Workshop</td>
<td>Vicky Buchan</td>
<td>$2,000</td>
</tr>
</tbody>
</table>

D. CENTER PROJECTS/ACTIVITIES

1. Ongoing Projects – 24

2. Projects completed – 54

3. Projects dropped/discontinued –
   a. Rural Veterinarians Perceptions of their Role in Agricultural Health and Safety. Dropped due to lack of access to population of study.
b. Assessing Ultra-Violet Light Exposure of Colorado Farmers and Ranchers. Graduate Student quit school---this will likely be revived.

4. Projects involving Human Subjects Approval – Project title and approval number

   The Use of Famphur by Livestock Handlers: Knowledge About and Perceptions of Risk - Human Subjects Approval (Protocol) No. 01-100H

The remaining projects listed below have been closed and no number is available per our Human Subjects Department.

   Carbon Monoxide Exposures During Potato Harvesting Processing
   Endotoxin Exposures in Corn Handling Facilities
   Assessing Residential Herbicide Exposures
   Dust Exposure to Horse Trainers in Indoor Training Arenas

E. CENTER INVESTIGATORS: It must be noted that these numbers reflect only one full time employee----everyone else is part time.

   1. Scientific Investigators – 12
   2. Program Support Staff - 12
   3. Student Participation - 11

F. REGIONAL ACTIVITIES

   1. State in Center’s Region: (List) – Colorado, Wyoming, Utah, Montana, North Dakota and South Dakota
   2. States with Center Activity: See Contacts by State Table III
<table>
<thead>
<tr>
<th>State</th>
<th>Number Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZ</td>
<td>83</td>
</tr>
<tr>
<td>CA</td>
<td>18</td>
</tr>
<tr>
<td>CO</td>
<td>519,367</td>
</tr>
<tr>
<td>DC</td>
<td>1</td>
</tr>
<tr>
<td>FL</td>
<td>12</td>
</tr>
<tr>
<td>ID</td>
<td>6</td>
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<td>IL</td>
<td>1</td>
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<td>KS</td>
<td>38</td>
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<td>MI</td>
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<td>MO</td>
<td>4</td>
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<td>MT</td>
<td>77</td>
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<td>ND</td>
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<td>OR</td>
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<td>WV</td>
<td>1</td>
</tr>
<tr>
<td>WI</td>
<td>2</td>
</tr>
<tr>
<td>WY</td>
<td>3,113</td>
</tr>
<tr>
<td>USA (National)</td>
<td>107,250</td>
</tr>
<tr>
<td>International</td>
<td>70</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>632,726</strong></td>
</tr>
</tbody>
</table>
G. CENTER PRODUCTS

1. Presentations: 21

2. Publications:
   a) Peer Reviewed Journal: 3
   b) Trade Journals: 21 articles
   c) Fact Sheets/Brochures/Technical Publications: 24
   d) Other Publications: 2
      NIOSH Agricultural Center Initiative Multisite Evaluation: A Program Monitoring Report FY 2000
      Migrant Clinic Case Audit IC-9 Codes

3. Education/Training/Outreach:
   a) Training Seminars: 16
   b) Short Courses: 0
   c) Hazard Surveys/Consultations: 19
   d) Academic Training: Pandi Highland Karen Barnard
      Emily Garrison Helen Schledewitz
      Tom Walsh Tiare Wells
      Traci Rogers Marcos daSilva
      Seth Caulkins Brian Oberbeck
      Angela Roberson-Barton
   e) Web Site: 1
   f) Newsletters: 19
   g) CD ROMs: 0
   h) Other: 2
      Appearances on two Grand Junction, CO news broadcasts as part of a Safety Expo for children.

4. Conferences/Meetings Sponsored: 6
   Advisory Committee Meeting
   NIOSH Site Visit
   Meet with CHAMPS to discuss migrant health revised IC-9 code research project with Salud
   NIOSH ACE Team meeting re second initiative report
   Meet with CHAMPS to plan continuation and expansion of IC-9
code research project into additional clinics
NIOSH ACE Team Workshop

5. Other Products: 2
   Agenda and presentation for Multisite Workshop
   Revise multisite database Codebook
### TABLE IV

**FY 2001 OBJECTIVES PLANNING REPORT**

**CENTER WIDE**

<table>
<thead>
<tr>
<th>NIOSH AG. CENTERS OBJECTIVES AND COMMENTS</th>
<th>OBJECTIVES</th>
<th>PRODUCT OR OUTCOME</th>
<th>TIME LINE</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2 &amp; #6</td>
<td>C.1 Professional Education</td>
<td>Two Graduates – Ph.D.</td>
<td>10/00-8/02</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>C.1 Joint Agricultural Course</td>
<td>Two Graduates – M.S.</td>
<td>10/00-5/01</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>One semester course offering</td>
<td>10/00-8/01</td>
<td>Completed</td>
</tr>
<tr>
<td>#2, #6, #7, &amp; #8</td>
<td>C.2 Regional Cooperative Extension Project</td>
<td>Expertise and Outreach in each State in Region VIII</td>
<td>10/00-9/01</td>
<td>Completed</td>
</tr>
<tr>
<td>#2 &amp; #8</td>
<td>C.3 Conference Planning Regional Conference</td>
<td>Presentations and Papers</td>
<td>10/00-6/01</td>
<td>Deferred to future</td>
</tr>
<tr>
<td></td>
<td>Conduct Conference NIFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 &amp; #8</td>
<td>C.4 Update and Revise CAHS Website</td>
<td>Ag Health and Safety Information to Constituency</td>
<td>10/00-9/01</td>
<td>Completed (continually updated)</td>
</tr>
</tbody>
</table>
II. CENTER PROJECT/ACTIVITIES SECTION– OUTREACH SERVICES AND EDUCATION

A. PROJECT TITLE: Community Outreach Services: Education, Training and Consultation

Introduction: This activity encompasses a variety of projects intended to provide communities, schools, individuals and other populations with information and experience to improve the level of knowledge relative to agricultural health and safety. It is anticipated that increased knowledge will result in lower accident and injury rates among populations employed in agriculture. Resources and services in this activity include direct instruction to program participants, reference materials, in-service for teachers, curriculum for high school age students, information CD’s and a web site as resources for teachers.

It must also be noted that there was considerable intervention in terms of on-site industrial hygiene and safety consultation. This was usually followed with larger organizations requesting very specific educational programs for our industrial hygienist and Cooperative Extension Safety Specialist.

B. PROJECT OFFICERS:

Del Sandfort, CIH
Department of Environmental Health (970)-491-6462
EH-124 Environmental Health Bldg.
Del.Sandfort@colostate.edu

Brit Todd, CIH
EH-140 Department of Environmental Health (970) 491-4986
Brit.Todd@colostate.edu

Glen Rask, PhD.
College of Agricultural Sciences, 124 Shepardson, (970)491-2074
grask@agsci.colostate.edu

C. PROJECT DESCRIPTION:

This activity is designed to provide education, training and educational materials to formal and informal educational audiences. Included in this activity are educational opportunities for informal community groups, public schools, youth organizations, underserved populations and individuals. The educational materials are provided through HICAHS personnel, Colorado State University Cooperative Extension, Colorado Vocational Agriculture teachers, Community Colleges, agricultural producers, agribusiness organizations, migrant farm worker organizations and mass media.
D. PROJECT START AND ANTICIPATED STOP DATES:

(October 1, 2000 - September 30, 2001)

E. PROJECT BUDGET: $43,517 formal education (Rask), and the remainder (outreach, intervention and special education workshops) subsumed in HI-CAHS budget.

F. ACTIVITIES AND ACCOMPLISHMENTS:

Training and Educational Outreach

A major effort in education this year was the development of the Agriculture Health and Safety Curriculum for high school agriculture programs. The content for the curriculum was developed based on the input of agriculture teachers and a research project conducted in 2000. The curriculum was placed on compact disc with teacher reference materials, Microsoft Power Point presentations and quizzes. The curriculum was pilot tested by a group of five teachers and revisions are currently being made. A Teachers Guide for the curriculum is being developed. The curriculum has been used by about 200 high school vocational agriculture students. Upon implementation the curriculum will be used through the region and will impact about 4,000 students per year.

The HICAHS program was presented at the Colorado Vocational Agriculture teacher annual meeting to help them become aware of materials and services available through HICAHS. The HICAHS web site was emphasized as a resource for teachers. Approximately 120 teachers participated in the series of three workshops.

Five AgríAction sheets have been translated into the Navajo language to be used with native speakers who farm and ranch in the Four Corners area. The sheets have not yet been duplicated but when completed will be distributed to the Natural Resource committee of the Chapter Houses in the region.

G. PRODUCTS

- Agricultural Health and Safety Curriculum for High School Students on compact disc.
- Five AgríAction sheets translated into Navajo language.
- Presentations: 10 presentations to an audience of 778
- Publications:

  a) Peer Reviewed Journal: 0
b) Trade Journals: Fence Post
   Article Topics
   ATV Safety
   PPE – Gloves
   Chainsaw Safety
   Diabetes Awareness
   Winter Driving
   Back Support Back Study
   The New Ergonomics Standard
   Transporting Farm Equipment
   Agricultural Injuries (English and Spanish)
   Migrant Farmworkers Conference Information
   Tornado Season (English and Spanish)
   Welding Safety
   Fire Extinguishers
   National Safety Month
   Heat Stress (English and Spanish)
   Lightning
   Law Mower Safety
   Bicycle Safety
   National Farm Safety Week 2001
   Drovers Magazine
   Beyond Shields and Signs

c) Fact Sheets/Brochures/Technical Publications
   ATV Safety
   PPE – Gloves
   Chainsaw Safety
   Diabetes Awareness
   Winter Driving
   Back Support Back Study
   The New Ergonomics Standard
   Transporting Farm Equipment
   Agricultural Injuries
   Migrant Farmworkers Conference Information
   Tornado Season
   Welding Safety
   Fire Extinguishers
   National Safety Month
   Heat Stress
   Lightning
   Law Mower Safety
   Bicycle Safety
   National Farm Safety Week 2001
   Transporting Horses Safely
Protect Your Eyes
Animal Handling Tips (English and Spanish)
Lifting Safety (Spanish)
Working in the Fields (Spanish)

d) 0

3. Education/Training Outreach

a) Training Seminars: 16 seminars to an audience of 1024 people
   (includes migrant farm workers WPS training sessions)

b) Short Courses: 0

c) Hazard Surveys/Consultations: 19 (serving 180 employees)

d) Academic Training

e) Web Site

f) News Letters
   ATV Safety
   PPE – Gloves
   Chainsaw Safety
   Diabetes Awareness
   Winter Driving
   Back Support Back Study
   The New Ergonomics Standard
   Transporting Farm Equipment
   Agricultural Injuries
   Migrant Farmworkers Conference Information
   Tornado Season
   Welding Safety
   Fire extinguishers
   National Safety Month
   Heat Stress
   Lightning
   Law Mower Safety
   Bicycle Safety
   National Farm Safety Week 2001

g) CDROMS: 0
h) Other:
   i. Appeared on two Grand Junction, CO news broadcasts as part of a Safety Expo for children.

4. Conferences and Meetings Sponsored:
   a) Regionalization Project Meeting for Cooperative Extension Farm Safety Specialists from Wyoming, Utah, North Dakota, and South Dakota

5. Other Products
   a) A transportable interactive pinch point display for use in training both adults and children
   b) One hundred twenty-five (125) PPE kits were distributed to migrant farm workers. These kit contents include a toothbrush, soap, a water bottle, suntan lotion, and painter caps.

H. STATES THE PROJECT WAS ACTIVE IN

   Colorado, Utah, Wyoming, Montana, North Dakota, South Dakota

I. COLLABORATION

   Agencies involved in collaboration on these activities are as follows:
   College of Agricultural Sciences, Colorado State University, Fort Collins, Colorado
   Colorado Community Colleges, Agriculture Division, Denver, Colorado
   Colorado TechPrep Consortium, CCC, Denver, Colorado
   Colorado Vocational Agriculture Teachers Association, Denver, Colorado
   Crown Point Institute of Technology, Crown Point, New Mexico
   Cooperative Extension in each State in USPHS Region VIII.

F. ACTIVITIES/ACCOMPLISHMENTS

   Website Development

   The HICAHS website (www.HICAHS.colostate.edu) was completely reconstructed updating the format and content. The website contains general information about HICAHS, research reports, resources for clients, educational materials and a section for HICAHS staff.
G. PRODUCTS

The website contains a variety of new products and resources that are delineated in other sections of this report. (Site specific products included in website?) The automatic accounting system included in the website shows the site was used times in the following ……  ???

H. STATES THE PROJECT WAS ACTIVE IN

The accounting system used does not track the geographic source of website use.

I. COLLABORATION

a) Department of Environmental Health
b) Department of Social Work
c) Department of Bioresource Engineering
d) College of Agriculture
e) College of Veterinary Medicine and Biomedical Sciences
f) College of Engineering
h) College of Applied Human Sciences
<table>
<thead>
<tr>
<th>+NIOSH Objective</th>
<th>Activity</th>
<th>Product/Outcome</th>
<th>Timeline</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>#7</td>
<td>O-1. Annual Report</td>
<td>1 Report</td>
<td>9/00-2/01</td>
<td>Completed</td>
</tr>
</tbody>
</table>
| 2 & 7            | O-2. HICAHS Web Site  
2.1 Publish Agri-Action Sheets  
2.2 Publish Training Presentations and Materials  
2.3 Publish “Plain English” Research results  
2.4 Web site use evaluation | Continue to publish, electronically, health and safety information  
Analysis of web site use | Ongoing | Continual updates |
| 2                | O-3. Develop Health and Safety Information sheets  
3.1 Develop Agri-Action sheets  
3.2 Develop Training materials and information  
3.3 Collaborate with Cooperative Extension to share information and resources between HICAHS and the Extension Safety Specialist | 6 new Agri action Sheets in English and Spanish.  
Adapt Extension Weekly Safety Messages to Agri Action Format and collaborate on new topics | 10/00-09/01 | Completed |
| 4                | O-4. Health and Safety Consultation  
4.1 Conduct on-site health and safety audits for agricultural clients | 25 Health and Safety consultation visits to agricultural workplaces | 10/00-09/01 | Completed 19 |
| 2 & 4            | O-5 Migrant Worker Health and Safety  
5.1 Conduct health and safety visits to migrant housing facilities  
5.2 Conduct migrant worker health and safety training sessions, including WPS training (bilingual) | 10 Camp visits  
10 Health and Safety training sessions | 10/00-09/01 | Completed |

TABLE V

FY 2001 OBJECTIVES PLANNING REPORT
OUTREACH
<table>
<thead>
<tr>
<th>NIOSH Objective</th>
<th>Activity</th>
<th>Product/Outcome</th>
<th>Timeline</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-6</td>
<td>In-Service and Professional Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Continue curriculum development for Agricultural Health and Safety Education (High School level)</td>
<td>New curriculum modules for use via distance education methods.</td>
<td>10/00-09/01</td>
<td>Completed</td>
</tr>
<tr>
<td>6.2</td>
<td>Develop and deliver in-service education to cooperative extension agents</td>
<td>1 short course</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>Develop and deliver Health and Safety short course in cooperation with Integrated Resource Management project at Colorado State University.</td>
<td>1 secondary level safety course</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>6.4</td>
<td>Develop and disseminate an agriculture and horticulture safety course for secondary teachers.</td>
<td></td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>O-7. Health and Safety Training</td>
<td>30 training sessions</td>
<td>10/00-09/01</td>
<td>Completed</td>
</tr>
<tr>
<td>7.1</td>
<td>Conduct specific health and safety training based on client needs and requests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.2</td>
<td>Develop specific training materials based on client needs and requests</td>
<td></td>
<td></td>
<td>Completed</td>
</tr>
<tr>
<td>2</td>
<td>O-8. Health and Safety Training Packages</td>
<td>3 packages with scripts available for download</td>
<td>10/00-09/01</td>
<td>Completed</td>
</tr>
<tr>
<td>8.1</td>
<td>Develop training presentations for dissemination based on client needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>O-9. Interactive Displays</td>
<td>3 interactive health and safety displays</td>
<td>10/00-09/01</td>
<td>Completed</td>
</tr>
<tr>
<td>9.1</td>
<td>Design and use interactive displays related to agricultural health and safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-10.</td>
<td>Center and Agency Collaboration</td>
<td>1 program developed in another region implemented in this region</td>
<td>10/00-09/01</td>
<td>Completed</td>
</tr>
<tr>
<td>10.1</td>
<td>Collaborate with other Centers and Agencies to share developed heath and safety information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-11.</td>
<td>Fence Post Article</td>
<td>Monthly articles</td>
<td>10/00-09/01</td>
<td>Completed</td>
</tr>
</tbody>
</table>
III. CENTER PROJECT/ACTIVITIES SECTION – PROGRAM ASSESSMENT RESOURCE DEVELOPMENT UNIT (PARD)

A. PROJECT TITLE: Program Assessment Resource Development Unit

Introduction: The following section delineates an overview of the projects within the PARD unit for fiscal year 2001.

B. PROJECT OFFICERS:

Vicky Buchan, Ph.D.
buchan@cahs.colostate.edu
Angi Buchanan, Administrative Assistant
angi.buchananl@cahs.colostate.edu
Cindy Quick, Research Associate (through 7/1/01)
cquick@cahs.colostate.edu
Sue Tungate, Research Associate (through 7/1/01)
tungate@cahs.colostate.edu
Helen Holquist-Johnson, Research Associate (started 7/1/01)
hjohnson@lamar.colostate.edu
Pandi Highland, Graduate Research Assistant (through 7/1/01)
pandihighland@yahoo.com
Stacy Duenwald, Graduate Research Assistant
stacyduenwald@hotmail.com

(970) 491-1912
HI-CAHS
134 Education Bldg.
Colorado State University
Fort Collins, CO 80523-1586

C. PROJECT DESCRIPTION:

The program assessment and resource development (PARD) unit of HI-CAHS addresses multiple objectives including: seeking to improve Center programming via evaluation, archiving Center resources, documenting Center activities, monitoring productivity and impact, as well as participating in several research projects. A complete list of unit objectives and fiscal year progress on them may be found in Table VIII. The unit has developed a program monitoring approach to evaluation, including needs assessments, formative evaluation of new programs, documentation of Center personnel activities, and summative or impact assessment on those projects that warrant it. This comprehensive longitudinal approach to evaluation seeks to enhance program responsiveness to the needs of our target population, and provides continual feedback loops to Center staff and program planning. A number of personnel changes took place during this fiscal year, as cited above.
D. PROJECT START AND ANTICIPATED STOP DATES:

Start date: 10/01/00
End date: Ongoing

E. PROJECT BUDGET:

1. Total PARD expenditure for the fiscal year: $ 133,460.0
2. In-kind project funding for the fiscal year: $ 0

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS:

See Table VIII for report on total PARD Unit Objectives. The more significant projects follow in NIOSH format. They include:

1. Center Program Monitoring
2. HI-CAHS Resource Development, Archiving, Mailing List, Websites

Brief reports follow on those unit objectives that do not warrant a separate report, but that are objectives within the PARD unit.

Objective P-2.2.1 “Evaluation Report on second year of Regional Cooperative Extension Safety Project Proposal”

Cooperative extension specialists in Montana, North Dakota, South Dakota, Utah, and Wyoming were funded by HI-CAHS to provide Health and Safety related activities during FY 2001. This project was under the direction of Brit Todd of the Education and Outreach unit. An instrument was developed by PARD staff to conduct the evaluation of the regionalization project. Telephone interviews were conducted to collect data from each cooperative extension agent. During the regionalization conference, held at Colorado State University, HI-CAHS personnel discussed the results of the evaluation and provided each agent with a copy of the full report.

G. PROJECT PRODUCTS:

See individual sub projects for product lists.
H. STATES PROJECT WAS ACTIVE IN:


I. SPECIAL POPULATIONS:

See Table VI, listing Center Objectives by indicators.

J. COLLABORATION:

Collaboration is reported by sub-project in the PARD unit. Collaborative efforts for the Center can be found in Table VII.

III. CENTER PROJECT / PARD - Program Monitoring

A. PROJECT TITLE: Center Program Monitoring

B. PROJECT OFFICERS:

Vicky Buchan, Ph.D.
Sue Tungate, Research Associate
tungate@cahs.colostate.edu
Helen Holmquist-Johnson, Research Associate
hjohnson@lamar.colostate.edu
(970) 491-2088

C. PROJECT DESCRIPTION:

The purpose is to document activities, contacts, products, and impact of all Center personnel and to provide evaluation feedback on Center efforts. Information is based upon activity logs that HI-CAHS personnel complete and evaluation forms those recipients of services complete. Log data is entered into “Access Database” and reports can be requested as necessary. Client feedback is entered into a statistical package and reports forwarded to the project staff responsible for the service.

D. PROJECT START AND ANTICIPATED STOP DATES:

Project Start: 10/01/00
Project End: Ongoing

E. PROJECT BUDGET:

1. Subsumed in PARD unit budget.
F. PROJECT ACTIVITIES/ACCOMPLISHMENTS:

Objective P-2.1.1 Project staff completed the revision of the Access database used to collect data for Center program monitoring. The database structure was revised based upon input from the ACE team at the August 2001 meeting held in Morgantown, West Virginia. The updated database was distributed to all ACE members and implemented by the HI-CAHS program monitoring staff.

G. PROJECT PRODUCTS:

1. PRESENTATIONS: Verbal reports to Executive Committee.
2. PUBLICATIONS: N/A
3. TRAINING COURSES: As required by new staff.
4. MEETINGS SPONSORED: Regional Cooperative Extension Meeting.
5. OTHER PRODUCTS: Internal Project reports and Annual Reports for NIOSH and other funders.

H. STATES THE CENTER WAS ACTIVE IN:


I. SPECIAL POPULATIONS:

Migrant and seasonal farm workers (primarily Spanish speaking), children, women and the elderly. Also, refer to section ‘I’ in each individual project description.

J. COLLABORATION:

The monitoring and database are specific to HI-CAHS activity and documented for Center reports and administration. The monitoring model experience has been useful as the Centers moved toward an Initiative evaluation model. (See Multisite Project Page ______.)
### TABLE VI

**SPECIAL POPULATION CONTACTS**

<table>
<thead>
<tr>
<th>Special Population Group</th>
<th>Number Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>245</td>
</tr>
<tr>
<td>Migrant Workers</td>
<td>5,274</td>
</tr>
<tr>
<td>Low Income</td>
<td>245</td>
</tr>
<tr>
<td>Ethnic/Minority Workers</td>
<td>246</td>
</tr>
<tr>
<td>Elderly Adults (65+)</td>
<td>175</td>
</tr>
<tr>
<td>Disabled</td>
<td>245</td>
</tr>
<tr>
<td>Children – school age</td>
<td>4,283</td>
</tr>
<tr>
<td>Children – all ages</td>
<td>912</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11,625</strong></td>
</tr>
</tbody>
</table>

### TABLE VII

**HI-CAHS COLLABORATION**

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIOSH</td>
<td>18</td>
</tr>
<tr>
<td>Agricultural Centers (other than own)</td>
<td>16</td>
</tr>
<tr>
<td>Cooperative Extension</td>
<td>11</td>
</tr>
<tr>
<td>Governmental Agency (other)</td>
<td>9</td>
</tr>
<tr>
<td>Agricultural Organizations</td>
<td>8</td>
</tr>
<tr>
<td>University, academic department</td>
<td>7</td>
</tr>
<tr>
<td>Health Care Provider / Organization</td>
<td>7</td>
</tr>
<tr>
<td>University, academic research center</td>
<td>4</td>
</tr>
<tr>
<td>Professional Society</td>
<td>3</td>
</tr>
<tr>
<td>Community Organization</td>
<td>3</td>
</tr>
<tr>
<td>Insurance Company</td>
<td>2</td>
</tr>
<tr>
<td>Agricultural Organizations (focus on children)</td>
<td>2</td>
</tr>
<tr>
<td>Producer/Grower</td>
<td>1</td>
</tr>
<tr>
<td>Equipment Dealer</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>90</strong></td>
</tr>
</tbody>
</table>
III. CENTER PROJECT/PARD - HI-CAHS Resource Development, Archiving, and Mailing List

A. PROJECT TITLE: Resource Development, Archives, and Mailing List

B. PROJECT OFFICER:
   Pandi Highland, Graduate Research Assistant
   (970) 491-2313
   pandihighland@yahoo.com
   Angi Buchanan, Administrative Assistant
   (970) 491-1912
   angi.buchanan@cahs.colostate.edu
   Stacy Duenwald, Graduate Research Assistant
   (970) 491-1986
   stacyduenwald@hotmail.com

C. PROJECT DESCRIPTION: These are ongoing tasks of the PARD unit with the objective of enhancing Center operations.

   1. Maintain a collection of all HI-CAHS products.
   2. Collecting, organizing, and making available to Center staff as well as persons external to the center all agricultural health and safety resources and selected literature.
   3. Compile and synthesize the literature related to health and safety human behavior.
   4. Maintenance of multiple Center mailing lists. A particular focus has been expanding our regional contacts.
   5. Maintain bibliography of Center products.

D. PROJECT START AND ANTICIPATED STOP DATES:

   Project Start: 10/01/00
   Project End: Ongoing

E. PROJECT BUDGET: Subsumed in PARD unit budget.

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS:

   **Objective P-1 1.1, 1.2** Project staff continue to collect and literature and materials applicable to Center goals and mission. These materials, whether they be copies of journal articles or PowerPoint presentations, are reviewed, added to the resource database, and made available to all Center staff at their request.

   **Objective P-1.3** Specific efforts continue to be made to regionalize the mailing list. This included researching and adding to the list agricultural businesses and requesting additions from our Advisory Board and external projects.
Objective P-2.1.2 The Center bibliography is constantly maintained and updated. (See Table VIII.)

Objective P-1.2.1 Websites from the website database developed in fiscal year 2000 were reviewed and an extensive list of links was added to the HI-CAHS website. Links were grouped in the following categories: Commodity Groups, Databases and Research Tools, General Agriculture Sites, General Safety Sites, Government Links, Sites for Kids, Pesticides, Publications, Rural Health, State Colleges of Agriculture in Region, and Other Links of Interest. Staff also began to compile agricultural photographs for a photo gallery on the HI-CAHS website.

G. PROJECT PRODUCTS:

1. PRESENTATIONS: N/A
2. PUBLICATIONS: N/A
3. TRAINING COURSES: N/A
4. MEETINGS SPONSORED: N/A
5. OTHER PRODUCTS: 2001 HI-CAHS bibliography, website “Links” page, and website photo gallery.

H. STATES THE PROJECT WAS ACTIVE IN:

Available nationally and internationally.

I. COLLABORATION:

HI-CAHS, Other Agricultural Centers, NIOSH, and other Ag Health and Safety groups have shared resources, based upon requests. There has been tremendous collaboration with multiple government agencies, organizations, and individuals.


B. PROJECT OFFICERS

Vicky Buchan, Ph.D.
buchan@cahs.colostate.edu
970-491-1912
Stacy Duenwald, Graduate Research Assistant
970-491-1986
stacyduenwald@hotmail.com
C. PROJECT DESCRIPTION:

PARD staff continue to participate in center product evaluation. Some specific tasks under this project have been the completion of the translation of 6 Agri-Action Sheets from English to Spanish. Formative evaluation of the constantly evolving HI-CAHS website was also conducted by PARD with feedback given to the members of the education unit who were redeveloping and updating the website. Formative evaluation feedback was also given to education unit staff as they completed the formation of an agriculture curriculum.

D. PROJECT START AND ANTICIPATED STOP DATES:

Project Start: 10/01/00
Project End:  9/30/01

E. PROJECT BUDGET: subsumed in PARD budget.

F. PROJECT ACTIVITIES / ACCOMPLISHMENTS:

G. PROJECT PRODUCTS:

1. PRESENTATIONS:
2. PUBLICATIONS:
3. TRAINING COURSES
4. MEETINGS SPONSORED: Regionalization Conference.
5. REPORTS:
6. PROPOSALS:
7. OTHER: Spanish translations of 6 Agri-Action Sheets.

H. STATES THE PROJECT WAS ACTIVE IN:

Colorado, Wyoming, Utah, North Dakota, South Dakota, and Montana.

I. COLLABORATION:
<table>
<thead>
<tr>
<th>NIOSH OBJECTIVE</th>
<th>CENTER OBJECTIVES / ACTIVITIES</th>
<th>PRODUCT OR OUTCOME</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#8</td>
<td>P-1 MAINTAIN CENTER ARCHIVES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>1.1 Catalog available educational and prevention programs utilizing library database</td>
<td>Additions to database</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>1.1.1 Assist Center staff with searches of materials available</td>
<td>Additions to database</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.2 Share information as needed with target groups, other Centers, and NIOSH</td>
<td>Lists of Center Products: materials, services, training modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.3 Add HI-CAHS education or prevention program materials to Database</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>1.2 Catalog literature that is in HI-CAHS library resources utilizing database</td>
<td>Additions to database</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>1.2.1 Assist Center staff with searches of available literature, including books, journals, newsletter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2.2 Share resources as requested with consumers, NIOSH, Center Staff and others interested in prevention of agricultural injury and disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>1.3 Maintain Center mailing list</td>
<td>Additions to database</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
## TABLE VIII

**FY 2001 OBJECTIVES PLANNING REPORT**  
**PROGRAM ASSESSMENT AND RESOURCE DEVELOPMENT** (continued)

<table>
<thead>
<tr>
<th>NIOSH OBJECTIVE</th>
<th>CENTER OBJECTIVES / ACTIVITIES</th>
<th>PRODUCT OR OUTCOME</th>
<th>STATUS</th>
</tr>
</thead>
</table>
| #5  
P-2  
PROVIDE EVALUATION SERVICES TO CENTER | 2.1 Program Monitoring of HI-CAHS activity and production  
2.1.1 Compile data on Center activity  
2.1.1.1 Enter personnel logs  
2.1.1.2 Review for trends  
2.1.1.3 Articulate with Multisite database  
2.1.2 Update as necessary the Center Product file: includes Educational materials, model programs, research reports, theses and dissertations, media articles, etc.  
2.1.3 Assist with project year end and renewal reports  
2.1.4 Assist with HI-CAHS annual report | Additions to database | Completed |
| #5  
| 2.2 Conduct evaluations of Center outreach services  
2.2.1 Evaluation Report on second year of Regional Cooperative Extension Safety Project Proposal  
2.2.2 Monitoring Report on migrant outreach | One report | Completed |
<p>| | Additions to database | Completed |
| | Section reports | Completed |
| | Annual reports | Completed |
| | Database report | Completed |</p>
<table>
<thead>
<tr>
<th>NIOSH OBJECTIVE</th>
<th>CENTER OBJECTIVES / ACTIVITIES</th>
<th>PRODUCT OR OUTCOME</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5</td>
<td>2.3 Conduct evaluations of Center educational activities:</td>
<td>Report</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>2.3.1 Re-evaluate ease and utility and use of HI-CAHS website after revisions</td>
<td>Report to Developers</td>
<td>Pending Modules not completed</td>
</tr>
<tr>
<td></td>
<td>2.3.2 Formative evaluation of health and safety curriculum</td>
<td>Feedback to Developers</td>
<td>No new agri-action sheets received</td>
</tr>
<tr>
<td></td>
<td>2.3.3 Formative evaluation of three training modules (web PowerPoint modules)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3.4 Formative evaluation of Agri-Action Sheets developed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td>P-3 OFFER EVALUATION SERVICES TO EXTERNAL PROGRAMS AS FEASIBLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td>3.1 Year II of Migrant Health Surveillance Project</td>
<td>Evaluation Report</td>
<td>Completed</td>
</tr>
<tr>
<td>#7 &amp; #8</td>
<td>P-4 PLANNING FOR REGIONAL CONFERENCE (NOVEMBER, 2001)</td>
<td></td>
<td>Objective modified*</td>
</tr>
<tr>
<td>#7 &amp; #8</td>
<td>4.1 Develop and mail public relations brochure</td>
<td>Brochure</td>
<td>Objective modified*</td>
</tr>
<tr>
<td></td>
<td>4.2 Call for papers – develop and mail</td>
<td>Abstract Request</td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>P-5 Translation of Outreach Materials – English to Spanish</td>
<td>6 Agri-Action Sheets Translated</td>
<td>Completed</td>
</tr>
</tbody>
</table>
A. PROJECT TITLE: Multisite Evaluation NIOSH Agricultural Health and Safety Centers

B. PROJECT OFFICERS:
Vicky Buchan, Ph.D.
buchan@cahs.colostate.edu
970-491-1912
Sue Tungate, Research Associate
tungate@cahs.colostate.edu
Helen Holmquist-Johnson
hjohnson@lamar.colostate.edu
970-491-2088

C. PROJECT DESCRIPTION:

The PARD unit within HI-CAHS proposed and has facilitated implementation of an evaluation of the NIOSH Agricultural Health and Safety Center Initiative. This project has a separate budget from NIOSH, but operates within HI-CAHS.

The goal of this project is to demonstrate the effects of the NIOSH Agricultural Center Initiative based upon a collaborative multisite model of evaluation. With the participation of a designated person from NIOSH and each of the nine Agricultural Health and Safety Centers, the purpose is to document cumulative Center progress on the NIOSH Agricultural Initiative program objectives. It provides the opportunity for a collective vision to build upon the strengths of the individual Centers to assist both the Centers and NIOSH with future program choices.

D. PROJECT START AND ANTICIPATED STOP DATES:

Project Start: 10/01/00
Project End: 9/30/01

E. PROJECT BUDGET: $72,037.00

F. PROJECT ACTIVITIES / ACCOMPLISHMENTS:

Objectives MS-1 through MS-8 Table IX lists the Multisite Evaluation objectives for FY2001. All eight objectives were completed. Since the initiation of the multisite evaluation project, HI-CAHS has sponsored and / or facilitated nine meetings of evaluation personnel from the NIOSH Agricultural Centers, two of these in FY 2001. Conference calls (meetings), as needed, were also planned and implemented. Notes, reports, and minutes from each ACE Team meeting and workshop were disseminated to Team members and NIOSH.
The Multisite Evaluation Team has accomplished the following during FY 2001:

- Completed data collection and aggregation of Multisite Agricultural Center Evaluation information (October 1, 1999 – September 30th 2000);
- Produced a report based upon the first full year of data collection, with distribution to all Agricultural Centers and NIOSH;
- Implemented a formative evaluation of the Agricultural Center Initiative Multisite Evaluation Pilot Report, collecting feedback from key Center personnel;
- Systematically collected and reviewed ACE recommendations for database revisions, implementing those agreed upon by the Team;
- Completed the first full year of data collection for the Initiative Multisite Evaluation;
- Presented the Agricultural Center Initiative Multisite Evaluation model at the ACE Team Meeting in Morgantown, WV;
- Documented the work of the ACE Team in meeting notes and minutes; and
- Moved forward with planning for FY 2002.

Lessons learned via ACE Team and Center personnel feedback and the experiences of the pilot period were incorporated into the second full year of Multisite Evaluation data collection (FY 2001). The Agricultural Centers’ Multisite data will be aggregated into a common database. A set of program monitoring questions addressing NIOSH Agricultural Center Objectives, and indicators of progress on these objectives at the Initiative level, form the foundation and structure for the database queries and information presented in the upcoming evaluation report. This report, based on aggregate data from the Centers, is due out in January of 2002. The report outline, format, and content will be similar to that of the previous year. Improvements, based on ACE team suggestions, will be incorporated into the report on FY 2001.

G. PROJECT PRODUCTS:

1. PRESENTATIONS:


2. PUBLICATIONS:

3. TRAINING COURSES

4 MEETINGS SPONSORED:

NIOSH Agricultural Centers Evaluators (ACE) Workshop. Fort Collins, CO. November 3\textsuperscript{rd} and 4\textsuperscript{th}, 2000 (planned, hosted, and facilitated meeting).

NIOSH Agricultural Centers Evaluators (ACE) Team meeting. Morgantown, WV. August 20\textsuperscript{th} and 21\textsuperscript{st}, 2001 (facilitated meeting).

Meeting session notes and minutes are compiled and disseminated to the ACE Team.

5. REPORTS:


HI-CAHS Year End report.

6. PROPOSALS:


7. OTHER:

NIOSH Agricultural Centers Evaluators (ACE) Team Multisite Database for FY 2001

ACE Database support materials, including the database codebook, detailed data entry instructions, and instructions for modifying the database for individual Center use.

H. STATES THE PROJECT WAS ACTIVE IN:

Attendees from: California, Colorado, Florida, Iowa, Kentucky, Louisiana, New York, Texas, Washington, West Virginia, and Wisconsin. Public Health Regions I – X and NIOSH were represented.

I. COLLABORATION:

NIOSH and all of the Agricultural Centers. (See complete ACE Team List attached as Appendix ______.)
<table>
<thead>
<tr>
<th>NIOSH OBJECTIVE</th>
<th>CENTER OBJECTIVES/ACTIVITIES</th>
<th>PRODUCT OR OUTCOME</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5 &amp; #7</td>
<td>MS-1 FACILITATE ACE TEAM MEETING</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Host ACE Team workshop in Fort Collins, CO.</td>
<td>2 day workshop</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>1.1.1 Travel &amp; accommodation arrangements</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.2 Prepare Agenda based upon Team suggestions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.3 Prepare/collect materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1.4 Coordinate sessions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Objectives:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2.1 Evaluate FY 2000 implementation of database</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2.2 Revise Initiative Report based upon Center/NIOSH feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MS-2 FACILITATE USE OF DATABASE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.1 Provide technical assistance to Team members</td>
<td></td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>2.2 Collect Team input re suggestions for revisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Facilitate communication among Team members to accomplish this task</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Assist Centers with queries and reports if requested</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MS-3 DATABASE MAINTENANCE/REVISIONS</td>
<td>Aggregate data FY ‘00</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>3.1 Aggregate multi-site data from 9 Centers into database</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2 Revise structure as necessary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MS-4 GENERATE INITIATIVE REPORT FY 2000</td>
<td>1 Initiative Report</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>4.1 Aggregate 12 months data from all Centers (10/1/99-9/30/00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2 Develop Initiative report based upon recommendations from ACE meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.3 Revise report based upon team input</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.4 Disseminate Initiative report to Centers and NIOSH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIOSH OBJECTIVE</td>
<td>CENTER OBJECTIVES/ACTIVITIES</td>
<td>PRODUCT OR OUTCOME</td>
<td>STATUS</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------</td>
</tr>
<tr>
<td>MS-5</td>
<td>FACILITATE COMMUNICATION AMONG TEAM MEMBERS&lt;br&gt;5.1 Maintain written/email communication among all team members and Subcommittees&lt;br&gt;5.2 Work with NIOSH to coordinate conference calls&lt;br&gt;5.3 Solicit team input re agendas for calls and meetings</td>
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<td>#5 &amp; #7</td>
<td>DEVELOP RECOMMENDATIONS FOR NIOSH WITH TEAM&lt;br&gt;6.1 Prepare recommendations for NIOSH re MULTISITE for competitive renewal of Center Initiative.&lt;br&gt;6.2 Seek input from variety of sources to assist with recommendations</td>
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<td>MS-7</td>
<td>DOCUMENT MULTISITE EVALUATION TEAM WORK&lt;br&gt;7.1 Archive all ACE team documents for distribution&lt;br&gt;7.2 Record and disseminate minutes of all meetings and conference calls&lt;br&gt;7.3 Year-end and Progress reports to NIOSH (with HI-CAHS reports)</td>
<td>Minutes Section reports</td>
<td>Completed</td>
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<tr>
<td>#8</td>
<td>DISSEMINATE RESULTS OF MULTISITE TEAM WORK&lt;br&gt;8.1 Initiative Report to Stakeholders Article</td>
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</table>
IV. RESEARCH

The research activities listed below are shown in abstract form followed by Table X which describes the current status of each project. Unless the project has a specific budget given, the research was subsumed under the larger operational HI-CAHS budget.

A. PROJECT TITLE:

Engineering Control Strategies Based on Tractor Stability- Paul Ayers

B. PROJECT OFFICERS:

C. PROJECT DESCRIPTION:

D. PROJECT START AND ANTICIPATED STOP DATES:

E. PROJECT BUDGET:

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS:

This past year’s research focused on the design, construction and testing of a rollover protective structure (ROPS) for a D-17 Allis Chalmers tractor. The D-17 ROPS design included a complex axle mount configuration due to the lack of mounting locations on the axle housing. An axle mount design for the ROPS was accomplished and the ROPS design passed both the lateral and longitudinal static test in accordance with SAE J2194. An additional ROPS was constructed with the same axle mount configurations. This ROPS passed both the lateral and longitudinal field upset tests. After discussion with Saf-T-Cab ROPS engineers, a new ROPS axle mount was designed and constructed. This design employs a compression fit that is easier to manufacture and is more universally applicable to various D-17 axle housing models. The compression fit utilizes the fender mount lobes on the axle housing while avoiding the use of existing bolt holes. This new axle housing design was evaluated on the ROPS test stand and has shown the potential to support the torsional moments applied during the SAE J2194 static test. A ROPS is currently being constructed based on the new axle mount design and will be tested this spring. In addition to the ROPS design, construction and testing, torsional strength tests were conducted on the Allis Chalmers D-17 axle housing. These strength tests verified the axle housing strengths as suitable for ROPS mounting.

A. PROJECT TITLE:

Hemoglobin Adducts of Atrazine: Specific Biomarkers of Exposure

B. PROJECT OFFICERS:

C. PROJECT DESCRIPTION:

D. PROJECT START AND ANTICIPATED STOP DATES:
E. PROJECT BUDGET:

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS

This year, in conjunction with leveraged funds from US EPA, studies were completed to provide a better understanding of the fate of atrazine in the body. Atrazine is transformed into a series of metabolites in which alkyl groups are lost from two amino functions on the molecule. Diaminochlorotriazine (DACT), a metabolite lacking both alkyl groups, is the major urinary metabolite seen (64-67% of total) in in vivo studies where animals are dosed with radiolabeled atrazine (ATRA) administered by oral intubation or feeding. We developed analytical methods to assist pharmacokinetic model development in rodents and humans, to assess human exposures via examination of urine metabolites, and to assess protein binding of these compounds in blood and hair. We have developed methods to measure ATRA, de-ethyl-ATRA, di-isopropyl-ATRA and DACT in blood. Rat whole blood was spiked with ATRA and DACT and cleaned up with solid phase extraction (SPE). The SPE eluate and standards were derivatized with methyl iodide and tetra-butyl ammonium hydroxide (TBAOH), yielding the dimethyl derivative of ATRA and the tetra-methyl derivative of DACT. Derivatization is not needed for ATRA but is necessary for accurate quantification of DACT by removing undesirable column interactions and thus improving peak symmetry. Samples and standards were analyzed with Gas Chromatography/Mass Spectrometry (GC/MS) in Specific Ion Monitoring (SIM) mode. We obtained excellent recoveries of all analytes with detection limits near 100 ppb. These methods have also been employed to determine time course concentrations of chloro-s-triazines in blood in rats following dosing in rats and establishing improved kinetic models to support our biomonitoring studies of metabolites and protein adducts.

G. PROJECT PRODUCTS:

Two abstracts were prepared and presentations provided at scientific meetings.

A. PROJECT TITLE:

Pour-On-Insecticide use in Western Livestock Production: Usage patterns, Risk Perceptions, and Health and Safety Information Sources.

B. PROJECT OFFICERS:

Victoria V. Buchan
Pandi Highland
C. PROJECT DESCRIPTION:

The livestock industry in the Western United States is an agricultural occupational sector that health and safety specialists have fairly limited knowledge about. The purpose of this study was to identify pesticide use practices among individuals who own or manage feedlots or ranches in states in Public Health Region VIII, including Colorado, Montana, Wyoming, North Dakota, and South Dakota. Patterns of chemical use, selection factors, perceptions of risk, knowledge about pour-on insecticides, and preference of sources of health and safety information was assessed.

D. PROJECT START AND ANTICIPATED STOP DATES:

E. PROJECT BUDGET:

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS

The design of this study was survey research, utilizing non-probability sampling. The sample consisted of 50 respondents who consented to telephone or in-person interviews. The majority of the respondents were male owners/operators and worked full-time on their operation; 22 of the respondents had been in the livestock industry for 20-39 years, within a range from 10 to 59 years. The vast majority of the respondents had used, avermectin pour-on insecticides, with use of pyrethroid and organophosphate pour-on insecticides second and third, in the last year. Respondents stated that product effectiveness and cost were the factors having the most influence on their choice of a specific pour-on product. Seventy five percent of the respondents reported wearing additional clothing or gloves as a form of protection. Of the 50 respondents, 29 indicated receiving information regarding pour-on products, primarily from chemical manufacturers, via chemical labels. Respondents indicated they would like to receive human health effect information more than receiving product handling or personal protective equipment information. Respondents indicated their preferences of sources of information were chemical manufacturers, via label information, and traditional agricultural or commodity magazines. This research supports the importance of regional information on agricultural populations. Recommendations are focused on the applicability to occupational health and safety practice within states in Public Health Region VIII. Respondents’ feedback can assist occupational health specialists develop prevention efforts utilizing preferred types of information and preferred formats to better target this unique population.

G. PROJECT PRODUCTS:

Master’s Degree and Thesis

A. PROJECT TITLE:

Evaluation of Dust Exposure to Horse Trainers in Indoor Riding Arenas
B. PROJECT OFFICERS:
Del Sandfort
Angela Barton

C. PROJECT DESCRIPTION:

D. PROJECT START AND ANTICIPATED STOP DATES:

E. PROJECT BUDGET:

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS:

Combinations of inorganic and organic dusts often become airborne in enclosed horse riding arenas. Such dusts have been reported as initiating respiratory problems among workers in other agricultural settings and thus represent a potential health hazard for instructors and trainers working in arenas. However, the occurrence of airborne dusts in indoor arenas has not been well characterized. To aid in the characterization, several different parameters of airborne dust were studied in 13 indoor riding arenas. The paper reports the preliminary total and respirable dust, respirable silica, thoracic mass, and endotoxin findings. Levels of total and respirable dust and respirable silica were all well below established evaluation criteria. Endotoxin levels were consistent with those reported in similar agricultural operations. In most cases, endotoxin levels were significantly elevated over background levels. The elevated levels of endotoxin found in the air samples suggest that repeated dust exposure may pose a health risk for the development of respiratory problems. However, the low concentrations of airborne dust measured in these facilities indicate that the dust suppression methods used in the arenas were effective.

A. PROJECT TITLE: Effects of Noise on Hearing Thresholds During Extended Shifts

B. PROJECT OFFICERS
Del Sandfort
Brian Oberbeck

C. PROJECT DESCRIPTION:

This study will concentrate on the determination of a Threshold Shift from the audiometric testing of agriculture workers following excessive duration (approximately two-three weeks) exposure to noise during corn harvesting. This cross-harvest Threshold Shift may evidence the potential for permanent Noise Induced Hearing Loss. The Time Weighted Average (TWA) of the noise exposure during the corn harvesting will also be determined among a subcohort. The subcohort of the agriculture workers will also be measured for a Temporary Threshold Shift from the audiometric testing of agriculture workers following cross-shift exposure to noise during corn harvesting.
D. PROJECT START AND ANTICIPATED STOP DATES:

E. PROJECT BUDGET:

F. PROJECT ACTIVITIES:

A research plan has been developed for this project. After Human Research Committee (HRC) approval, contact with the Colorado Corn Growers Association will be made. A maximum of forty research subjects will be selected. These subjects will be operators of mechanical corn harvesting equipment. Data collection will consist of three parts. These parts include a baseline audiogram and post-harvest audiogram of the cohort; personal noise dosimetry of the cohort for cross-shift noise exposure; and cross-shift audiograms of a subcohort of subjects who received high noise exposure doses [from the dosimetry data]. Initial data collection will consist of pre-harvest audiometric testing. This testing will occur approximately one week prior to beginning the harvest. The entire cohort will be tested. Pre-harvest audiometric tests will be conducted on-site in a vehicle that has been verified by octave band analysis to be well insulated from outside noise. To enable coverage of the regional spread of subjects, Colorado State University and University of Northern Colorado researchers will conduct sampling. Researchers will use approved audiometric testing methods as per OSHA Standard 1910.95 to conduct audiometric testing (1).

A. PROJECT TITLE:

Non-Averaged Orientation Effects of IOM Inhalable Mass Fraction Air Samplers.

B. PROJECT OFFICERS:

Colby Adams
Marvin Tillery

C. PROJECT DESCRIPTION

The IOM Inhalable Mass Fraction air sampler is designed to collect all particles in the air capable of entering the head airways region. Most of the particles collected are in what is termed the Inhalable Mass Fraction consisting of large particles greater than 10 μm in diameter. The assumption made with the design of these samplers is that the worker's orientation to any wind or air movement is through a 360° circle of work. However, in agriculture worker's on older tractors without cabs, and the ATVs now in use dictates that the workers orientation is directly into the wind. Thus, the IOM sampler may not be the best choice for sampling exposure to dusts in the agricultural environment, especially considering that most aerosols of biologic origin in agriculture are in the Inhalable range.

This research was designed to generate large particles in a wind tunnel with a human sized mannequin facing into the wind and compare IOM samples taken in the breathing zone of the mannequin compared to isokinetic samples taken at the same time.
D. PROJECT START AND ANTICIPATED STOP DATES:

E. PROJECT BUDGET:

F. PROJECT ACTIVITIES/ACCOMPLISHMENTS:

The wind tunnel has been constructed, the mannequin is in place and aerosol generation of aluminum oxide is being generated of large aerodynamic sizes as would most likely be encountered in agriculture. Data collection in near completion, and a final thesis and publication should result in our next end of year report.
TABLE X
FY 2001 OBJECTIVE PLANNING REPORT

RESEARCH

<table>
<thead>
<tr>
<th>NIOSH/NORA</th>
<th>CENTER OBJECTIVES/ACTIVITIES</th>
<th>P.I.</th>
<th>PRODUCT OR OUTCOME</th>
<th>PROJECTED TIMELINE</th>
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<td>I-H</td>
<td>R.1 Engineering Control Strategies Based on Tractor Stability</td>
<td>P. Ayers</td>
<td>Journal Article</td>
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<td>J. Liu</td>
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<td>III-D</td>
<td>R.2 Rural Veterinarians Perceptions of Their Role in Agricultural Safety and Health</td>
<td>V. Buchan</td>
<td>Continue to Explore Sample Access</td>
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<td>R.3 Wind Tunnel Characterization of Agricultural Dusts</td>
<td>R. Buchan</td>
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<td>R.4 Hemoglobin Adducts of Atrazine: Specific Biomarkers of Exposure</td>
<td>M. Andersen</td>
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<td>R.5 Colorado Assessment of Youth Agricultural Health and Safety Education</td>
<td>L. Dumm</td>
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<td>R.6 Carbon Monoxide Exposures During Potato Harvesting Processing</td>
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<td>III-A &amp; C</td>
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<td>R.8 Endotoxin Exposures in Corn Handling Facilities</td>
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<td>R.9 The Use of Famphur by Livestock Handlers: Knowledge About and Perceptions of Risk</td>
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<td>III-E</td>
<td>R.10 Development, Implementation and Assessment of a Pesticide Use and Safety Training Program for Thai Farmers in Phitsanolok Province, Thailand</td>
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