News of the UC Agricultural Health and Safety Center at Davis

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"Agriculture and mining rank as the most hazardous industries in the country...

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Profile

Don Villarejo

and the California Institute for Rural Studies

Don Villarejo, with a Ph.D in Physics from the University of Chicago, seems an unlikely candidate to conduct the UC Agricultural Health and Safety Center's project on farm safety and labor contractors. But it not unusual for a person in his position as Executive Director of the California Institute for Rural Studies, a non-profit organization dedicated to the study of farm structure and ownership, farm labor and rural poverty, and problems associated with agriculture's dependence on toxic chemicals.

Don was an Assistant Professor of Physics at UCLA from 1968 to 1975 but he was also a political activist, working in the civil rights and anti-war movements. He and his family moved in 1975 when his wife, Merna, was offered a position as a professor at UC Davis. She is currently an Associate Dean in the Division of Biological Sciences.

After the move, Don worked as a Visiting Lecturer in Physics at UC Davis and

-See Villarejo, p. 5

Report from the Director

It is timely and appropriate for a new national health and safety center to address agriculture, and in particular to focus on agriculture in California and other western states. Agriculture is California's number one industry, and California is the nation's leading agricultural state with 16% of all U.S. crop production. Farm production in California is 60% greater than the second leading state in the country. A review of agricultural production statistics documents the enormous size and importance of California commodities. For example, California produces 39% of all U.S. vegetables and melons, 53% of all fruits, nuts and berries, and 24% of all nursery and greenhouse products.

Looking beyond the production statistics, agriculture is a hazardous industry that has received inadequate attention from the occupational health and agricultural communities in the past. Agriculture and mining rank as the most hazardous industries in the country. For example, in California traumatic occupational fatalities in agriculture are over twice the state average, and four times the rate in manufacturing. There are 22,000 non-fatal disabling injuries recorded in California agriculture each year, and approximately 3,000 reported pesticide related illnesses of which half occur in agriculture. Concern also exists about many chronic disease risks, which have been inadequately studied. For example, the recent study of occupational mortality in California documented an increased risk of mortality from chronic obstructive pulmonary disease among California farmers. The cause for this increase is unknown.

Marc Schenker

Government agencies such as the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), the Department of Agriculture and EPA have paid little or no attention to occupational health problems in agriculture. In 1976 Federal funding for occupational safety in agriculture was only $1 million out of a total occupational safety budget of $331 million. In 1987 the Federal budget for farm safety had been reduced to less than one half million dollars. On a per worker basis, the Federal budget for occupational safety in 1985 was estimated to be $4.34 per worker for all industries, $181 per mine worker and only 30 cents per agricultural worker. This discrepancy may in part explain why there has been a decline in the rate

-See Director, p. 5

In this issue

Research and Outreach Activities...

Health Status of California Farm Families

The objective of this study is to identify important health and safety problems among California farm families. The information gained will help support future research that will look for ways to improve health conditions for those families.

The project will survey a representative sample of California farmers from selected California counties. Subjects will complete a questionnaire on agricultural exposures, personal habits, and acute and chronic health problems including hearing loss, respiratory conditions, dermatitis, mental health and stress related disorders, traumatic injury, musculoskeletal conditions, and reproductive outcomes.

Specific health and safety problems identified in the survey will be the targets of subsequent case-control investigations including on-site industrial hygiene evaluations, and follow-up studies.

Another project, being developed in collaboration with Don Villarejo, will investigate acute and chronic health conditions among Hispanic farm workers. This effort, currently in developmental stages, will administer questionnaires in person to a population based sample of Hispanics living in towns where the predominant employment is farm work.

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Outreach Coordinator ..... Bill Steinke
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Principal Investigator: *Marc Schenker*, M.D., M.P.H., Associate Professor of Medicine, Division of Occupational and Environmental Medicine, School of Medicine, UCD.

Detection of Exposure by Workers to Agricultural Chemicals

The purpose of this multidisciplinary research is to develop more sensitive ways to detect exposure to pesticides in the agricultural work place. It will pave the way for future studies on pesticide exposure and will aid in the development of improved pesticide application equipment, techniques, and protective devices to reduce worker exposure.

Principal Investigator: *Barry Wilson*, Ph.D., Professor of Environmental Toxicology/Avian Sciences, Departments of Environmental Toxicology/Avian Sciences, UCD.

Allergic Contact Dermatitis Among Nursery Workers

Workers' Compensation claims show that nursery workers are at high risk for occupational skin disease from exposure to allergenic plants and agricultural chemicals. This study will identify the specific causes of dermatitis among nursery workers so that employers and workers can better manage exposure and target measures to reduce the problem.

A network of 5 regionally located dermatologists will use patch testing and other diagnostic tools to test cases of dermatitis in nursery workers employed by cooperating growers.

Principal Investigator: *Michael O'Malley*, M.D., M.P.H., Associate Medical Coordinator, Worker Health and Safety Branch, California Department of Food and Agriculture, and Volunteer Clinical Faculty, Department of Internal Medicine, School of Medicine, UCD.

Epidemiology of Agricultural Pesticide Illness in California

This study will use California's extensive data sources based on required reporting of pesticide use and pesticide illnesses to identify risk factors for pesticide illness in agriculture. The information can be used by state agencies, researchers, and extension specialists to target and implement preventive measures for safer pesticide use, and outreach/education programs.

Sources of data to be used include physician's reports of suspected or actual pesticide illnesses, and Pesticide Use Reports submitted by growers and commercial applicators. Risk factors to be analyzed include the contribution of individual characteristics (e.g. age, race), application data, (e.g. type of application, crop, season), and pesticide use data (e.g., pounds applied per acre). The uniqueness of the data sources in California and the large number of cases reported annually makes this a study with large potential impact to reduce pesticide related illnesses.

Principal Investigator: *Marc Schenker*, M.D., M.P.H., Associate Professor of Medicine, Division of Occupational and Environmental Medicine, School of Medicine, UCD.

Improved Health and Safety of Field Workers by Redesigning Tools

This project will focus on redesigning the citrus harvesting system to improve the working environment for laborers. Improved ladders and alternatives to current picking bags should reduce inju-

ries and fatigue related to slips, falls and heavy lifting. Improved fruit clippers are being developed to minimize carpal tunnel injuries. To increase the probability that the new systems will be adopted by the citrus industry emphasis will be placed in the areas of: reducing workers' compensation insurance claims; developing cost effective harvesting alternatives; and maintaining fruit quality.

Principal Investigator: *John Miles*, Ph.D., Associate Professor of Agricultural Engineering, Department of Agricultural Engineering, UCD.

Contact, Retention and Transfer of Pesticides in Home and Apparel Fabrics

The purpose of this research is to evaluate the roles of apparel and home fabrics in secondary contamination of the farm home. Investigating the factors affecting pesticide contact, retention, and transfer could lead to recommendations on the handling of contaminated apparel, reentry intervals, and the selection of carpets and fabrics used in farm homes.

Laboratory analysis of carpeting is currently in progress. The ability of carpet to absorb and release pesticides is being studied since the floor represents one of the largest potential deposition sites for residues. Families with young children may have special cause for concern because children are apt to play on the floor and are less able to tolerate a given level of exposure. Preliminary analysis suggest that more pesticide transfers to a 50% cotton/50% polyester apparel fabric than to a 100% cotton fabric.

Principal Investigator: *Margaret Rucker*, Ph.D., Professor and Chair, Division of Textiles and Clothing, UCD.

Epidemiologic Study of Farm Worker Injuries

Seventy five percent of all California farm worker injuries result from acute or repetitive trauma. The objective of this study is to improve understanding of the personal and environmental risk factors related to farm worker injuries and promote effective interventions.

Analysis of serious and complicated injuries will be performed using Workers' Compensation claims. Traumatic injuries among farmers and farm workers will be compared to controls having musculoskeletal claims and evaluated for specific risk factors. Evaluation will include on-site industrial hygiene assessments. In addition we will use the results of a survey on the health status of California farm workers to develop more applied injury prevention programs.

Principal Investigators: *David Goldsmith*, Ph.D., Adjunct Assistant Professor, Department of Internal Medicine, School of Medicine, UCD; *Garen Wintemute*, M.D., Associate Professor, Department of Family Practice, UCD.

Safety and Hazard Awareness Training for Agricultural Workers

Innovative agricultural and pesticide safety information and training programs for agricultural workers will be developed, disseminated, and evaluated. Approaches to be used include: 1) creating language appropriate resource materials to assist employers in training their employees; 2) providing resource materials, and training to personnel working in rural health clinics and social service agencies; 3) delivering educational materials and training programs for agricultural workers through rural health clinics and community social service agencies; 4) developing safety training materials for workers who are unable to read; and 5) targeting workers through Radio Bilingue, a network of Spanish language radio stations in California.

An annual Regional Health and Safety Conference will be established to serve as a forum for employers, workers, insurance carriers, educators, health care providers, regulatory agencies, and the public to exchange information relating to agricultural health and safety.

Principal Investigators: *Patrick Marer*, Ph.D., Pesticide Training Coordinator, UC Statewide Integrated Pest Management Project, UCD; *William Steinke*, Ph.D., Extension Agricultural Engineer, Department of Agricultural Engineering, UCD; and *James Grieshop*, Ph.D., Specialist/Lecturer in Community Education, Department of Applied Behavioral Sciences, UCD.

Farm Safety and Labor Contractors in California

Production of labor intensive crops (fruit, vegetable, and nursery products) and the dominance of large, industrial style agricultural businesses has shaped a labor pattern in which an estimated 80% of all work on California farms today is performed by hired workers. Farm labor contractors in California employ a majority of the farm workers during the peak harvest season. Since contractors have only a transitory relationship with a specific farm and have a high turnover of employees, it is difficult for them to maintain an effective farm safety program.

This project will determine current management practices of farm labor contractors in California and their relationship to job safety issues. This information will be used to develop a model farm safety program that is responsive to the specific needs of farm labor contractors and their employees.

Extensive interviews of 150 to 300 California farm labor contractors, their employees and the growers they work for will focus on management and safety practices, recruitment, training, and crew transportation. Actual job hazards to which employees of farm labor contractors are exposed will be identified by crop and task.

Principal Investigator: *Don Villarejo*, Ph.D., Executive Director, California Institute for Rural Studies and Research Associate, Department of Sociology, UCD.

Barriers to Adoption of Technological Solutions to Reduce Agricultural Hazards

The successful development of a prototype machine or machine modification does not mean that the device will find acceptance in the agricultural workplace, even if it provides for a safer work environment. This project evaluates and seeks to overcome barriers to the adoption of technologies designed to reduce the severity of hazards in agriculture. Immediate benefits include the development of redesigned equipment that will reduce agricultural injury and illness rates.

Barriers such as training for users, cost, lender or insurance policies, regulatory issues, maintenance or operational requirements, and conditions of employment may limit the adoption of the advances which are most effective at protecting farmers and employees. This project will assist growers in adoption and implementation of tools and equipment that reduce the number and severity of hazards.

Principal Investigator: *William Steinke*, Ph.D., Extension Agricultural Engineer, Department of Agricultural Engineering, UCD.

Establishing a Health and Safety Program for the Agricultural Workplace

New legal requirements in California state that as of July 1, 1991 every employer must have a comprehensive, written injury prevention program. This project developed a half-day course to help farm managers and supervisors prepare a well documented, effective safety program for their operation.

The course was offered in six locations throughout California in April and May. It taught participants how to identify and evaluate workplace hazards, correct unsafe or unhealthy conditions, conduct worker safety training, and address each of these elements in a written plan. While supply lasts, course materials may be requested by calling Kaddie Kandola at University Extension, 916/757-8878.

Principal Investigators: *Dennis Pendleton*, Ph.D., Continuing Education Specialist and Unit Director, University Extension, UCD; *Mona Ellerbrock*, M.P.H., Continuing Education Specialist, University Extension, UCD; and *Connie Alexich*, M.S., Program Coordinator, Univ. Extension, UCD.

Information Exchange and Interaction on Agricultural Health Issues

The goal of this project is to bring together the diverse interests involved in agricultural safety and rural health by establishing a coalition which will provide for improved dissemination of information, improved collaborative effort to prevent agricultural injury and illness, and improved public awareness and support for prevention activities.

Principal Investigator: *James Meyers*, Ed.D., M.P.H., Extension Specialist, School of Public Health, UC Berkeley.

Continuing Medical Education

Medical education programs, focusing on the health effects of agricultural pesticides, will be developed and presented to health and agricultural professionals such as medical practitioners, public health practitioners, and health and safety regulatory professionals. In the future new CME programs will be initiated that focus on preventing and treating agricultural injuries.

The pesticide classes will be conducted throughout California, Hawaii and Arizona during the first two years and will expand to other states afterward. Topics will include:

- medical toxicology
- pesticide uses associated with major crops within a region
- emergency medical practices for pesticide poisoning
- dermatitis associated with agricultural employment
- cancer, neurological, respiratory, and other chronic health hazards
- clinical assessment of common pesticides
- working with farm workers and farmers
- contamination of soil, groundwater, and food residues

Principal Investigator: *David Goldsmith*, Ph.D., Adjunct Assistant Professor, Department of Internal Medicine, School of Medicine, UCD.

For more information on any of these activities contact:

Janice Abrinko, UC Agricultural Health and Safety Center, Univ. of Calif.,Davis CA 95616-8757. (916) 752-4050

-Director, from p.1

of traumatic deaths in mining, but no such decline has occurred in agriculture.

I am extremely pleased with the Center award because it recognizes the wide range of expertise in agricultural health and safety at UC Davis, and will bring together this diverse expertise to address an extremely important occupational health issue. This multidisciplinary approach is a major strength of the UC Center at Davis. In particular, major components of the Center exist within the School of Medicine and the College of Agriculture and Environmental Sciences, as well as in numerous other Departments and programs at UC Davis. The Center also involves active collaboration by investigators at UC Berkeley's School of Public Health, and the California Departments of Health Services and Food and Agriculture. Additional collaboration and support exists with the University of California Division of Agriculture and Natural Resources, University Extension, and the California Institute for Rural Studies.

The Center will be unique in addressing both research and outreach issues in agricultural health and safety. More specifically, the research effort will investigate the causes of such diverse health problems as traumatic injuries, dermatitis, respiratory disorders, and pesticide related illnesses. Chronic health effects such as cancer, reproductive hazards, stress and neurologic disorders from agricultural exposures will also be investigated. The Outreach Component, which brings together expertise from cooperative extension, university extension and continuing medical education, will address issues in communication of research results and methods for reducing health risks to the agricultural community. In addition, the extensive outreach network will serve as an "antennae" to detect new or changing health issues and concerns in the agricultural workplace so that they can be addressed by the Center.

An important element in the Center's effort is a focus on health hazards to the entire agricultural population. Health hazards exist for both farmers and farm owners who work on the 80,000+ farms in California, and the approximately 750,000 farmworkers in the state, most of whom are of Hispanic ethnicity. While no single program can address all of the health and safety issues in such a large and varied industry, we hope to make an important beginning.

Marc Schenker M.D., M.P.H
Director
UC Agricultural Health
and Safety Center at Davis

-Villarejo, from p. 1

kept up his activism by also working for UFW in a proposition campaign. It was at this point that he became aware of how little was known both about the agricultural labor market and about the ownership and structure of farms in California. In 1977 he was instrumental in founding the California Institute for

Don Villarejo

Rural Studies and became its Executive Director in January, 1978. For a few years he split his time between the Institute and the Physics Department but in 1985 he became full time at the Institute.

The Institute started as a small, non-public, think tank. In 1985 it deliberately shifted direction to become more public and more active. The Institute seeks to combine the theory of publicly oriented research with the practice of direct support for communities. It currently has five major projects underway.

The study mentioned earlier, on farm safety and labor contractors in California, is funded both by the UC Agricultural Health and Safety Center and by the California Employment Development Department (EDD). It is a result of the rapid and significant increase in the use of farm labor contractors in the past few years. See page 3 for a description.

Another one of the Institute's major projects is part of their farm labor and rural poverty program funded by the Ford Foundation. They are conducting a multiyear ethnographic study of indigenous migrants from southern Mexico working in the western US. These are the Mixtec Indians from the state of Oaxaca. These migrant laborers, who speak Mixteco not Spanish, tend to have the most unstable, lowest paid jobs as well as the worst housing and health care of migrant laborers in the Western US.

A third project is the Projecto Laboral Agrìcola. It is led by Luis Magaña in the Institute's Modesto office. The purpose is to help create and strengthen community based organizations that represent agricultural employees. The project publishes a Spanish language newspaper that serves as a vehicle to articulate concerns and advertise activities of various agricultural worker organizations.

The fourth project is the traveling photo essay, *Agriculture and the Common Good: An Exploration of Community in Rural California*. The exhibit travels to rural California towns and is accompanied by community forums featuring discussions, poetry readings, etc.

The Institute's fifth major activity, the Cotton Project, is seeking to reduce the use of toxic materials for cotton defoliation.

For more information:
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Welcome

This quarterly newsletter will be a forum for communicating about activities and current programs within the UC Agricultural Health and Safety Center at Davis, and topics of importance to the agricultural community. This first edition will give an overview of current projects within the Center. Future editions will focus in more depth on specific programs and individuals. We encourage your comments and suggestions. If you did not receive this newsletter directly and wish to be on the mailing list for the newsletter and notices of Center activities, please call the Center at 916 752-4050.

Calendar

Seminars

First Friday of Every Month
12:00 Noon
ITEH Conference Room, UC Davis
The UC Agricultural Health and Safety Center at Davis sponsors these educational seminars which address important agricultural health and safety issues. The seminars serve as a forum for research and information exchange among Center participants, as well anyone else interested in agricultural health and safety. Speakers/topics to be announced. Call (916) 752-4050 for more information. Dates and location subject to change.

Brown Bag Meetings

Third Friday of Every Month
12:00 Noon
ITEH Conference Room, UC Davis
A very important activity of the Center is communication and interaction among investigators and staff. These "Brown Bag" lunches facilitate that communication and collaboration. Call (916) 752-4050 for more information. Dates and location subject to change.

Preventing and Treating Pesticide Illness

September 27-28
Veterans Administration Hospital, Fresno, CA
Co-sponsored by the UC Agricultural Health and Safety Center at Davis, California Department of Health Services, California Department of Food and Agriculture, and the Environmental Protection Agency. For more information contact the UCD Office of Continuing Medical Education at (916) 734-5390.