Hazardous Harvests:

Exploring Occupational and Environmental Health and Safety Hazards of U.S. Farmworkers

(Based on AIHce 2000 Roundtable 228)

Featuring photojournalist David Bacon

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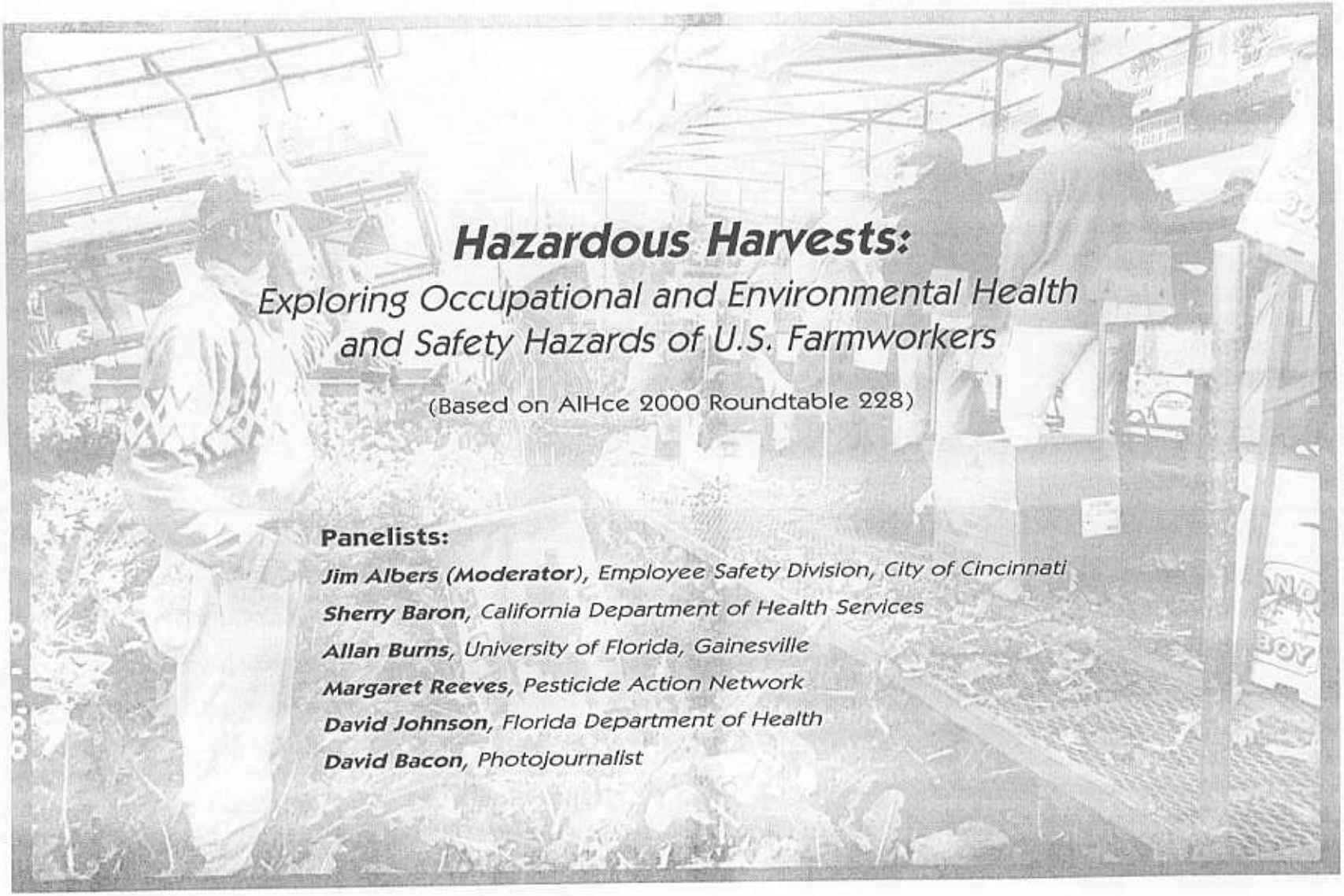

Hazardous Harvests:

Exploring Occupational and Environmental Health and Safety Hazards of U.S. Farmworkers

(Based on AIHce 2000 Roundtable 228)

Panelists:

***Jim Albers (Moderator)**, Employee Safety Division, City of Cincinnati*

***Sherry Baron**, California Department of Health Services*

***Allan Burns**, University of Florida, Gainesville*

***Margaret Reeves**, Pesticide Action Network*

***David Johnson**, Florida Department of Health*

***David Bacon**, Photojournalist*

The information presented in this book was developed by occupational hygiene professionals with backgrounds, training, and experience in occupational and environmental health and safety, working with information and conditions existing at the time of publication. The American Industrial Hygiene Association (AIHA), as publisher, and the authors have been diligent in ensuring that the materials and methods addressed in this book reflect prevailing occupational health and safety and industrial hygiene practices. It is possible, however, that certain procedures discussed will require modification because of changing federal, state, and local regulations, or heretofore unknown developments in research. As the body of knowledge is expanded, improved solutions to workplace hazards will become available. Readers should consult a broad range of sources of information before developing workplace health and safety programs.

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American Industrial Hygiene Association
2700 Prosperity Avenue, Suite 250
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Tel.: (703) 849-8888 • Fax: (703) 207-3561
http://www.aiha.org • e-mail: infonet@aiha.org

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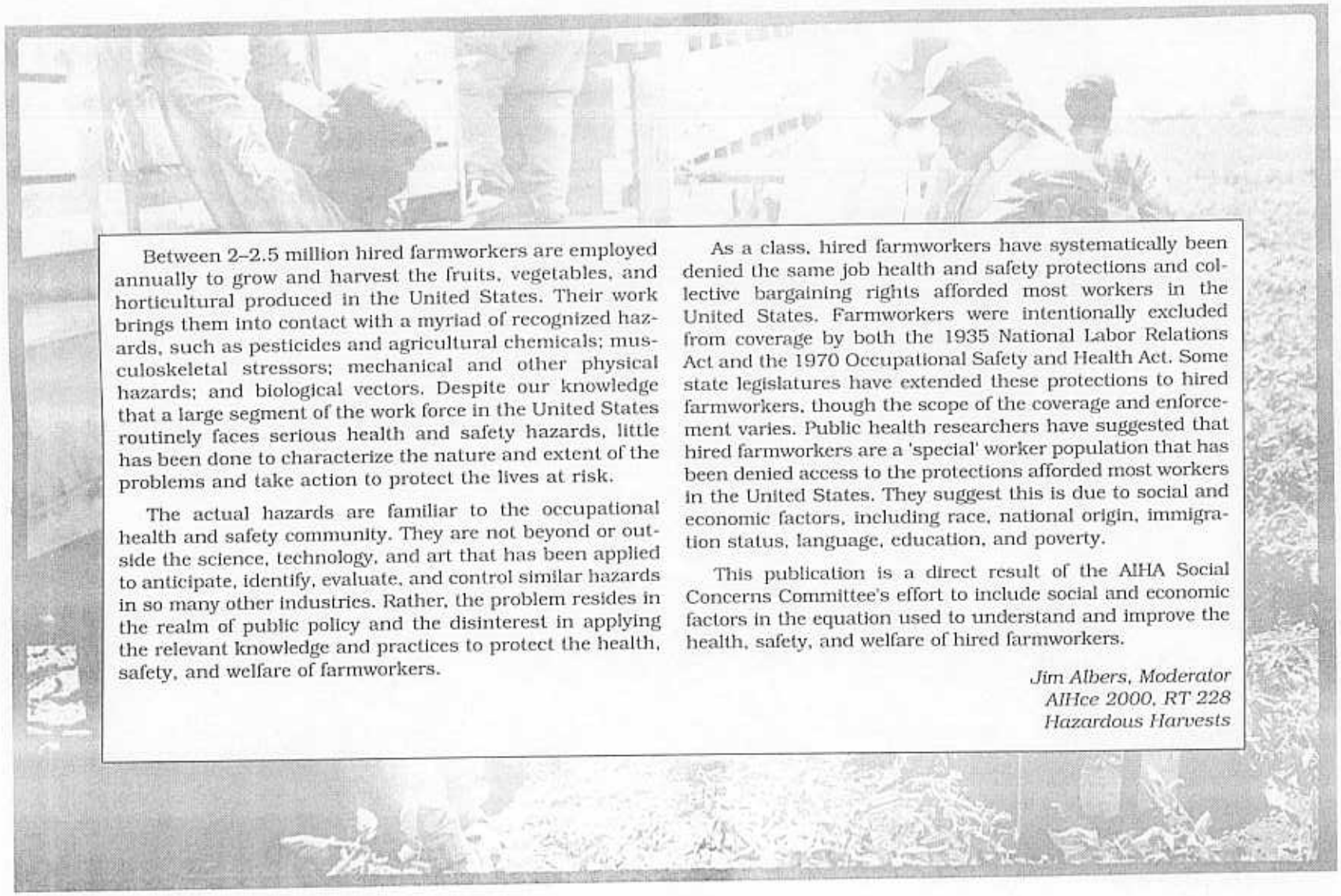
Project Editor: Hind Benjelloun
Designer: Billy Stryker

PREFACE



Between 2–2.5 million hired farmworkers are employed annually to grow and harvest the fruits, vegetables, and horticultural produced in the United States. Their work brings them into contact with a myriad of recognized hazards, such as pesticides and agricultural chemicals; musculoskeletal stressors; mechanical and other physical hazards; and biological vectors. Despite our knowledge that a large segment of the work force in the United States routinely faces serious health and safety hazards, little has been done to characterize the nature and extent of the problems and take action to protect the lives at risk.

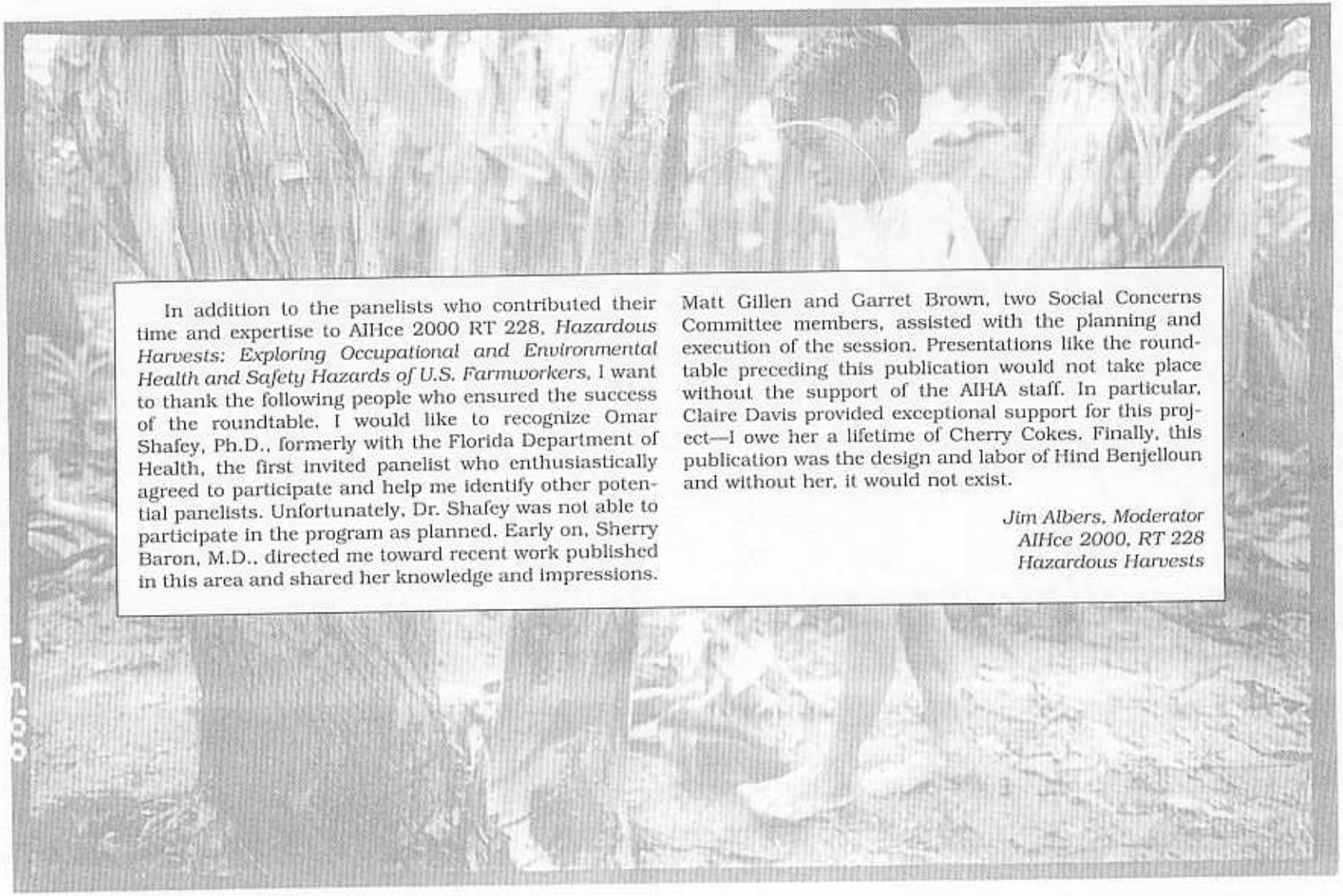
The actual hazards are familiar to the occupational health and safety community. They are not beyond or outside the science, technology, and art that has been applied to anticipate, identify, evaluate, and control similar hazards in so many other industries. Rather, the problem resides in the realm of public policy and the disinterest in applying the relevant knowledge and practices to protect the health, safety, and welfare of farmworkers.

As a class, hired farmworkers have systematically been denied the same job health and safety protections and collective bargaining rights afforded most workers in the United States. Farmworkers were intentionally excluded from coverage by both the 1935 National Labor Relations Act and the 1970 Occupational Safety and Health Act. Some state legislatures have extended these protections to hired farmworkers, though the scope of the coverage and enforcement varies. Public health researchers have suggested that hired farmworkers are a 'special' worker population that has been denied access to the protections afforded most workers in the United States. They suggest this is due to social and economic factors, including race, national origin, immigration status, language, education, and poverty.

This publication is a direct result of the AIHA Social Concerns Committee's effort to include social and economic factors in the equation used to understand and improve the health, safety, and welfare of hired farmworkers.

Jim Albers, Moderator
AIHce 2000, RT 228
Hazardous Harvests

ACKNOWLEDGMENTS



In addition to the panelists who contributed their time and expertise to AIHce 2000 RT 228, *Hazardous Harvests: Exploring Occupational and Environmental Health and Safety Hazards of U.S. Farmworkers*, I want to thank the following people who ensured the success of the roundtable. I would like to recognize Omar Shafey, Ph.D., formerly with the Florida Department of Health, the first invited panelist who enthusiastically agreed to participate and help me identify other potential panelists. Unfortunately, Dr. Shafey was not able to participate in the program as planned. Early on, Sherry Baron, M.D., directed me toward recent work published in this area and shared her knowledge and impressions. Matt Gillen and Garret Brown, two Social Concerns Committee members, assisted with the planning and execution of the session. Presentations like the roundtable preceding this publication would not take place without the support of the AIHA staff. In particular, Claire Davis provided exceptional support for this project—I owe her a lifetime of Cherry Cokes. Finally, this publication was the design and labor of Hind Benjelloun and without her, it would not exist.

Jim Albers, Moderator
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Hazardous Harvests

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SHERRY BARON

MODERATOR: Without going into a lot of details, the issues that we have focused on include social class, race, gender, and others. I had a few introductory comments about farmworkers in general, but I had a chance to peek at one of the speaker's slides and I know these issues are going to be taken care of.

We are going to take questions right after each presentation; up to five minutes of questions. Unfortunately, one of our speakers will not be here today. Tirso Moreno, who is the director of the Farmworkers Association of Florida, is not able to make it.

Our first speaker is Sherry Baron. She will discuss the results of the National Farmworker Occupational Health Survey. Sherry has a Bachelor of Arts from Harvard, her M.D. from Case-Western Reserve, and her M.P.H. from the University of Illinois in Chicago. I met Sherry while working in the Occupational Medicine Residency Training Program at Cook County Hospital and attending graduate school at U. of I. From '88 to '99, Sherry was with NIOSH in Cincinnati. Recently she moved to the Bay area to work for the Occupational Health Branch of the California Department of Health.

Sherry is a co-investigator for the National Agricultural Workers Survey, the supplement on occupational health of U.S. farmworkers, and she is the recipient of the U.S. Department of Health and Human Services Migrant Health Branch Award for service to migrant workers.

BARON: Thanks a lot, Jim. I would like to start off by commending Jim Albers for organizing this session. In occupational safety and health in general and probably in industrial hygiene even more so, we tend to forget about the agricultural workforce.

Since this convention is in Florida, the second biggest state for agriculture in the country, it is very appropriate to organize this session. I also think it is quite interesting because many of the things we will be seeing here today about migrant farmworkers—about their pay status, their living conditions, and their occupational health conditions—we're also seeing in the changing U.S. workforce where increasing numbers of immigrant, low-wage workers are not just working in farmwork, but are increasingly moving into urban areas to work in manufacturing, construction, and service sector jobs.

Many of the issues I will raise, including the social and economic challenges for immigrant workers, will become increasingly more important to this organization as the industrial hygiene profession adapts to a changing U.S. work force.

What I am going to be talking to you about today is the results of a survey called the National Agricultural Workers Survey. We will be learning much about the demographics and a little bit about very recent results of occupational safety and health conditions coming out of this survey.

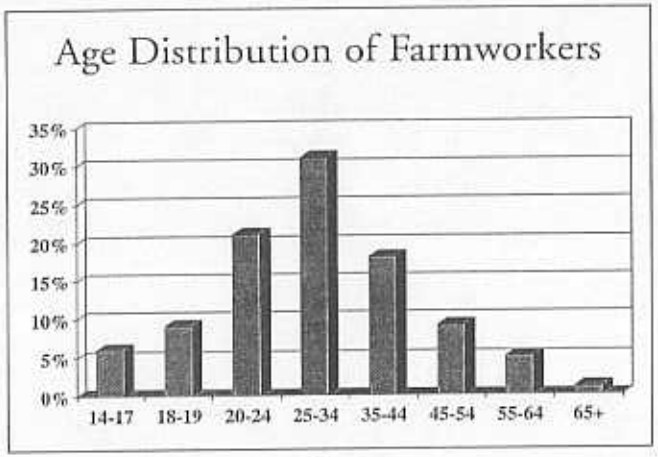
Let me start by first telling you a little bit about the National Agricultural Workers Survey. This survey dates back to 1989, and it came about because of the Immigration Reform Act that came about

during that year. As many of you will remember, there was a major Act passed by Congress, which allowed the legalization of formerly undocumented workers in this country.

The way the Act was written, for most workers in the country, they had to go through a very complex system of documenting that they had been living and working in this country for many years. However, because of the pressure by the agricultural community because of the labor shortage of that time, a special clause was added for agricultural workers. If undocumented workers could show that they had worked just a few months in agriculture in the last year, they were able to become documented under this program.

In the Act, they also put in a clause that said if it was shown that there would continue to be labor shortages in agriculture in this country, that this Act would allow in future years for agricultural workers to become legalized.

Then people turned around and said, well, how do we know if there is a labor shortage in agriculture? As many of you know, people will work in a particular job for a few weeks or months and then move on to another job, so the total number of agricultural jobs is not equivalent to the number of workers that are actually needed.



Slide 1

So the Department of Labor was given the responsibility of developing a survey that would actually estimate the number of workers in agriculture in the United States. This began in 1989. The person who was hired by the Department of Labor to start this survey was Rick Mines. For many years, he had been working in the field of agriculture and agriculture economics, and was very interested in the needs and conditions of farmworkers. He was a very visionary person who realized this was a great opportunity; not just to estimate the labor pool for agriculture, but also to begin to collect information about working conditions, living conditions, wages, et cetera.

Now 10 years later, this survey has created a tremendous pool of data. There have been 25,000 farmworkers who have participated in the survey. It provides us with a tremendous amount of information about who farmworkers are in this country.

The survey is just limited to crop workers, so it doesn't include livestock workers, which is a very important part of the work force, but I won't be talking about that today.

I will not go in detail about the sampling design of the survey. But just to summarize: it is done in such a way so that it reflects both the seasonal variation and geographic variation. The actual surveys themselves are done by interviewers who go to the farm and randomly choose workers, and then arrange an interview with them back in their homes or in their communities. The interviews last about an hour. They are done by bilingual and bicultural interviewers.

In 1998, because of some special monies that were appropriated from Congress for agriculture, NIOSH was able to attach to this survey a special supplement that asks specifically about the occupational safety and health conditions of farmworkers, and I also will be presenting to you some very preliminary results. This will be the first presentation of results of the occupational health supplement to this survey.

I am going to start off by telling you a little about what we know about the demographics and working and living conditions of farmworkers. If you ask how many farmworkers there are, you will hear a variety of different estimates from people, but usually they will fall in the 1.5 million to 2.5 million range. I think the general estimate is if you're talking about crop agricultural workers, there are about 2 million in this country.

For most people, if you ask them what is the stereotype of farmworkers in this country, the image that comes to mind based upon documentaries, movies, and things that have been written, are these families of workers (often foreign-born workers) who move across the country from farm to farm and live in difficult conditions. Though that stereotype may have been true many years ago, it is not true today. The picture of farmworkers and who they are is quite different from that initial image.

First of all, farmworkers now are almost entirely male; 88 percent of farmworkers are male. They are increasingly becoming younger and younger. The average age of farmworkers is 31 years old. Many of them, about half of them, are married and have families, although only about half of those, or 25 percent, actually have their family living with them while they are doing their farmwork.

This will show you an age distribution of farmworkers (Slide 1). The distribution here is a little deceiving because the half of the graph to the left has a much shorter age interval, and you can see that most farmworkers (about 50 percent) are below age 25 years old.

I would like to talk about these bottom bars—the 14- to 17-year-olds and 18- to 19-year-olds who are the minors working in agriculture. There has recently been a lot of news coverage about youth working in agriculture. There was a large expose by Associated Press a year or so ago about child labor and agriculture.

That bottom bar is a very interesting group of workers because what you find is that about 6 percent of farmworkers are between ages 14 and 17 years old. Some of those are kids working in summer jobs who live with their families and work the summers in the field. But 50 percent of those workers are young, minor, unaccompanied males who have traveled from Mexico into the United States, are living completely on their own, away from their families, and traveling around the country harvesting our crops.

Slide 2

As we all know from other parts of occupational safety and health, these are very vulnerable workers in terms of injuries in the work force, but also in being taken advantage of, starting out when they cross the border. They are vulnerable to what are called the 'coyotes' that help them cross the border illegally, and who might charge them thousands of dollars in order to get across the border, and the workers arrive in these communities very disoriented. They can also be taken advantage of by individuals who recognize their vulnerable position and who, for example, rent them houses, trailers, or apartments at exorbitant rates.

Eighty-one percent of farmworkers in the 1997 to 1998 period were foreign born, and 77 percent of those came from Mexico. An additional 9 percent were U.S.-born children of Hispanic farmworkers. So about 90 percent of farmworkers come from Mexican heritage.

If you look here, this graph shows the amount of time the foreign-born workers have been living in the United States (Slide 2). This first bar at the bottom represents people who have been living in the United States zero to two years. The last two bars are 10 to 14 years and 15 years.

You can see there is sort of a bimodal distribution. We have a large group of farmworkers, about one-third, who have been working in agriculture for a very long time. Many of these workers live year-round in an area, are settled there, and may even own their homes.

Then about one-third are workers who have been in this country a very short period of time. These very young workers often come with very little experience in agriculture. Again, as we know from occupational safety and health in general, these young workers with little experience are really the most vulnerable workers in terms of injuries, lack of knowledge about how to protect themselves from exposure, et cetera.

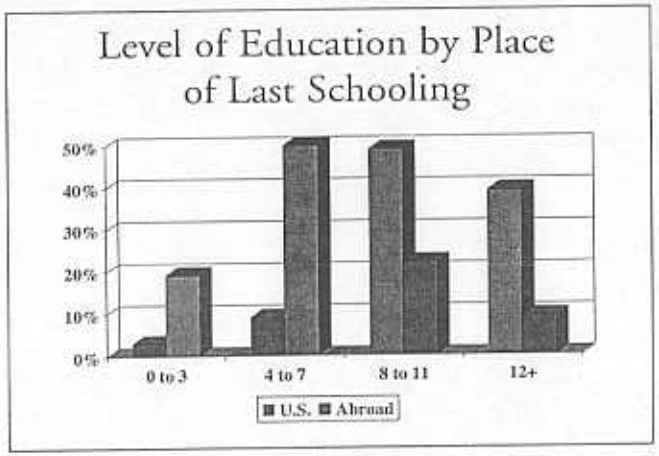
In terms of education and literacy, five out of six farmworkers speak Spanish as their native language. Many of these workers come from rural parts of Mexico and so they have very low literacy skills. Most of them have only completed six years of school and only 1 in 10 can speak English fluently. As we know, this adds special challenges in terms of training programs, labeling programs, et cetera, being both sensitive to the low literacy skills and also the language of these workers.

You can see here in this graph the difference in education level between those workers who were born in the United States and those born abroad [Slide 3].

The darker bar represents those born in the United States and the lighter bar represents those who are actually not born abroad, but their last education was abroad. As you can see, those foreign-educated workers have much lower educational levels than the U.S.-born workers.

The stereotype of agricultural workers who move from crop to crop around the country is not really the situation of most farmworkers. Sixty percent of farmworkers actually have one job and work for one grower in the course of their employment during the year. Most farmworkers spend about half of their year employed in agriculture. Fifty-six percent of farmworkers are what people think of as migratory farmworkers.

This will explain a little bit more about the migrant status of farmworkers. There are three categories that people have used to describe the migratory status of farmworkers. The first are nonmigrating, or what is called 'settled out farmworkers.' These are people who work regularly in agriculture but are settled in an area and work for a particular grower year after year. Many of them own their own homes and live with their families.



Slide 3

Thirty-nine percent are called 'shuttle migrants.' These are people who have a single job in the United States and will work for some period of time and will shuttle back to an area that is their home base. About 90 percent are shuttling back internationally; they are coming to the United States from Mexico, go to a certain area, work in a single job, and then return to their home in Mexico.

Seventeen percent are 'follow-the-crop agricultural workers.' These are the farmworkers that most people think about who move from crop to crop throughout the country. They may start in Florida and end up in New England in the summer months.

In terms of the legal status of farmworkers, 52 percent of farmworkers are undocumented workers in this country.

There also exists a trend in documentation over time. Starting in 1989 right after the Immigration Act, we had a lot of legalized farmworkers, but now in 1998, over 50 percent of farmworkers are undocumented workers.

Three out of four farmworkers are paid by the hour, and their average wage is $5.94 per hour. These are very low-wage workers. The other 20 percent are workers who are paid by piece rate, and as we know piece rate is a tremendous risk for stress on workers because they tend to work much too quickly.

Nearly three-fourths of U.S. farmworkers earn less than $10,000 per year, and three out of five farmworkers have incomes that would be considered below the poverty level. Not only are farmworkers paid less than other workers, but the gap in income between other workers and farmworkers is increasing.

There is a concept called 'agriculture exceptionism.' This means that through the years, growers have very successfully been able to lobby such that farmworkers do not have many of the basic legal rights of other workers. Only 14 states actually cover agricultural workers under Workers' Compensation. There is no required overtime pay. In agriculture, children 12 years old are considered legal to work. Under the Occupational Safety and Health Act, growers that have 10 or less employees are not covered by OSHA.

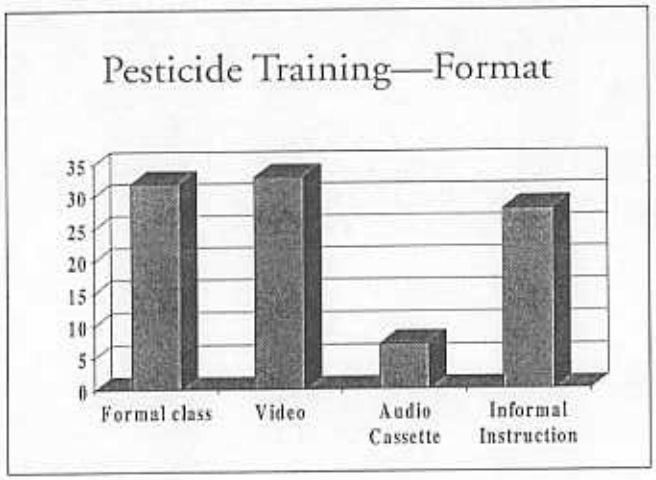
That gives you the general statistics from the National Agricultural Workers' Survey. In 1998, we were able to ask questions specifically related to occupational safety and health, and these included such things as training, exposure to pesticides, field sanitation, personal protective equipment, and then a whole series of health outcomes including access to health care.

We are just in the process of analyzing these data, so I am going to give you some very preliminary results related to training, pesticide

exposure, and field sanitation. Under the EPA regulation for the Workers' Protection Program, there are requirements in terms of training, washing facilities, et cetera, for farmworkers. All farmworkers are required by law to be trained in pesticides.

We found that only 64 percent had been trained in the last year on pesticides. When we asked had they been trained not only within the last year but also within the last five years, that only added another 3 percent of farmworkers who had received any training.

We then looked at training by how long people had been in the United States: less than one year, one to two years, two to five years, and more than five years of farmwork. Those who had worked less than a year were much less likely to have received training. This is not just a matter of the fact that they hadn't been working very long, because most people who were trained were trained within the last year. Just to ask people 'have you had training?' is a little difficult because what does it mean to say you've had training? You don't really know what the nature of that training was and whether they actually learned anything. We tried to ask some questions about the format of the training to see how rigorous it might be.



Slide 4

This shows you a description of the training (Slide 4). The first bar represents formal classes, videos, audiocassette, and what we called informal instructions that were given in the field. You can see that a large group had training by formal classes and videos, but only a quarter of farmworkers received informal training by their supervisor.

In looking at the content of the training, some of the specific requirements for the training are three aspects of pesticide safety: when it is safe to re-enter a field after it has had pesticides applied; effects of illness; and emergency care. The people who described their training as 'informal' were less likely to receive training on illness effects or how to receive emergency care. Informal training tended to be shorter.

This is a little bit on the use of personal protective equipment. Eleven percent of people said that they mixed-loaded or applied pesticides. Although in many cases, over half of the workers did have personal protective equipment, a significant number of workers who worked with pesticides were not using the basic protective equipment that is necessary for use with pesticides.

Consider the use of gloves, although there was use of glove protection, a number of workers were using types of gloves that we would not consider protective against pesticide use.

Of the 11 percent who mixed or applied pesticide, 6 percent said they became sick from those pesticides. The most common symptoms that they reported were headaches and skin problems.

In terms of field sanitation, there are requirements that workers have drinking water, hand-washing facilities, and toilets available to them. As you can see here, there were 6 percent who did not have drinking water available every day; an additional 16 percent had water but no cups available; 10 percent of workers had no toilets available to them in the fields every day; and 11 percent said they had no hand-washing facilities available to them.

Amongst those people who did have hand-washing facilities available to them, we asked them about when they used them. You can see here that the most common time they used it was before eating, which is good for protecting themselves against exposure; 82 percent said they washed their hands before eating. Only 76 percent of people said they washed their hands after using the toilet. This is very interesting because there has been a lot of concern about fecal contamination of crops in the fields. Only 30 percent of workers said that they washed their hands before going home from work, so this raises some very important questions about taking pesticides home, contaminating their homes especially if they are living with their family.

That is a quick overview. In the next year or so, we will have a tremendous number of other results and this will tell us much more about the occupational safety and health of farmworkers.

Thank you.

ALLAN BURNS

MODERATOR: Our next speaker is going to be Allan Burns from the University of Florida at Gainesville. The title of his talk is *Global Work and Global Farmworkers: Transnational Risks.*

Just to preface his presentation, Allan has a Ph.D. in Anthropology. He is currently professor and chair of the Anthropology Department of the University of Florida, Gainesville. He is a Fulbright Scholar. He has authored 3 books and more than 90 articles. His fieldwork has included several years in the Maya areas of Mexico and working with immigrants from Mexico and Central America to Florida. Please welcome Allan.

BURNS: Thank you very much. I certainly appreciated that last presentation because I think my presentation appropriately follows it. Good morning. I will talk today about how farmworkers in both the United States and Mexico are at risk for accidents, illnesses, and stress because of their work. The title of my presentation is *Global Work and Global Farmworkers: Transnational Risks.* I am especially interested in looking at pesticide exposure and health risks across national boundaries. The perspective I am using is that of anthropology, or the study of people through their life cycle in light of cultural characteristics of ideology, adaptation, and change.

I am an anthropologist, so I want to say right off that I will not be talking about specific chemicals exposure or disease epidemiology. I will instead concentrate on what it is like to live as a person who does farmwork. My perspective is to look at the life cycles of farmworkers and through that lens look at issues of migration and mobility, culture, and poverty as they contribute to unhealthy lives. Let me start with a recent event that shows the intersection of poverty, culture, and illness in clear relief.

As an anthropologist who studies culture, I am interested in how family structure, institutions, and communities influence exposure to toxins as well as how these risks interact with other risks found in migration communities.

Slide1; Photo by Maria Rocha © 1991

Anthropologists study people's everyday lives and produce case studies of how people adapt to changing situations. We often take case studies as our point of departure, and articulate them with some statistical and demographic data such as that we just saw.[1]

This talk will be about farmworkers but at the levels of their families, their houses, what they look like, and how they work. One of my goals is to give a human face to the discussions that preceded this one. A second is to discuss risks to contamination and exposure in terms of cultural characteristics of farmworkers: how they live, what size families they have, what ideological concepts they have, and their place in the lifecycle.

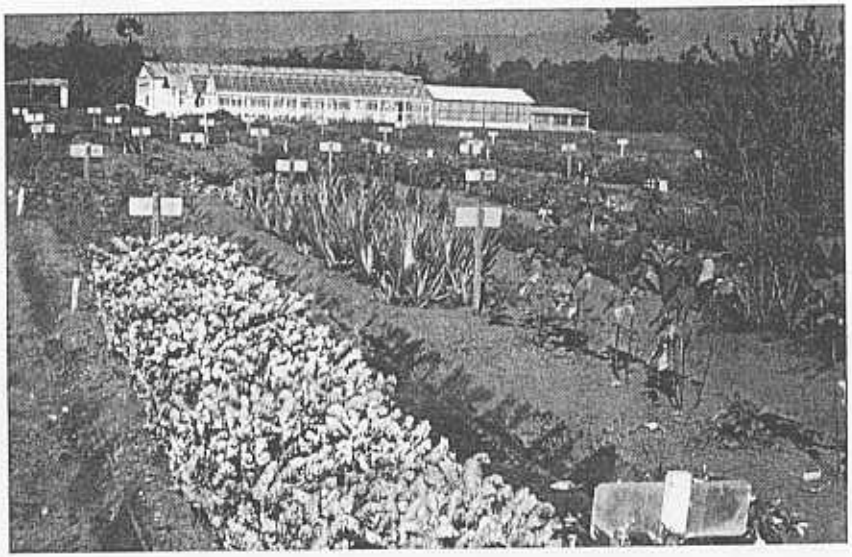
I want to say at the outset that I am not a chemist or an expert on the properties of pesticides. I will talk about exposure and pesticides and how they form part of the lives of farmworkers. One thing I've learned working with pesticides is that very, very few of them can be documented as causing long-term effects with farmworkers. It is very easy to find symptoms, but very difficult to find out anything about effects other than the symptoms.

I am going to be talking about farmwork in Mexico, the countries of Central America, and the United States. I have purposely mixed up my slides so you sometimes can't tell whether we're in Mexico or the United States. My point is that as the countries have become more and more engaged in trade through NAFTA and other kinds of agreements, that farmwork and farmworkers look pretty much the same in both countries.

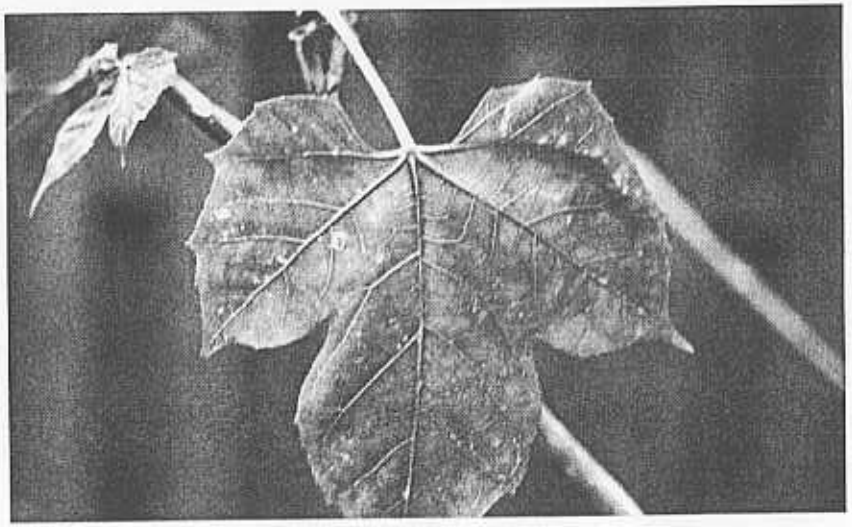
This is in a very remote area of the highlands of Mexico (Slide 2). The rectangle shapes you see there are flower-producing greenhouses. A lot of the farmworkers who work in Florida greenhouses and nurseries have already worked in places like the most remote villages of the mountains in Mexico. As farmworkers encounter issues of pesticides and environmental contamination here in the United States, they are often encountering the same issues in other parts of the Americas.

Just as in the United States, Mexico, and Central America, there are agriculture extension agencies and officials who are trying to improve crops, especially in a cultural way (Slide 3). As more and more nontraditional crops are exported to the United States, there is an ideology of having the 'perfect-looking' fruit. The perfect-looking orange, the perfect-looking snow pea, or whatever has resulted in more chemical inputs that are now being used in Mexico and Central America (Slide 4).

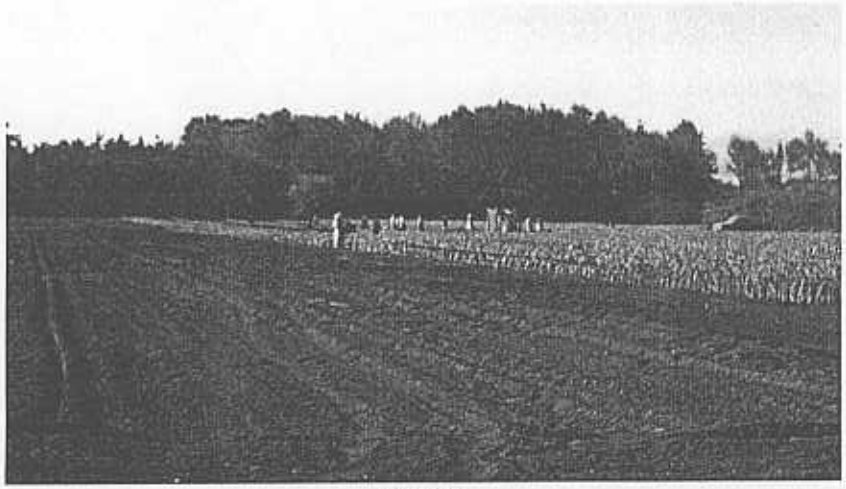
Slide 2



Slide 3



Slide 4



Slide 5

This is in contrast to previous agricultural practices when crops were eaten locally and the look of the fruit itself didn't really matter as much as it does to purchasers as it does in the United States.

This is a field in Guatemala of snow peas (Slide 5). Again, it looks very much to me like a field in Florida. These are indigenous people running up and down the fields doing the same kind of farmwork that we do here.

This is a street in Mexico where I used to live (Slide 6). We used to think of Mexico as having this kind of grinding poverty with pigs in the streets and so on, and that people were escaping that grinding poverty to come to the United States. Indeed, a lot of the housing and living conditions of the farmworkers in the United States really are not that much different than what you might see in Mexico or Central America. Often times the living conditions are far better in Mexico and Central America. 'Roughing it' in the United States is often seen as a temporary sacrifice that people make in order to improve their lot in natal villages. While living conditions in terms of housing and services are sometimes better in Mexico or Central America, the depressed wages and lack of capital make the relatively higher wages for farmwork in the United States an attractive strategy.

As farmwork becomes more and more similar and farmworkers get used to doing similar work in the two areas, some of the issues of risk are becoming very difficult to pinpoint as to geography or background. While I don't want to imply that we can now forget about risks in the United States, I do want to indicate that dangerous exposure and contamination in the United States is compounded by the globalization of pesticide use and farm techniques throughout the Americas.

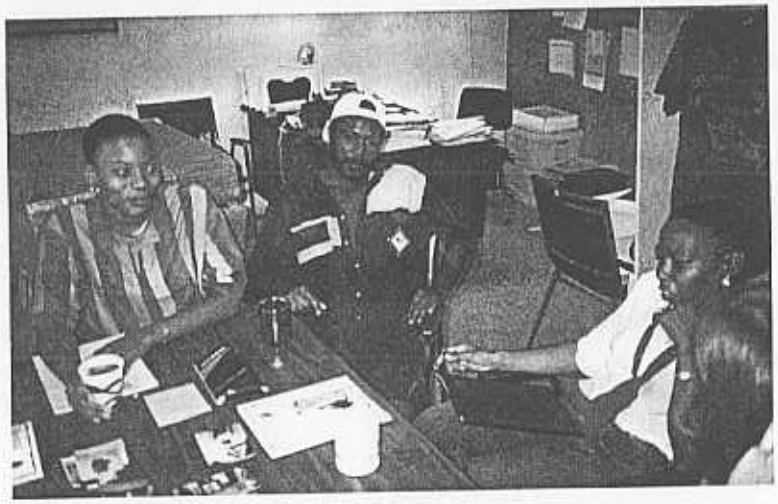
I would like to begin with a case example of the transnational nature of farmwork and farmwork risks. In February of 1999, I was called to a hospital to translate for a doctor and a nurse because a young farmworker couple had their car break down on the edge of Gainesville. The woman gave birth in an emergency room in a local hospital to a child that had a severe birth defect, the corpus callosum between the two halves of the hemisphere of its brain just wasn't there, so the baby had the prognosis to live about a month. The family had no address, so we had to use my home address for the birth certificate. The mother spoke no English and she didn't speak Spanish either. She spoke an indigenous language, which I speak. The father spoke some Spanish, but not very much. They wanted to do a health inventory interview to see if there was anything about this condition that was due to the work habits or family habits.

As is common in a lot of situations like that, the woman had been in the United States for three years, mostly working in Los Angeles and

Slide 6

California, and had just come to Florida. The man was not the father of the baby, but was her long-term partner. He said he was going to marry her. When I asked the woman had she had other children in Guatemala, she said yes, and one had died. She said it had just got a cold or flu and died. When I asked if other children or family members had any sort of birth defects, she said she didn't know because she was raised an orphan because her family was killed in the civil war in Guatemala in the 1980s. I asked where they had been most recently, and they had been in South Florida where they had bought this car for $1,000, which broke down completely on the highway and had to be abandoned. They didn't know the name of the town they were in, but they did know that there might be work in an agricultural center about 60 miles north.

Part of the farmwork lifestyle for this couple and many others is to travel from place to place, in Mexico or the United States, sometimes not even knowing whether it is one country or the other.



Slide 7

As the previous speaker pointed out, 81 percent of farmworkers are Hispanic, but there are a large number who are African American and Haitian American. While the majority of farmworkers are from Mexico, other groups are also significant in terms of their participation in the different niches of agricultural labor in the United States. Different kinds of farm labor and other unskilled labor have become the arenas of work for different ethnic groups. This is because once pioneer laborers get into a market, they often bring friends and acquaintances from the same area as work opportunities expand. Guatemalans, for example, are found in higher numbers in nurseries than in citrus. Although it is not technically farm labor, golf course construction and maintenance is a good example of this. The hundreds of golf courses in the Miami-West Palm Beach corridor employ Guatemalans far more than people from Mexico or other Central American countries. When I interviewed course managers about this, the common rationale given was that the Guatemalans are excellent workers and they bring with them their compatriots who likewise are hard working and attuned to the detail work necessary on golf courses.

What I would like to talk about now is lifestyles outside of the fields and how that affects risks in one way or the other.

We did a study a few years ago looking at the kind of housing that different subsections of the farmwork community have, including African Americans, Haitian Americans, Guatemalans, and Mexicans. We found a tremendous variety in the kind of families and housing domestic unit and use of the domestic unit.

Haitian farmworkers tend to have more occupations than other farmworkers (Slide 7). Guatemalans had approximately 3 occupations in the last year; Haitians had 13 to 14 occupations in the last year. You get a multiple job spread. You get people moving in and out of farmwork and other activities, especially what we might call informal economy activities in the home such as baby sitting, recycling, and small-scale commerce.

In a study we did in the late 1980s, commissioned by the Department of Labor, we found that while Mexican and Guatemalan families have many children with them; Haitians have less children in the houses. African Americans also have less children in the household. Guatemalans tended to average about 12 people in households, Mexicans about 6 people, and Haitians about 4. An earlier speaker reported on data from the NAWS survey that shows most farmworkers are young men, but I want to stress that this also varies widely according to national origin. There are different sorts of exposure based on who is in the domestic unit.

We're finding that in a lot of our research both in Mexico and the United States there are tremendous numbers of birth defects, especially neural tube disorders, that are hard to pinpoint in terms of the particular exposure to pesticides, but it is coming up more and more.

Unfortunately in the United States, there is no national registry of birth defects. There are about 35 states that have registries of them. Florida just started registering birth defects in 1997, so we have no baseline data on the numbers of birth defects, whether they're going up

or going down. Anecdotally, in the populations that I work in, I get asked to translate in the hospitals much more for either heart defects or neural defects more than any other thing that occurs.

When we think about farmwork, we have this picture of people going out in the field and picking crops. But more and more in Mexico as well as in places like Florida—as we heard earlier has the second largest number of farmworkers—more and more work is done in agriculture, but it is ornamental agriculture: golf course construction and maintenance, nursery, et cetera. There's a huge nursery that has gone up near Gainesville where I live that will cover 50 acres. Farmworkers continue to work in outdoor fields, to be sure, but more and more are working in enclosed conditions such as in nurseries or in the dank conditions of mushroom barns.

I am going to talk in a few minutes about a study done by my colleagues and me. Let's now look at the impact of farmwork on communities. One thing that happens in farmworker communities as more and more land is put into cultivation and as more and more agribusiness occurs both in Mexico and the United States, the living quarters get to be placed right next to the fields. Previously, in thoughts about our own history, we had the idea of a small town and people went out to the farm or field, or where you had a farmhouse and a large area, and the field was far from that.

Slide 8; Photo by Elizabeth Guillette © 2000

Now, more and more in farmworker areas, especially in Florida and places in California, the communities themselves are placed right on the edge of the fields, which increases the possibilities for exposure. Some estimates suggest that up to 50 percent of all airborne spraying of fields does not land on the field but lands somewhere next to the field. You can figure that people living in these communities on the edge of the field are exposed to about 50 percent of the airborne spraying that is done.

Also in farmwork communities, they are often in rural and unincorporated areas, and there is no garbage pick-up, so people live with garbage around their housing and on the edge of their housing. These slides are of some pesticides and other kinds of containers that a woman is looking for—some good bottles that she might use for her own home.

This is an illegal dump outside of a farmworker town (Slide 8). With farmwork communities being that close to the actual fields, people do not have nice lawns and playgrounds, either cement or otherwise, but rather people are playing right on the dirt—and playing without shoes on. The risk for some sort of toxic contamination is higher in these areas, both because of the contamination of the fields nearby, and also because of the lifestyle of the people working there.

One way to think about the culture of farmworkers is to look at the organization of households: who lives in them, what they do there, and how farmwork and pesticides intersect with home life.

As I mentioned earlier, among Guatemalans, the number of people living in a household is 13. Many Guatemalan domestic units include a nuclear family and rented out space to six to eight young men. Mexican farmworker households, on the other hand, have fewer nonfamily residents, and the total number of people is less. So in the Guatemalan households, pesticide residue on clothes, shoes, and on the laborers themselves is higher than in Mexican households. In addition, the risk of other infectious diseases is also higher in Guatemalan households because of the greater number of people living in very close proximity: colds, TB, and other contagious diseases spread more quickly in Guatemalan households than in the households of other farmworkers.

If we think about the domestic unit and what kinds of risks are there, among the many things we could think about is that if you have 13 or 14 people living together and there are no rugs on the floor, any pesticides or toxins brought in from the fields are permeated throughout the house, into the kitchen, bedrooms, and the bathroom.

Slide 9; Photo by Maria Rocha © 1991

There was a study done in Oregon about eight years ago where they found that in growers' houses, the pesticides stayed in the living room because there were rugs and people would walk in and the rugs would naturally take off the pesticides. But in farmworker houses that don't have rugs, the pesticides were distributed equally throughout the houses, including the far-back bedrooms where the children slept. As part of a cultural adaptation, the housing of farmwork does increase risk (Slide 9).

Another cultural risk area has to do with a combination of poverty and culture. A lot of us think about washing our clothes in a washing machine or a laundromat. In most farmwork houses, clothes are washed in a bucket with a stick. This is true of Mexico and also the United States. We did a study to see who was washing clothes and how often. Most clothes are done once a week because of the demands of other activities that farmworker families do, or that men are taking all of their clothes to a woman that does this as a part-time job.

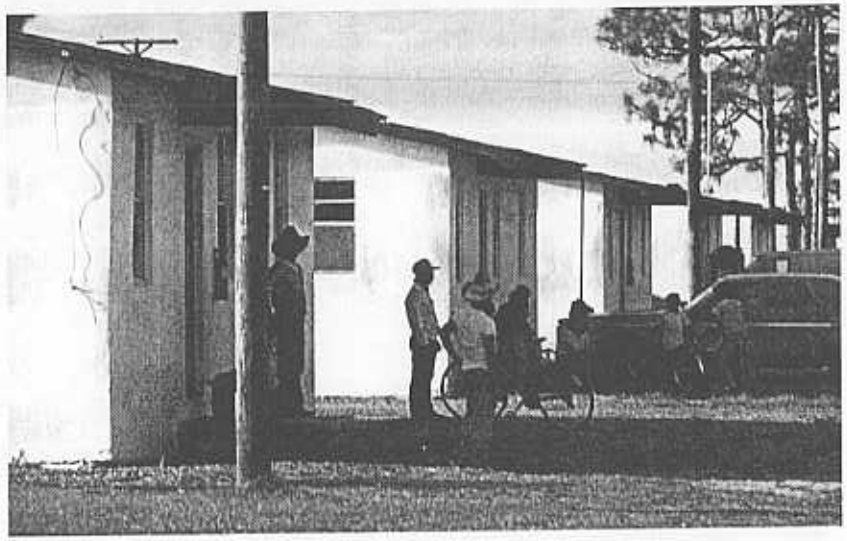
So when we talk about the contaminants from farmworker clothing, we can see that it spreads throughout the families and throughout other farmworkers, even if somebody is not primarily engaged, as we heard in the last talk, with mixing the chemicals. Their same clothes get washed with the other farmworker clothes, as in this slide.

Farmworker housing, I think, is probably the next big area for understanding a lot of the risks and health factors of people because, indeed, the conditions under which people have to live—whole families living in a 6 x 6 foot area; 13 or 14 people living in like a one-bedroom motel room—may be similar to the motel room you are staying in here, only not quite as nice (Slide 10).

The chances for disease going back and forth under these housing conditions are probably more dangerous than the chances for disease being spread in the field where people are physically spread apart.

Another cultural issue that affects farmworkers is ideology. These statements summarize some of the beliefs that people have about pesticides in the United States and in Mexico.

'If it was dangerous, then it wouldn't be sold.' This is especially true of household pesticides, 'If it was this bad for us, the government wouldn't sell it to us.' It is an important ideological belief of people because it affects, for example, daycare centers. A lot of farmworkers not working in the field are women who will take in 14 or 15 young children and do daycare for them while the rest of the family members are out working. When that occurs, in order to keep vermin and other things out of the houses where this informal daycare is taking place, people will spray



Slide 10

tremendous amounts of ant and cockroach pesticides in their homes to keep the places looking like they are free of cockroaches and other vermin. So if a little bit works, a lot will work better, especially if it is invisible. And if it is out of sight, it is out of danger; if you don't see it, if there is no residue there, it is probably not dangerous.

Then finally, another attitude and belief I wanted to mention here is that for a lot of farmworkers, exposure to toxins and work environments that are unhealthy is part of a self-sacrificing ideal: 'I'm not doing it for me. And even if I die, it doesn't matter because my children will have a better life.' For many farmworkers their own health isn't as important as the stability of future generations. Seen in terms of generations of family continuity, the sacrifices of one generation are worth ensuring a better life for coming generations.

I am going to switch and go to a final point here. A colleague of mine, Elizabeth Guillette,[2] has been working in Northern Mexico. She has been working in two nearby areas where similar communities of poor Mexican campesinos live. One is a lowland area that has had pesticides in it for over 40 years since the 1940s or 1950s. Another area nearby in the foothills hasn't had the pesticides or agribusiness at all. She found, like I did, a lot of children with spinal cord disorders in the former area. She started looking at what was happening to different ages of people, and the lifecycle effect of farmwork rather than just looking at the farmwork risks and effects to one particular group of people, such as those 18- to 30-year-old young men. Rather, the focus was on their whole families; their families in Mexico and their families in the United States.

Slide 11; Photo by Elizabeth Guillette © 2000

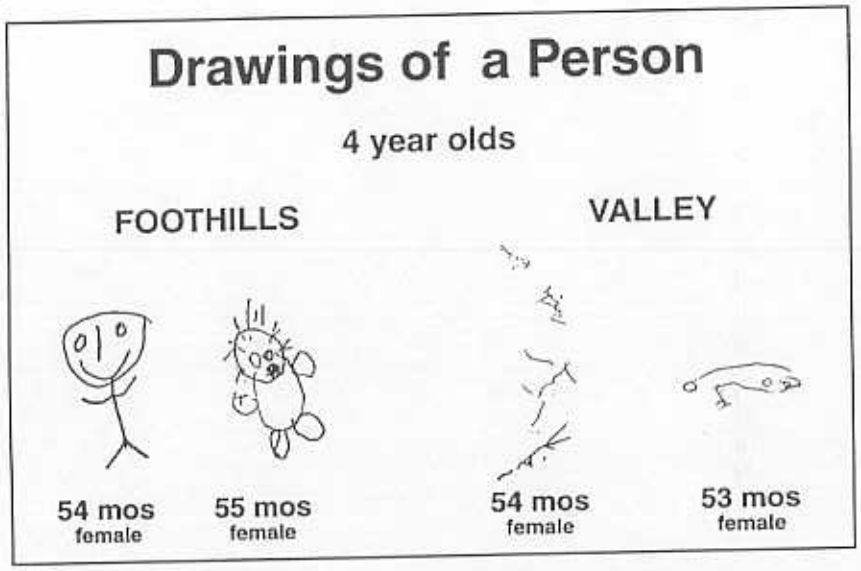
Children are close to the floor, so they are picking up things, they grab electrical wires, and they're putting things in their mouth (Slide 11). So children probably have a higher risk of contamination in farmwork families than actually a lot of people working in the fields because of where they are physically in their lives. Young children often play in contaminated areas.

As an example of how poverty and age affect exposure to pesticides, many children play around their houses where drainage ditches are common. Their patterns of informal play give them a different kind of risk than, say, the farmworkers themselves. Elizabeth Guillette looked at people in the valley and people in the foothills, and just did a rapid assessment of what sorts of things they complained about. Again, these are two areas: one that had agribusiness for 40 years, and one that does not.

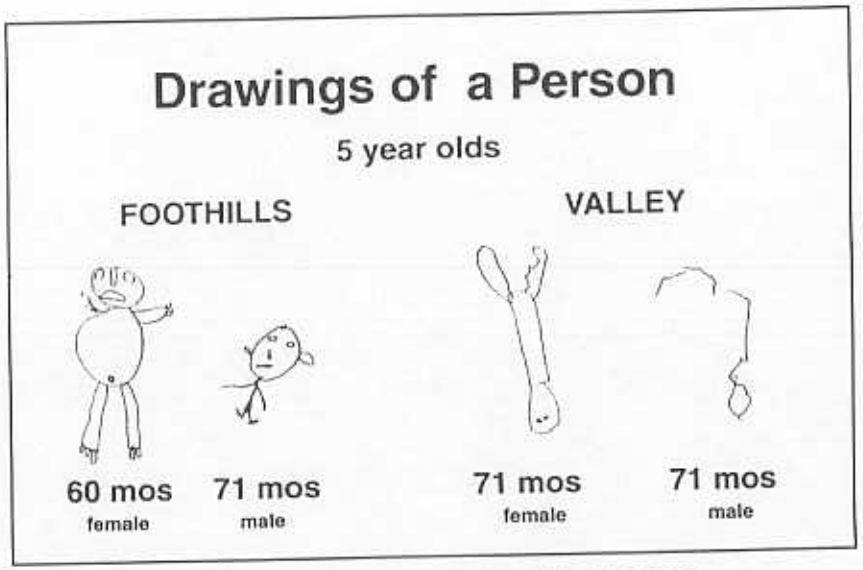
For example, Guillette found incidences of diarrhea many times higher for the children in the valley than the foothills. Rashes, which are very common in farmwork areas, were higher. Allergies, nausea, and vomiting, stomach pain; on every measure, children who were growing up in these areas—not necessarily going out to the fields, but just in an area of higher agribusiness—were suffering many more of these types of disease. Sore throats, for example, in the foothills, you see one percent incidence per child; one sore throat versus 3.5 in the agribusiness area.

Finally, what Elizabeth Guillette did was to look at motor development and neurological development: she asked them to draw pictures of people. The children in the foothills at the same age as the children in the valley drew pictures of people with an average of 4.7 body parts: heads, feet, hands, et cetera (Slide 12; Slide 13). Children in the valley, drew human figures with less than two body parts. I thought that was pretty remarkable evidence that something is going on. This study did not measure actual contamination in houses, but rather merely looked at differences in motor development for children living in an area where huge agribusinesses regularly use chemical inputs into the farm system.

These children are all Yaqui in terms of their cultural heritage, and they're all the same age. The only difference is one group has been living for 40 years in agribusiness and one group has not.



Slide 12: photo by Elizabeth Guillette © 2000



Slide 13: photo by Elizabeth Guillette © 2000

The lifecycle of farmworkers is the final feature of culture that leads us to a clearer understanding of risk. Young men have an ideology of health and the ability to withstand great sacrifices, and so they are more susceptible to pesticides than older people. Incidences of AIDS and other sexually transmitted diseases are sky-rocketing as the farmwork population becomes younger, and unaccompanied single men become the predominant group of people living and working together.

My main point is, in order to understand something about the risks, we need to look at the life cycle; not just the workers themselves. Farmwork risks begin in the womb with intrauterine issues, they continue with babies who are susceptible to exposure through breast milk and contaminated clothing and skin. Young children who play on the floor and in the yards of farmworkers are exposed more than older children. Each stage of the lifecycle has a different constellation of risk and contamination factors. While I haven't mentioned it in this talk, the gerontology of farmwork and farmwork risks is an area that is almost completely absent in the literature.

My second concluding remark is that the issue of toxins and pesticides among farmworkers is not just an issue of what is in the fields, but it is also an issue of what is used in the homes, what is brought to the homes, and what is in the larger community contexts of the lives of farmworkers.

Thank you.

MARGARET REEVES

MODERATOR: There will be time for questions after all of the speakers' presentations. Please wait until the end of the program and we will take questions. We've just seen and heard about the many occupational and community health issues that really need to be addressed. Allan's slides and comments really brought that home as well as anybody could.

Our next speaker will be speaking specifically about pesticides and the use of pesticides in California and the incidence of acute pesticide poisoning. This is Margaret Reeves. She has a Ph.D. in Agricultural Ecology from the University of Michigan, and she has done postdoctoral work in Agronomy at Ohio State University. Until 1996, she was involved in research and teaching in agricultural ecology primarily in Central America. Since 1996, she has been a staff scientist at the Pesticide Action Network in California.

REEVES: It is a pleasure to follow the two previous speakers. I think this is all fitting together very nicely. I am going to talk about farmworker pesticide poisonings in California from 1991 to 1996. This is research we did using data collected by the California Department of Pesticide Regulation (DPR). This work was done in collaboration with the United Farmworkers of America and California Rural Legal Assistance.

As we've already been hearing, farmworkers and their families face greater risk of exposure to dangerous pesticides than any other sector of society. California, which is the nation's largest agricultural economy, employs an estimated 800,000 farmworkers.

California Department of Pesticide Regulation, as I mentioned, collects data on commercial agricultural applications of pesticides, accounting for an estimated 80 percent of all pesticide use in the state. The other 20 percent not recorded includes home use, some institutional use, schools, and hospitals. DPR also collects data on pesticide-related agricultural poisonings.

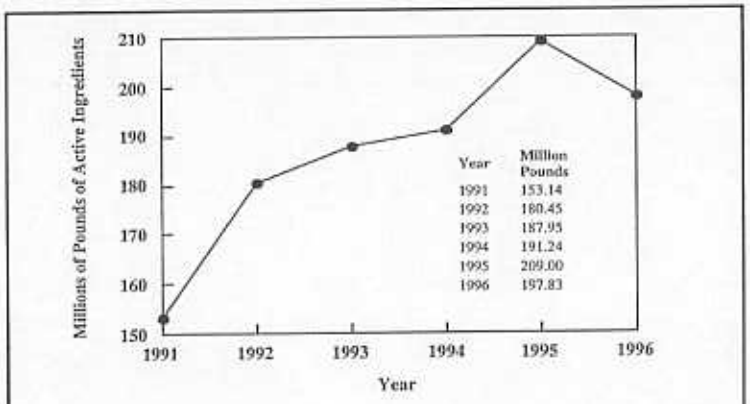


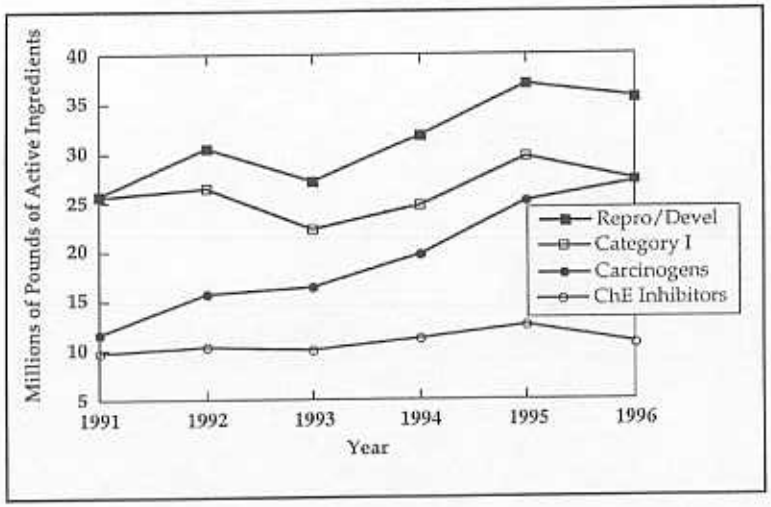
Figure 1. Reported Pesticide Use in California, 1991-1996.

Slide 1

California has the most rigorous and comprehensive reporting system. Although we do talk about some of the problems with the reporting system, it is also important to note that this system is far more comprehensive than any other state. Just recently, New York implemented a similar pesticide use reporting system, and Oregon has recently passed legislation to institute a similar system, but both of those systems are in the state of development.

The DPR data are available to the public in electronic format. That doesn't mean, however, that they are very easy to understand or interpret. In other words, the Pesticide Action Network and other nonprofit institutions have the staff and capability to do these kinds of analyses. Most of these data are not very understandable by the farmworker communities or by others that are most affected by exposure to pesticides.

First, I want to talk about pesticide use in California (Slide 1). Despite the fact that we hear more and more about the implementation of integrated pest management as a means to reduce pesticide use, we see that in California, pesticide use continues to increase.



Slide 2

The analyses I'll present only go through 1996. Although pesticide use data have been released for 1997 and 1998, illness data have only recently been released for 1997. I will therefore only be talking about data from 1991 to 1996.

We see that from 1991, there were 153 million pounds of active ingredient pesticides reportedly used in agriculture. That number increased to nearly 200 million pounds of active ingredient by 1996. That is not the total pesticide product; that is just the active ingredient of the pesticides. Inert ingredients can constitute up to 99 percent of a pesticide product, but average about 68 percent of product volume or weight.

Not only does pesticide use continue to increase in California, but so does the use of the most toxic pesticides. Again, these data only go through 1996. We show here use of reproductive and developmental toxins, Category 1 acute systemic toxins, carcinogens, and cholinesterace inhibitors (Slide 2). The latter is the most common insecticide group: the organophosphate and methyl carbamate pesticides. Most notable, are both the increases in reproductive and developmental toxins and increases in carcinogenic pesticides. If we were to follow use data for carcinogenic pesticides through 1998, we'd see a dramatic increase of over 127 percent since 1991.

What does this means in terms of poisoning in California? Looking at the same data from the DPR, we see that the top crops associated with acute poisoning cases—and, again, it is important to mention that although the California system is more rigorous than other states, it only records acute poisonings. There is no record of chronic pesticide effects such as cancer, birth defects, chronic neurologic disorders, and the like. What we see here is that some of the top crops associated with reported poisonings are grapes, cotton, broccoli—you see the list there—and the associated amount of pesticides used (Slide 3). There is, in fact, a significant relationship between pesticide use and reported poisonings, although the actual percent or proportion of poisonings accounted for by pesticide use is on the order of 57 percent. This relationship is influenced by the intensity of pesticide use; for example, the number of pounds per acre. Nevertheless, in general, as pesticide use increases, so does the number of poisonings. As one you might expect, DPR's response is, 'Well, use doesn't necessarily mean exposure.' So that is one of the things that we are constantly battling with when we address these issues at the state level.

Table 1. Acute Poisoning Cases—Top 10 Crops, 1991–1996

Crop	Total Cases 1991–1996	Million lbs. Active Ingredient (1995)
grapes	539	58.7
cotton	399	17.7
broccoli	307	1.3
oranges	165	9.9
ornamentals	104	3.4 *
almonds	102	12.0
tomatoes	102	14.2
lettuce	101	3.9
strawberries	78	7.1
alfalfa	70	3.4 **
subtotal	**1967**	
all other crops	880	
no crop given	1144	
total	**3991**	

Slide 3

Something else we see here: about one-third of the poisoning cases had no crop identified. We want to use the data to identify the particular problem areas. However, since much of the pesticide use is regulated by crop, it makes it very difficult when many cases don't identify the associated crop.

Overall, between 1991 and 1996, there were nearly 4,000 reported cases of acute poisoning. However, we know that the reported cases far underestimate the real situation. One of the things we pointed out in our report Fields of Poisons: California Farmworkers and Pesticides, which came out last year, were some of the reasons for underreporting. Those reasons include: farmworker fear of retaliation or job loss; particularly if they are undocumented, but not necessarily so. We have lots of anecdotal evidence showing that if a farmworker merely asks what pesticides have been applied, they are subject to being fired and perhaps blacklisted and unable to get another job elsewhere.

In addition to that, farmworkers don't often recognize symptoms of pesticide poisoning and won't look for medical care. Doctors also often fail to recognize symptoms of pesticide poisoning. The amount of training that doctors receive regarding pesticide exposure and appropriate treatment is, on average, extremely minimal (on the order of six hours). I've mentioned just some of the barriers.

Pesticide exposures occur on the job. The main causes of pesticide-related illnesses occur from: (1) exposure to pesticide residues (about 33 percent of the reported cases)—that is, workers enter fields before it is safe to do so, either because the regulations are inadequate or becauase the laws designed to protect workers are not enforced; and (2) exposure to pesticides that drift from the point of application to farmworkers in nearby fields (accounting for 44 percent of reported cases). Of course, there are a lot of cases, as Allan pointed out, of housing being located immediately adjacent to fields, and hence drift into homes. In addition, farmworkers bring pesticides into the home on their clothes.

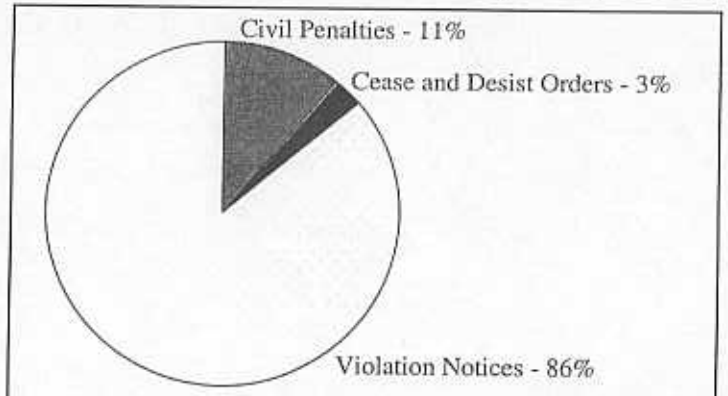


Figure 3. Lack of Enforcement of Pesticide Regulations.

Slide 4

The third point (after we look at the number of poisonings with crops, problems of underreporting and the main sources of exposures), is the lack of enforcement of laws and regulations that compound an already-serious situation. Here, we see that 86 percent of the reported violations had no fines associated with them whatsoever. They only had associated with them a notice of violation of the law or regulation. Only 11 percent of the recorded violations of worker safety laws had any sort of civil penalty, and about half of those were less than $151.00. In other words, in the few cases where there is a penalty applied, the incentive to follow the law is really so minimal that it is almost laughable if it weren't such a serious situation.

Just to summarize, between 1991 and 1996, we see nearly 4,000 cases of agricultural pesticide poisoning reported in California. That number is much lower than what the real number is likely to be. We have no good way to estimate what that is. Reported pesticide illness results from a combination of high pesticide use, insufficient laws and regulations, and poor enforcement of the laws and regulations that do exist (Slide 4).

The Pesticide Action Network and a coalition of more than 135 groups called Californians for Pesticide Reform (which is made up of parents, teachers, labor organizations, environmental organizations, the health care organizations, and many other groups) recommend that in order to solve this problem of farmworker poisoning and the more general problem associated with heavy use of toxic pesticides in California, that we ban the worse pesticides as soon as possible. We also want to reduce the use of other pesticides, and we want to improve use and illness reporting systems so that we can more appropriately identify the problems and identify the most important target areas for response. We want to improve worker safety laws and enforcement. Last, but not at all least, we want to support safer pest management alternatives.

It is extremely important, if we're talking about reducing pesticides, that we work with farmers to help them find economically viable and safer alternatives to toxic pesticides. We see with the burgeoning organic foods industry, that has been growing at about 20 percent per year consistently for the last 9 or 10 years, that viable alternatives exist for virtually every use of pesticides in agriculture. It is very important that we are with farmers on this and that we are seen as advocates for supporting sustainable agricultural, not just waving the sticks to get rid of the worst pesticides.

Finally, since I am at a nonprofit organization and a civil society organization, I want to talk about some of the ways in which we try to use these data to push for change. When we released Fields of Poison, we received great media coverage, both in Spanish and English (the report is in both languages). As a matter of fact, if anybody in the audience is interested or thinks they might be able to use this information, I would be happy to talk to you about that.

In response to the release of this report, the California Department of Pesticide Regulation initiated discussion with the coalition Californians for Pesticide Reform on improving worker safety and on improving case investigation procedures. That is, the investigations that are conducted at the agricultural commissioner level at each county when there are cases of poisoning reported. We have been talking about how we can work to prevent retaliation against workers who inquire about pesticide use or complain of exposure.

(One thing I didn't mention, in addition to the threat of job loss, are all the stories one often hears about when farmworkers do see a doctor for pesticide exposure and are told, 'Oh, you are just hung-over' or 'You have food poisoning.' There are all sorts of incredible stories like this.)

We also used the Fields of Poison report in recent testimony in support of a California Senate bill to improve field-posting requirements. That is, the simple requirement to put signs in the fields in a language the farmworker can see, and frequently enough so that farmworkers are warned that there has been an application of pesticides. As it stands right now, the posting requirements are minimal and enforcement of those requirements is inadequate at best.

I will leave it at that. Thank you very much.

MODERATOR: We do have a little bit of time. If you have questions for Margaret, we can take about four or five minutes.

PARTICIPANT: [Inaudible]

REEVES: Does enforcement of worker protection standards work in California? The responsibility for enforcement of both worker protection and pesticide use laws and regulations is at the level of the county agricultural commissioners. In nearly every California county, there is an agricultural commissioner, and they are the ones responsible for issuing the notices, fines, and penalties. If it gets at a certain level where a large number of workers are involved and the Department of Labor steps in, then it might move to the state level for enforcement action as well.

The question is whether enforcement and consultation is the responsibility of the same person. That's a very good question that raises another issue. Many of the agricultural commissioners, whose job it is to oversee the implementation of worker safety and pesticide-use regulation, are also either appointed or elected individuals in the agricultural counties in which they serve. It is very clear that their interests, more often than not, lie with the agricultural industry representatives rather than the farmworkers that they are presumably supposed to work on behalf of. There is clearly a conflict of interest in many of the enforcement issues at the agricultural commissioner level.

PARTICIPANT: Harvard Fong with the Department of Pesticide Regulation, Worker Health, and Safety. Some of the questions I have concern the acute poisoning. What are you defining acute poisoning as?

REEVES: The acute poisonings fall under the categories of systemic poisonings, eye irritation, and skin and respiratory ailments. I think those are the main categories.

PARTICIPANT: So were not the vast majority of the illnesses rated acute? Also, regarding the fact that they break them down by definite, probable, and possible, weren't the vast majority of them dermal?

REEVES: I would have to look. The data are all right there. I can't remember. First of all, these data only looked at the possible-to-probable. They are not looking at the unlikely category. Among the distribution—again, I would have to look at it, but dermal irritation and respiratory and eye irritations are quite prevalent as well.

PARTICIPANT: Also, the violation of the NOVs, you said for 84 percent there was simply notification. How many of those were paperwork NOVs?

REEVES: I don't know. I would have to look at that. But as opposed to?

PARTICIPANT: A paperwork NOV would be something like they didn't have a fit test record or that a training record was not signed, as opposed to a violation of, say, an equipment violation.

REEVES: Oh, you're talking about the kinds of violations. Yes, the typical violations that are reported were lack of protective equipment, but also lack of medical care—getting the workers to the medical facilities, which the employers are obligated to do, or provide transportation to medical facilities. Again, I would have to look at the details of that, but it wasn't just lack of keeping records. That was a piece of it.

PARTICIPANT: Specifically, to improve the illness reporting system, back in 1994, notification was sent to 70,000 doctors in California, and the Health Safety Code, Section 105200, requires notification. In fact, the Department of Industrial Relations has been known to fine doctors for not reporting illnesses. To the extent that doctors have been known to report illnesses that do not have anything to do with pesticides, how much more can you do with that part of the system? What specifically do you recommend?

REEVES: There are a couple of important areas. One is the information of reporting, per se, and that is identifying the crops and identifying the pesticides associated with the poisoning. In fact, the more recent data have been improved vis-à-vis identification of the associated pesticides. The other area is that a lot of doctors do not know of their reporting requirements. True, by California law, doctors are required to report any known or suspected cases of pesticide illness; unfortunately, many doctors in the field don't know of that reporting requirement. What we need is a concerted effort on behalf of all of the involved parties to get that message out to doctors.

PARTICIPANT: Concerning the necessity for reduction of pesticide use, most of these chemicals are fairly expensive. The whole concept of spraying by calendar has pretty much been left way in the past, and they are more likely to spray by use. How much more reduction can you expect? What specific recommendations do you have for reduction?

REEVES: I think the simplest answer to that, as I mentioned before, we looked at the burgeoning organic agricultural production in California and the United States. We see that there are viable alternatives to toxic pesticides in virtually every crop. Plus, in addition to that—and I am not saying that organic production is the only alternative—we see other sustainable agricultural methods being implemented across the country, and we see some real successful cases of reduction of pesticide use in a number of crops. As a matter of fact, in a very recent study, the most recent analysis of the use data showed that in a couple particular crops, use has declined despite the fact that overall pesticide use continues to increase.

PARTICIPANT: Does that include category 1, 2, and 3 materials?

REEVES: In one of the areas, the carcinogenic pesticides in particular have increased dramatically; 127 percent from 1991 to 1998. Overall, we see pesticide use increase, and we looked at it in great detail in the different toxicological categories: reproductive developmental toxins, et cetera.

MODERATOR: I have a question having to do with the association between the hand-picked crops that need to be picked because they need to look a certain way—fresh and not bruised—and the residue exposures that were described in the slides. Can you say something about that? Did you look at the relationship between whether or not crops were hand-picked versus otherwise, and did you look at exposure to residue on the crops themselves?

REEVES: No. The data aren't detailed in such a way that we could pick that out. We did see that pesticide drift was 44 percent of the exposure cases, and residues were 33 percent of the cases. Residue exposure occurs both from picking the fruit, but also other activities like weeding and pruning. In grapes, it is called 'tipping' the grapes. So there are various other activities that are not hand-picking that would bring the farmworkers into direct contact with both the foliage and the soil.

MODERATOR: Thank you, Dr. Reeves. Yet it has to do with the ability of farmworkers to organize into unions for collective bargaining as well as to establish due process procedures, et cetera. Farmworkers were excluded from the Back to Labor Relations Act in the 1930s. California has a bill that does allow farmworkers organizing. It was a very good bill. Most states do not have that kind of legislation, which facilitates this organizing.

DAVID JOHNSON

Moderator: Our next speaker will describe the State of Florida NIOSH SENSOR pesticide surveillance program that was initiated in 1997. I understand that the program has had incredible success in terms of identifying problems that had not been recognized before its initiation. Prior to this program, you could count the number of acute pesticide poisonings that were recorded for several years on one hand.

With that introduction, I would like to introduce David Johnson. David will discuss pesticide poisoning prevention and surveillance in Florida. He has his M.D. from Wright State, his Master of Science from the University of Cincinnati, where he also did his occupational medicine residency. He is currently the chief of the Bureau of Epidemiology for the Florida Department of Health. David is Board Certified in Occupational Medicine, and a Fellow of the American College of Environmental Medicine.

JOHNSON: Jim, I am going to present an overview of the Florida Pesticide Exposure Surveillance Program.

The Pesticide Exposure Surveillance Program is in the Bureau of Environmental Epidemiology, Division of Environmental Health, Department of Health in Florida. The program being presented is not specifically focused on farm-workers, however farmworkers are included and they are an important high-risk group. The Pesticide Exposure Surveillance Program draws upon resources throughout the Department of Health and has several personnel closely involved with this operation. These include the program coordinator, the program support personnel, a supervisor, a principal investigator, and a toxicology consultant. The program is funded by cooperative agreement between Florida Department of Health and CDC and, more specifically, the National Institute of Occupational Safety and Health (NIOSH).

It is a SENSOR pesticide program, as Jim pointed out. SENSOR is an acronym for Sentinel Event Notification Systems for Occupational Risks. SENSOR is a collaborative surveillance effort between NIOSH and state health departments. SENSOR is intended to prevent threats of health in the workplace. It is not just limited to pesticides. Prevention activities for SENSOR are aimed at work-related health problems such as amputations, asthma, burns, cadmium poisoning, cumulative trauma, lead poisoning, silicosis, TB, and other injuries.

There are several participating states in the SENSOR pesticide program, and Florida is one of them. The goals of the program include epidemiologic surveillance and pesticide exposure in Florida, maintaining a working group that meets regularly to discuss topics of pesticide use and safety, as well as goals, objectives, and accomplishments of the program. Participants are represented in various groups throughout the state including state agencies, businesses, farmworker advocacy groups, grower organizations, and university programs just to name a few. Other goals of the program are educational initiatives that are in part guided by surveillance activities and prevention of pesticide exposure and human health effects through education and safe work practices.

EPA lists the most common pesticides in their publication, 'Recognition and Management of Pesticide Poisoning.' We have a few copies here and can help you obtain other copies without cost. The publication ranks the most common pesticides in order, number one being the most common. We will briefly review this top 10 list, just to give an idea of what you would expect to see in a surveillance program. First on the list are the organophosphates, which are widely used in agriculture and the home. The organophosphates are cholinesterase inhibitors. Next on the list are the pyrethrins and the pyrethroids. Pyrethrins are derived from a type of flower and are used most commonly for indoor pest control; pyrethroids are synthetic derivatives and have better stability and are used more in agricultural settings.

The pine oil disinfectants and hypochlorite disinfectants are not generally included in the surveillance data because the numbers are great, and the symptomologies have less acute consequences.

Of the insect repellants, DEET is the most common and one of the most widely used repellants. Considering its extensive use, there are not many complaints of toxicity related to the use of DEET.

Number 6 on the list is phenol disinfectants. These are commonly used as household and office sprays. Next, carbamate insecticides are similar to the organophosphates in their use, their mode of action and their toxic symptomotology. Like organophosphates, they block the cholinesterase enzymes. Poisoning due to carbamates is a little bit easier to treat than organophosphates because carbamates have less affinity for the enzymes.

Number 8, the organochlorine insecticides, are used much less today than in the past. An example in this class is DDT, which is no longer used in the United States. However, other organochlorines are still found in home and garden products and in agriculture. Interestingly, lindane is an organochlorine and it is a medicine used to treat scabies in humans. Many of you may be familiar with this pesticide. Phenoxy herbicides are in hundreds of commercial products and finally, on the list, are the anticoagulant rodenticides. These rodenticides work through the action of warfarin. When the animal ingests the rodenticide, the warfarin blocks vitamin K-dependent blood clotting factors and causes hemorrhage and death of the animal.

Some common routes of pesticide exposure include: ingestion; skin exposure; inhalation; and mucus membrane exposure of the eyes, nose, and mouth. Often, multiple routes of exposure can be involved with a poison. This is important because the toxicity can be cumulative from several different routes of exposure.

Common presentations of pesticide exposure include: acute toxicity, dermal injury, ocular injuries, explosion injuries, and allergic reactions. Actually, explosions are not very common, but allergic reactions are common, as are reactions to odors.

Common signs and symptoms include: nausea and vomiting, abdominal cramps, diarrhea, chest tightness, increased salivation, myosis, blurred vision, sweating, bradycardia, anxiety, irritability, headache, tremor, impaired cognition, dermatitis, and coughing. Actually, these symptoms are most characteristic of the organophosphates and the carbamates. We cannot practically cover all of the pesticides and their symptoms of toxicity here since they are too numerous and various. Often, we have to research a suspected pesticide when we are confronted with an exposure because many of the symptoms are nonspecific. Because many of them are nonspecific, a clear and detailed exposure history and clear documentation is essential.

Serious toxicity can cause seizures, coma, and death. In Florida, pesticide poisoning is a reportable condition. Florida Statute 381.0031 states that 'any practitioner licensed in this state, any hospital licensed, or laboratory licensed,' and continues to say that 'diagnoses or suspects the existence of a disease of public health significance shall immediately report the fact to the Department of Health.' Pesticides are on the list of reportable diseases for the state.

The surveillance program obtains data from the Florida Department of Agriculture and Consumer Services (which I will refer to as DACS from here on out), from county health departments, physician reports, the Florida Poison Information Network, lab reports, the Agency for Health Care Administration (hospital discharge records), citizen reports, and at times the media brings a case to our attention. Once all the surveillance data is collected for an exposure, the case is classified using the NIOSH case definition criteria. Hopefully, such data will be used to direct public health initiatives.

Florida Statute 487.159 states that all physicians should report all pesticide-related illness or injury to the nearest county health department, which will notify the Department of Agriculture so they may establish a pesticide monitoring system. DACS receives a report of an exposure, a PIMS report is completed by a public health care professional, and then a field investigator is assigned to the investigation. A copy of the PIMS report is provided in your handout and can also be obtained from the Florida Department of Agriculture and Consumer Services.

The contact at DACS is Kimberly Hange or Elizabeth Braxton. The phone numbers are on this slide and in your handout. DACS investigation occurs through one of two bureaus in their department. First, Compliance Monitoring investigates misuse of pesticides in agriculture, and the Bureau of Entomology and Pest Control will investigate companies, such as lawn-care companies, and they take complaints for mosquito spraying, including aerial spraying. Investigation might include sampling of soil and vegetation; however, they don't routinely sample air. When DACS performs an investigation, they focus on whether or not the pesticide was used properly, if the labels were followed, and if appropriate protective equipment was used. They have the authority to fine up to $10,000 per violation.

Once we get all of the data, we may need to review the literature regarding exposure and toxicity. I have listed some sources of pesticide information: the NIOSH classification document provided to us, and the EPA's 'Recognition and Management of Pesticide Poisonings.' Other sources include the U.S. EPA Data Source and Extoxnet and various textbooks. The handout includes reference for additional sources of information published by the EPA.

The surveillance process involves classification of exposure using the NIOSH case definition. This occurs after we have assessed the exposure, the health risks, and researched the toxicological plausibility. Then the cases are classified by the CDC/NIOSH definition into one of the following categories: definite, probable, possible, suspicious, unlikely, insufficient information, or not a case. I'm sure some of you are already familiar with this classification.

I am going to give a simplified description of each category. You should refer to the NIOSH case definition document to actually classify a case. A definite case is based upon substantiating exposure and having physician documentation of two or more clinical signs as well as toxicological plausibility. A probable case is based upon substantiating exposure or having physician documentation of two or more clinical signs as well as toxicological plausibility. A possible case is based on written or verbal report of exposure and two or more symptoms that are reported by the patient. Again, the symptoms have to be consistent with known toxicology. An unlikely case may have documentation of exposure and two or more clinical signs reported by a physician; however, in this case the effects are inconsistent with known toxicology. Finally, if there is not good evidence of exposure, if the person is asymptomatic, or there is definite evidence of a nonpesticide cause, then you don't have a case.

The number of cases processed by the surveillance program in 1998 and 1999 can be placed in the different categories of definite, probable, possible, unlikely, et cetera. Jim Albers asked me earlier to point out that before 1997, there were very few reported cases in the state that were captured through surveillance. There were 507 exposures classified in 1998 and 375 in 1999. Obviously, this doesn't represent all cases of pesticide exposure in the state, but just those captured by the surveillance system.

In addition, there were 46 occupational versus 425 nonoccupational in 1998, and 160 occupational cases versus 198 in 1999, as reported to the surveillance program.

Surveillance data are reported to the Department of Agriculture for follow-up investigation and regulation enforcement if there has been misuse of a pesticide. Surveillance data are inputted into a NIOSH database and it is reported to CDC for analysis. The summary data are shared with county health departments and the general public.

Goals of the Pesticide Prevention Program include prevention activities. Ideally, surveillance data should guide some of these prevention activities. Prevention through education includes: continuing education for health care professionals, education outreach to high-risk groups, education outreach to the general public, and education to employers. In 1999, the program sponsored a satellite videoconference on the recognition and management of pesticide poisoning which targeted health care professionals. In the routine course of surveillance, health care professionals have been provided copies of California guidelines for work-related pesticide exposures and copies of the EPA manual for recognition and management of Pesticide Poisonings.

High-risk groups for exposure to pesticides include: farm managers, farmworkers, golf course superintendents, pest control operators, pesticide manufacturing workers, workers involved with mosquito control, employees of water management districts, and highway maintenance crews. Education to these high-risk groups has included the production of a radio novella for female farmworkers. This is a cassette and is being produced in three or four different languages. There was funding for the Farmworker Association Prevention programs, and there were 314 farmworkers trained from October of 1999 through April of 2000. Additionally, we are starting some collaboration efforts with USF Deep South Agricultural Medical Center, academic research through conference calls.

I am going to briefly review prevention. Most of it has been touched upon today already. Prevention includes the use of engineering controls, such as closed systems for mixing and closed door tractors for applications. There is personal protective equipment including gloves; face shields; aprons; boots; and clothing that cover the skin, arms, and legs. There are administrative controls that are often cost effective, such as spraying when the environmental conditions are right to avoid drift and observing restricted entry interval times. Finally, training is important; training the farmworkers and other high-risk groups about the correct operation of close systems and toxicity of compounds as well as proper handling and disposal.

To wrap up, I am going to comment briefly about two studies in Florida that are being proposed in collaboration with CDC. These are separate from the SENSOR program. One is the study of organophosphate urinary residue levels in inner city preschool children, which would involve sampling the children's urine and performing biological studies on this urine for metabolites of organophosphates. The results would then be analyzed with regard to potential exposure to the children. A second study involves measuring lindane in the urine of children. I think both of these studies have the potential for providing public health information of importance. Hopefully, they will also help in preventing adverse human health effects.

This concludes the overview of the Department of Health Pesticide Surveillance in Florida. We're working to collaborate with other agencies, and hope for continued growth. Thanks for the opportunity to discuss this important public health program.

MODERATOR: We do have time for a couple of questions.

PARTICIPANT: I'm Chris Odison with Oregon OSHA. On your reporting system, I had a couple of questions. In your total number of cases reported for 1997–98, you listed a category under 'Investigation.' Who does those investigations?

JOHNSON: What that means is when we get a report, we have to get in data from medical records and other sources to complete the file. Included is the information from the Department of Agriculture about their investigation, reports from doctors, and reports from laboratories. Under investigation just means that we don't have all of the results back yet to complete the file for the case.

PARTICIPANT: Do you have a referral mechanism in Florida to take that back to your OSHA program for any kind of enforcement follow up? I don't know if you guys are a state plan or a federal program here in Florida.

JOHNSON: I believe we are federal. We do not have a formal referral system set up to notify OSHA of occurrences in their jurisdiction.

PARTICIPANT: The reason this is of interest is because in Oregon, we have put together what we call an Agricultural Action Plan, and we have had all these different issues dealing with everything from labor housing to pesticides to field sanitation and water quality and all that. We try to package it all together. From an enforcement standpoint, you think through this process of how do you find where these things are at, and how do you go out and do enforcement-related work, and target resources to use them in the best way. It seems like one of the pieces that you have that we don't have is with the SENSOR program; you are identifying people that are actually being impacted by the use of pesticides and you have a prime opportunity to feed that back to somebody who can deal with it. If we had that piece, that would make our job a whole lot easier in terms of focusing resources because you know where the problem is occurring. I was just curious if you had that kind of system in place, if you were planing to pursue that.

JOHNSON: Florida Department of Health doesn't implement the regulation. There are formal statutes that I discussed in my presentation that direct us to provide reports to DACS; there are statutes to support that. I think we would advise the person, if it were an OSHA problem, that they can always report the problem themselves to OSHA. But as far as having a formal statute or regulation or program that charges us to report directly to OSHA, I am not aware of that.

BARON: I just wanted to add that Oregon is one of the NIOSH-funded SENSOR states, so you do have a parallel surveillance system in Oregon. I can give you the name of someone to call if you want to get in touch with them in the state.

PARTICIPANT: Yes, my name is Garrett Brown. I remember a short while ago, a controversy about a report that the department issued regarding malathion spraying in Florida. The report was rewritten in a way that both the author and the CDC opposed. Could you clarify what happened with that?

JOHNSON: First of all, I've been with the department since November of last year, 1999. I was not in the department at the time of what you described occurred. As far as clarifying it, I cannot clarify it for you right now in this setting. I don't know if you are referring to some of the newspaper articles, but I cannot clarify that for you right now.

PARTICIPANT: Hi, I am Roy Seeber with FCCI Insurance Group. You talked about some data on occupational versus nonoccupational. I was wondering if you could give me a definition of those two.

JOHNSON: Well, occupational would be anything that occurs at work.

PARTICIPANT: Would it be exposure to the family and that kind of stuff? The data showed that the nonoccupational was 10 times the amount of the occupational numbers. I found that interesting.

JOHNSON: In Florida, we're still working to obtain Workers' Comp data. I think that would help increase the occupational numbers. We're continuing to work on that.

BARON: I think nonoccupational also means people who use pesticides in their gardening. Also, there are a lot of poisonings that take place where children or adults will accidentally consume pesticides. It is not necessarily families of farmworkers, but it is use of pesticides outside of work, people using it in their homes.

PARTICIPANT: It is also my understanding that there were a number of cases reported as a result of aerial spraying of malathion.

PARTICIPANT: You mentioned you would like to collaborate with NIOSH on looking at urinary organophosphate residues. Are you aware of any research being done in that area in other states? Are you breaking new ground with this sort of research?

JOHNSON: This is a proposed study. I don't want to go into detail, but it is really through a county health department in Florida in collaboration as being proposed through CDC. That would be the research, to see what they find, and then to try to correlate that with exposure.

PARTICIPANT: So you are not aware that it is already been looked at elsewhere or that anyone has tried to correlate it with any specific health effects?

JOHNSON: No, I'm not. Does anyone have an answer to that here?

PARTICIPANT: There is some accumulating evidence that infants below the age of two don't have certain enzymes that are necessary to metabolize organophosphates, so that is of particular interest to me.

JOHNSON: Thank you.

MODERATOR: Let me suggest that we take a couple of minutes to ask a few questions, and then we will hear from our last speaker. Unfortunately for those who have come late, Tirso Moreno, who was scheduled to speak here this morning was not able to make it. We feel pretty badly about that because Tirso has been involved in farmworker advocacy in Florida for quite a few years. That organization also does a considerable amount of pesticide education and training, some of which was described by David in the previous presentation.

Are there any questions at this point? If not, we can take some at the end.

DAVID BACON

MODERATOR: Right now I have the great pleasure to introduce someone that I have only met recently. David Bacon is a photojournalist and journalist. For those of you who have had an opportunity to go through the exposition center, you may have seen his exhibit of photos, which look at labor conditions in the United States, in Mexico, and in the Philippines.

The title of David's presentation is Images and Commentary: Surviving the Global Economy. As well as being a photojournalist and an editor of the Pacific News Service, he is a member of Impact Visuals. In addition, he has also been a union organizer and he worked for the United Farmworkers of America in California during the 1970s. Please welcome David.

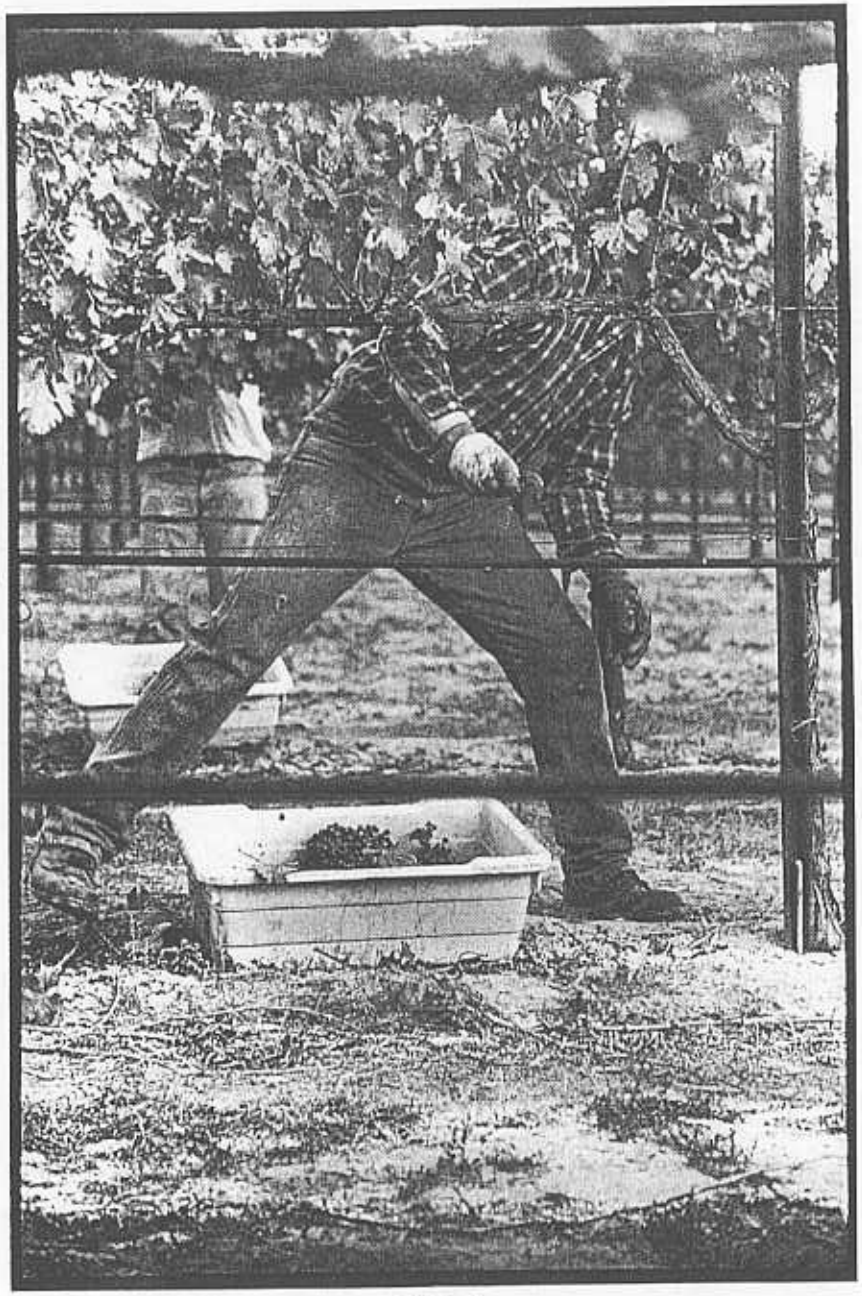
BACON: I want to put a human face on the power relationships affecting farmworkers. If our purpose is to improve the working conditions and work lives of farmworkers, then the first place to start is by noting the fact that farm labor is one of the most hazardous and dangerous occupations.

That has a lot to do with farmworkers' lack of power—economic and political power. These photographs, then, document the effort of farmworkers, both here and in other countries, to gain that power.

We start with a worker in the Napa Valley wine industry (Slide 1). As a former organizer for the United Farmworkers, in my experience most farm labor is paid by piece rate. Even wage systems that look like hourly systems turn out to have a piece-rate component—bonuses for instance.

The vast majority of farmworker labor offers economic incentives to get them to work faster. It is clear fast this particular worker is working under such a system because he is actually running up the rows. He pushes a tub with his feet, and then uses the knife in his hand to go down the vine.

As the grapes are cut, they drop right into the tub, enabling him to pick and run as fast as he can. His motivation is obvious—he can't make a living as a farmworker without working at this kind of speed.



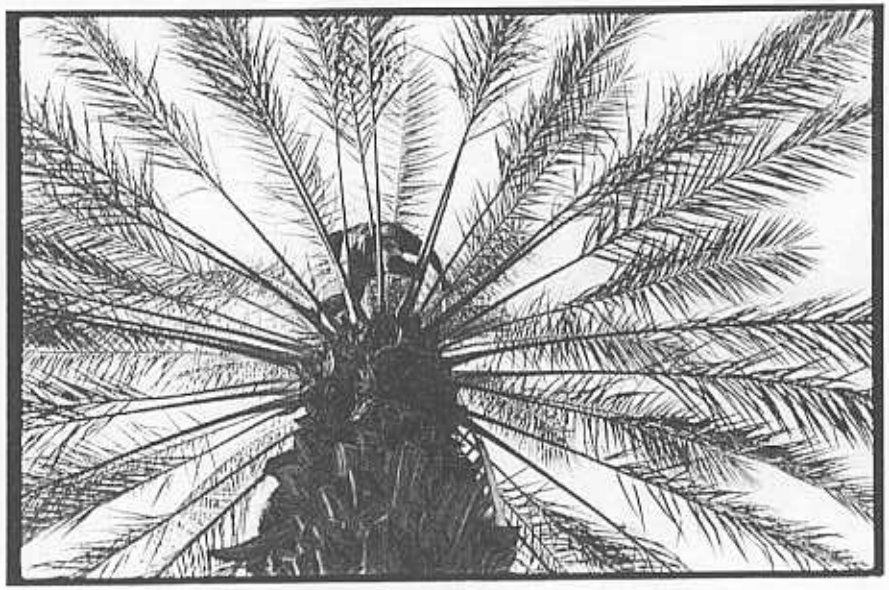
Slide 1

Slide 2

These strawberry workers in Watsonville work under a similar system (Slide 2). And the pick card, which is the record of the boxes he picks, is sticking out of one worker's pocket. This worker is supposedly being paid by the hour, but he is actually getting a bonus according to the number of boxes he picks. They bend over like this 8, 10, 12 hours a day, for as long as the season lasts. How many years can they do this work? I picked strawberries one year—it is very, very painful work; not something workers are generally able to do year after year after year for 20 or 30 years. The workers in this photograph are all in their late teens or early 20s there—aren't too many retired strawberry pickers.

This date worker lives in the Cotella Valley in California, the only place outside of Iraq and North Africa where dates are commercially grown (Slide 3). Growing dates is a very specialized kind of agriculture. Date trees are either male or female. There are a lot of operations that are required up at the top of the trees in order to make the date trees produce; e.g., pollination of the flowers and other operations to protect the dates from birds and insects. This work is also done by piece rate, and this worker has climbed up a ladder he leaned against the tree. He then climbed another ladder on the right in the photograph, which is actually nailed to the tree permanently. He then stepped off the ladder onto the crown of the tree, and is pollinating the flowers by walking on the fronds of the tree. He has no safety line. He's working as fast as he can on piece rate in order to be able to make a living.

These workers look at their work in a kind of nationalistic way, because in the Coachella Valley, they are all Mexican. 'Only Mexicans can do this work,' they say. 'They tried sending up White people, they tried sending up Japanese, and they tried sending up other nationalities. Nobody could survive at the top of the trees except Mexicans.' There's a certain amount of pride and machismo that goes along with this work that helps to get somebody up to the top of a 30-foot tree and work without a safety line.

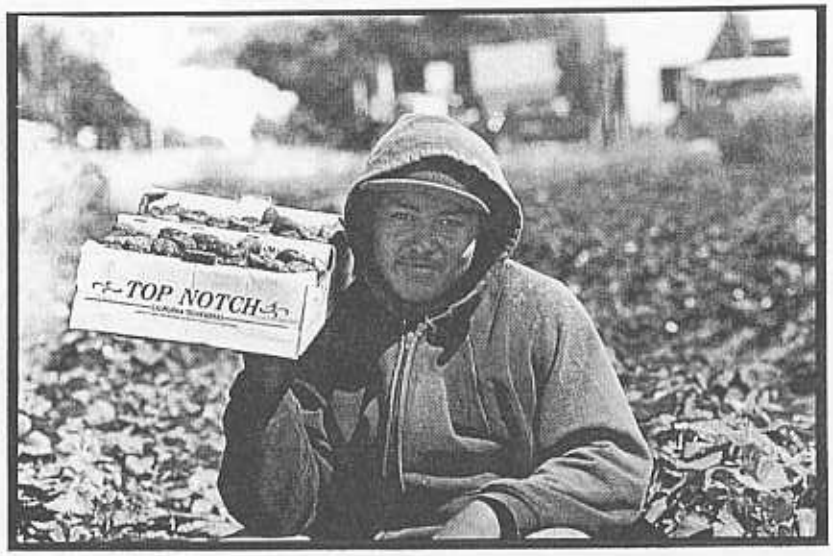


Slide 3

Slide 4

These are tomato workers in Stockton, also working by piece rate (Slide 4). One worker carries his tub over to the truck where the tomatoes will be dumped into the bins. The men walking in the other direction are crew bosses who keep track of the number of tubs each worker picks.

There have been a number of strikes and organizing drives over the years in the tomatoes. One primary reason why workers have organized and struck is their accusations that the companies cheat—that records are not kept properly about how many tubs each worker picks. All these crops—strawberries, tomatoes, and wine—are being hit very hard by the globalization of agriculture: tomatoes are grown in Mexico, especially in the San Quintin Valley on the Baja, California, peninsula; the same thing is true for strawberries; and wine is now produced in many different countries. This puts enormous downward pressure on the wages of U.S. farmworkers. When produce or agricultural products come into the United States from countries in which the wages are lower, U.S. growers then put pressure on labor contractors who put pressure on workers to work faster for less money to compete.



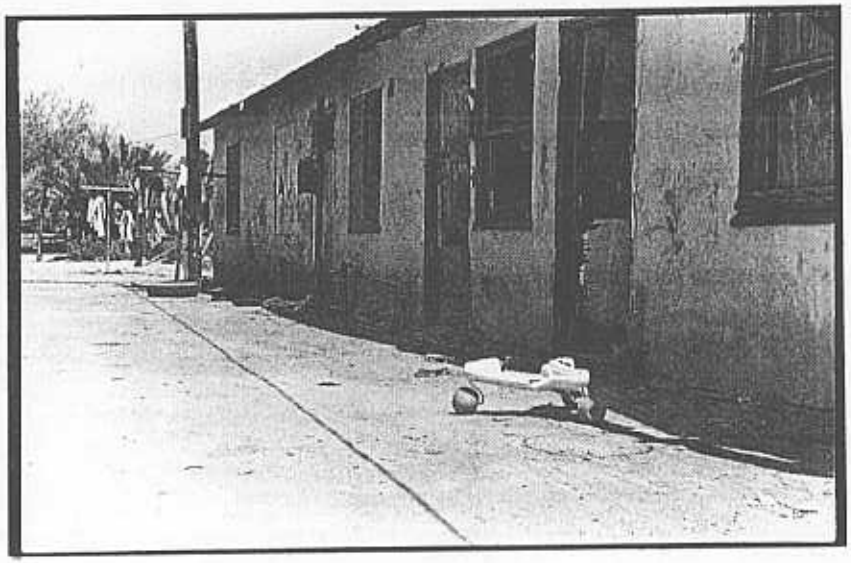
Slide 5

Roberto, a strawberry worker in Watsonville, was 15 years old when this photograph was taken in 1997 (Slide 5). This was his first year picking in Watsonville. He had been part of the migrant stream of farmworkers inside Mexico, going from Oaxaca up to the San Quintin Valley. He finally decided to come across the border to Watsonville, looking for higher wages. It is not uncommon to find teenage workers in Watsonville and in California agriculture generally. In my experience in Watsonville, interviewing strawberry workers, it was really hard to find any who were in their 30s. There were a lot of teenagers. One study by the California Institute of Rural Studies found that the median age for California farmworkers was about 20. This is certainly true of strawberry workers in Watsonville.

Slide 6

When workers like Roberto come to Watsonville, the coyote who brings them across the border drops them at the side of the field (Slide 6). It is up to the workers to survive and find a place to live. The first place where some Watsonville workers live is this marshy little place in a strawberry field. Here they've created a little encampamiento with cardboard and shipping pallet to sleep on, and some plastic salvaged from the fields to put over the tent. A lot of plastic in strawberry fields is contaminated with methyl bromide. The workers who sleep here are exposed to pesticide residue as a result. They have a little kitchen here where they cook their food in the field with a little tank of gas and gas burner.

On which side of the border was this picture taken (Slide 7)? This is the U.S. side of the border in Mecca, California, but the living conditions of the workers in this labor camp are like those in Mexico, not substantially better than the conditions in the places from which the workers have come.



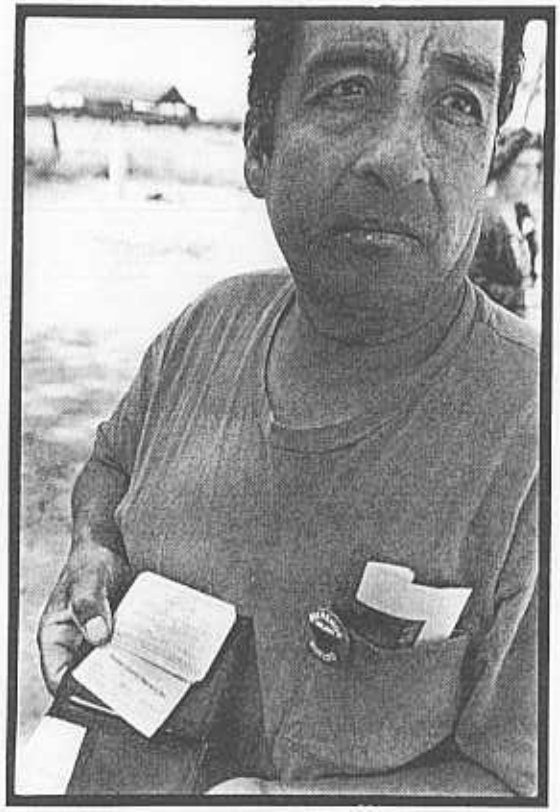
Slide 7

Slide 8

Not just in California, but around the country, workers try to do something about the conditions in which they live and work (Slide 8). This is a community march by strikers in the broccoli crop through the barrio where most workers live in Salinas. The purpose of this march is to try and get workers not to break the strike. There is an oversupply of labor in agriculture. Growers cry a lot about how hard it is to find workers, but whenever there is a strike, they don't have a problem finding strikebreakers. Here strikers are appealing to their fellow workers in the farmworker community in the Salinas Valley not to break the strike, even though they are unemployed.

Farmworkers use a lot of very interesting tactics, ones which other unions have adopted over the years in strikes and organizing drives (Slide 9). In a farmworker strike, strikers don't just picket at the edge of the growers' property, while the work goes on inside the fields. During the broccoli strike at D'Arrigo Brothers in Salinas in 1998, the union organizer in the cowboy hat and some of the striking workers go down into the field to the broccoli machines, stopped them, and talked to the women on the machines, asking them to join the strike.

Slide 9



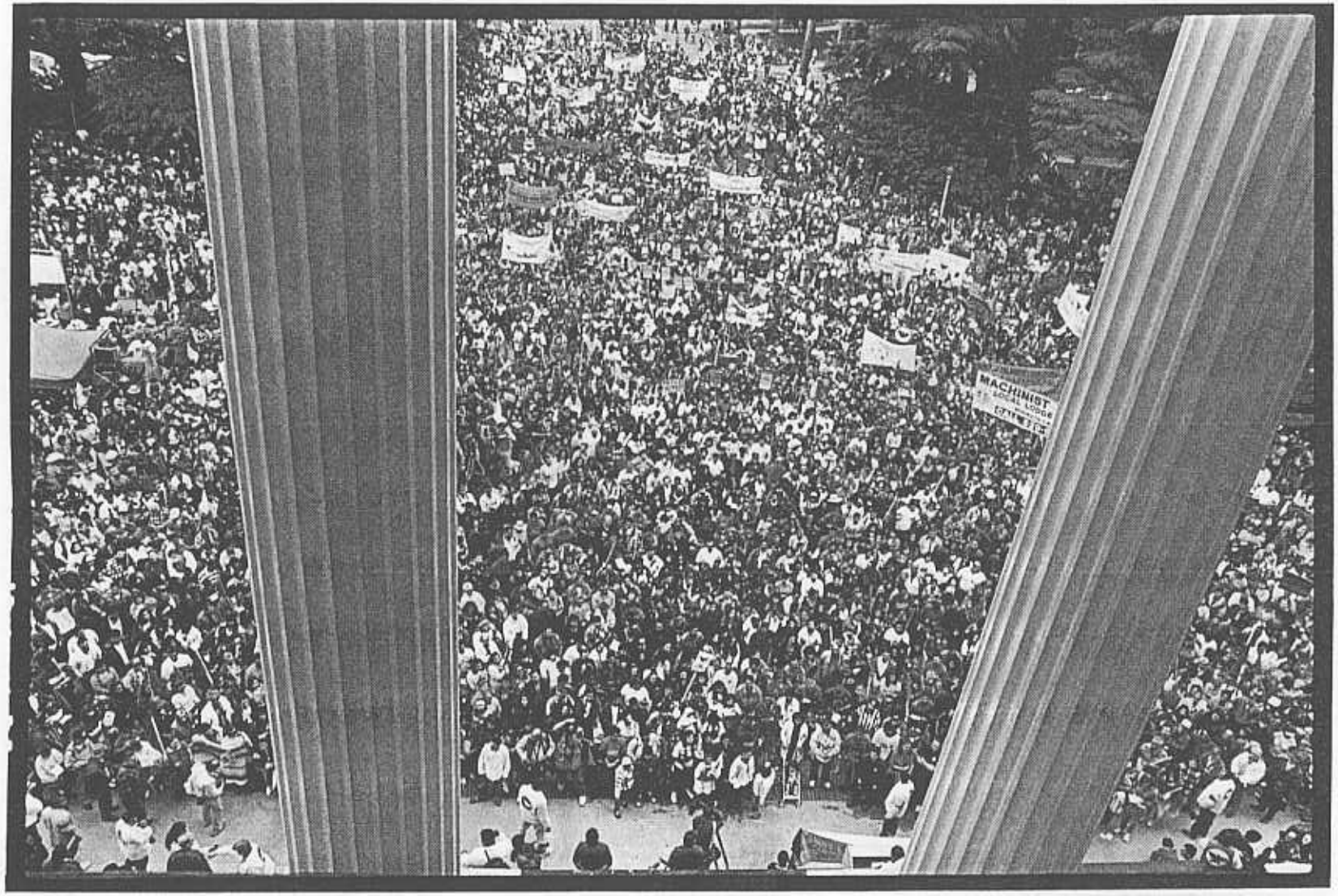
Slide 10

Slide 11

Farmworkers were not covered by the National Labor Relations Act when it was passed in 1936 (Slide 10). California did get its own law in 1976, which does prohibit firing workers for union activity. But as always, what exists on paper and what exists in real life can be very different. Jesus Barrios was fired for joining the union. Here he shows his union card, which cost him his job at Orange County nurseries. At the time the photograph was taken, the administration of California's Agricultural Labor Relations Act was essentially in the hands of growers. The general counsel of the board was David Sterling, a big Napa wine grower. There was no enforcement of the law, and for workers like Barrios, even though they had been fired in violation of the law, there was no legal remedy.

Dolores Huerta, one of the cofounders of the United Farmworkers Union with Cesar Chavez, rests at the conclusion of a march from Delano, the union's historic headquarters in the southern San Joaquin Valley, to the state capital in Sacramento, to urge the enforcement of the labor law (Slide 11). It took a month for people to march the entire distance. Those who walked all the way were called perigrinos, the Spanish word for pilgrim, recognizing the sacrifice they made. Those people wore a wooden cross around their necks, showing the religious feeling workers have about their union, the connection between the union and the church, and that to them, the effort to organize the union is like a moral crusade.

Over the years, Huerta made the point repeatedly that the working conditions and living conditions of farmworkers, especially their exposure to pesticides, was intimately related to the exposure of consumers to pesticide residue on food. By reducing pesticide exposure at work, consumers also benefit.



At the conclusion of that march in Sacramento, workers rallied with thousands of supporters (Slide 12).

Slide 13

Slide 14

One of the job-related problems of farmworkers, especially in the wake of the passage of NAFTA, has been the substantial rise in the importation of agricultural produce from Mexico (Slide 13). These are table grapevines that have been torn up in California's Coachella Valley. When NAFTA was passed, the barrier dropped on the importation of table grapes. The table grape harvest season in northern Mexico and the Coachella Valley is the same. All of a sudden, table grapes came across the border at a much lower labor cost than the grapes harvested in the Coachella Valley, even given the low wages of U.S. farmworkers. As a result, growers in the Coachella Valley either moved their operations across the border into northern Mexico or they went belly-up. These vines were torn up in the process.

For UFW members, this was a particularly bitter blow (Slide 14). Jose and Ingracia Castillo were strikers in the big grape strike in 1973. After that strike, Chavez's union supporters were blacklisted in California. There was only one table grape company where those workers could work—the David Freedman Company—at that time the largest table grape grower in the world. They kept their union contract when the other growers didn't. So Chavistas became concentrated in that company. Jose and Ingracia worked at Freedman for 22 years. On January 7, 1994, seven days after NAFTA went into effect, it went out of business, and those workers lost their jobs. For Jose and Ingracia, they said it was a double blow because 'We not only lost our job, but we lost our union at the same time.'

Slide 15

Some workers tried to figure out where their jobs were going. Luz Ayala and her family belong to the Hermandad Mexicana, a Mexican community organization in the Paris Valley, south of Riverside, about 100 miles north of the border (Slide 15). Workers at Boskovich Farms there grew green onions, and overnight, after NAFTA passed, the company sent out pink slips to the workers. The workers then staked out the fields and saw the grower removing the water pumps. They followed the trucks carrying the pumps south of the border into the Mexicali Valley. They found that U.S. growers had set up operations there growing exactly the same crop.

In the fields in the Mexicali Valley, workers bring their entire families to work with them (Slide 16). Here a man picks onions and piles them up to bunch them. He has his children with him, who are playing in the rows. They are very young kids. But by the time kids are six or seven years old, they have their own pile of onions that they bunch themselves.

Slide 16

Slide 17

Honorina Ruiz is six years old. She is bunching onions with her little brother who is too young to work, but her older brother has a pile on the right (Slide 17).

Slide 18

This is the new home of a family of onion workers in the Mexicali Valley, the first home this family has had with a concrete floor (Slide 18). Their previous home had a dirt floor. The whole family works because they can't survive on the wages of the adults alone. Simply by raising the price of a bunch of green onions by one-quarter of a cent in a U.S. grocery store, the income of these workers in Mexico could double. It wouldn't take very much for growers to improve the standard of living of these workers substantially.

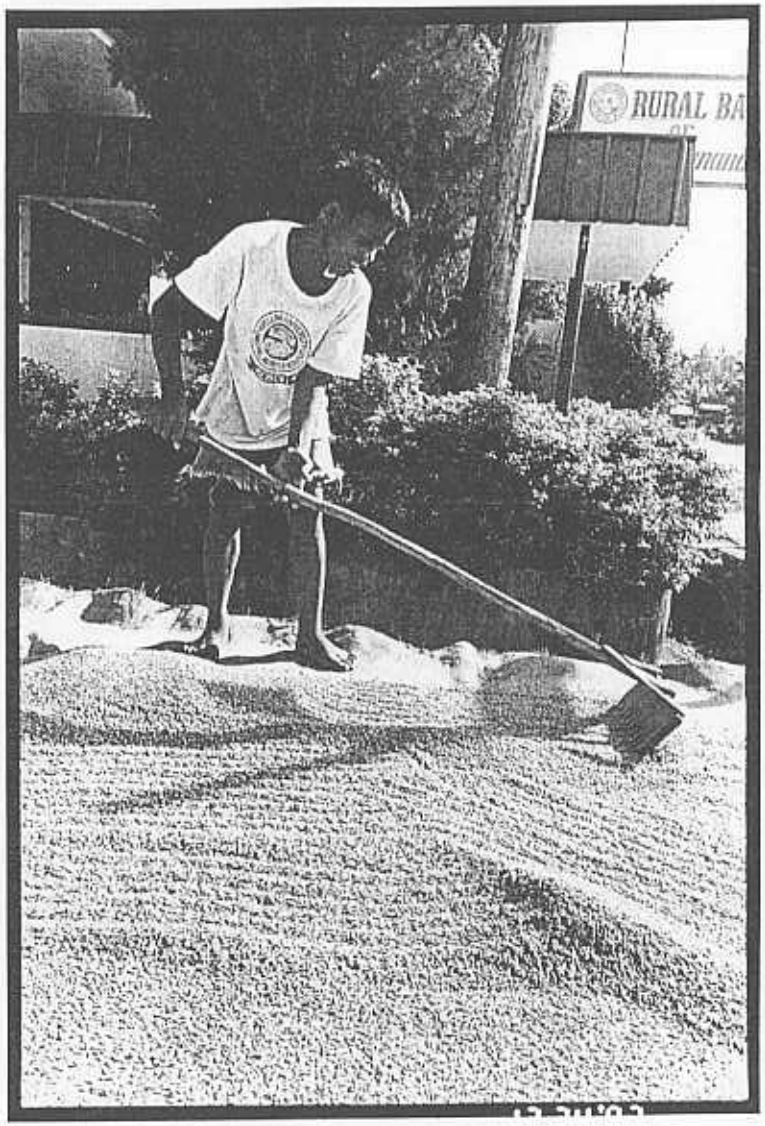
Slide 19

In this second grade class in the Mexicali Valley, attendance starts to drop as children begin working (Slide 19). School attendance in the valley has dropped so considerably that some schools have been closed. The population of Mexicali Valley is rising, but at the same time the number of kids in school is falling.

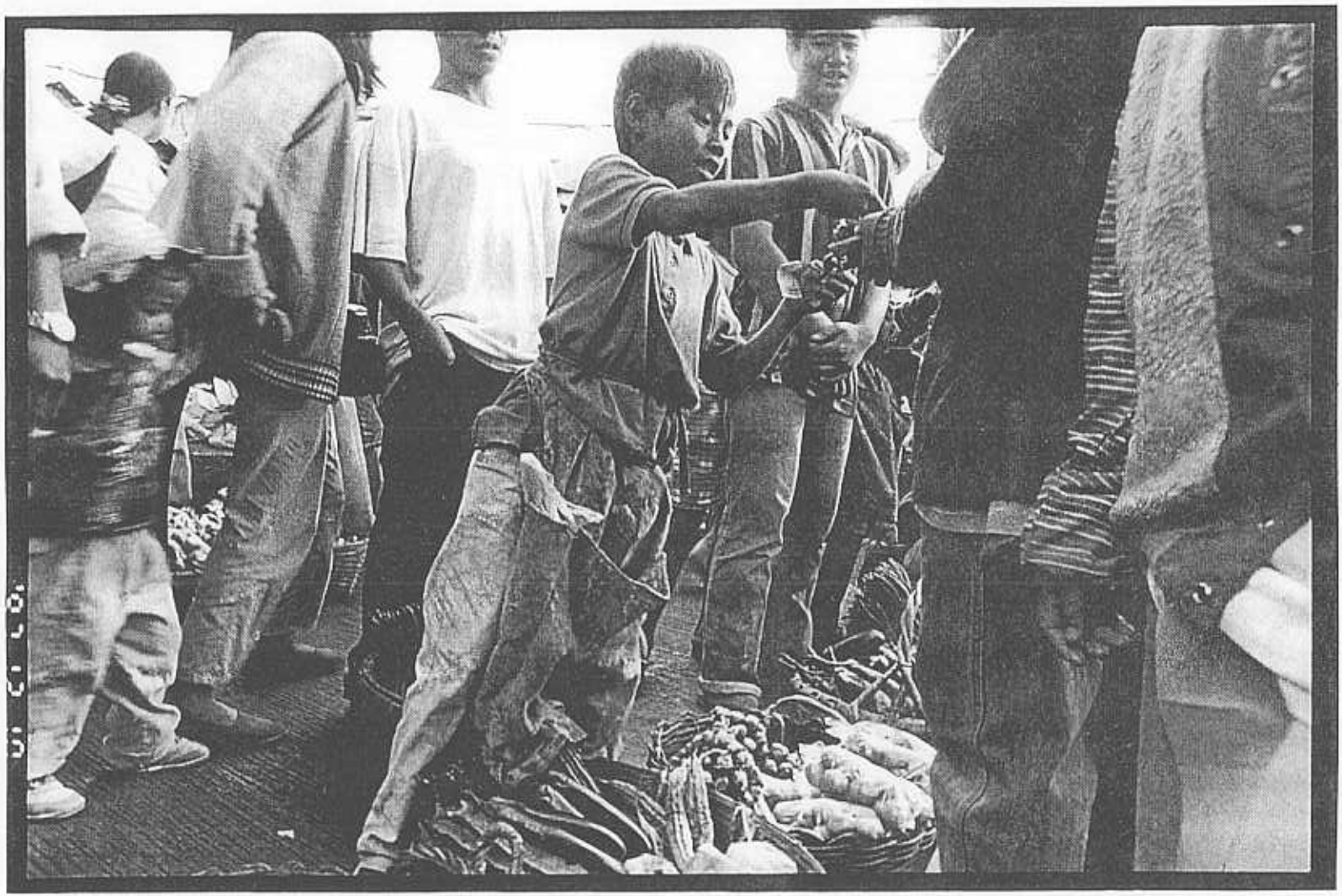
Slide 20

Green onions, radishes, and other row crops are packed for shipment to the United States in the shed of Muranaka Farms, a large grower with headquarters in Oxnard on the United States side of the border (Slide 20). Some United States growers like Muranaka run their own operations in Mexico, while others operate in partnership with Mexican growers. But all of the crop picked in the valley crosses the border, and is distributed throughout the UUnited States, Europe, and Japan. None of it stays in Mexico.

The same situation exists in other countries, like the Philippines (Slide 21). But not all child labor in agriculture is a result of commercial exploitation. In developing countries and developed ones alike, children historically have worked on farms. This boy spreads rice out to dry, which was harvested by his family on their farm on the Philippine island of Bohol. This is traditional work for a teenager, who is just helping the family with farm chores.

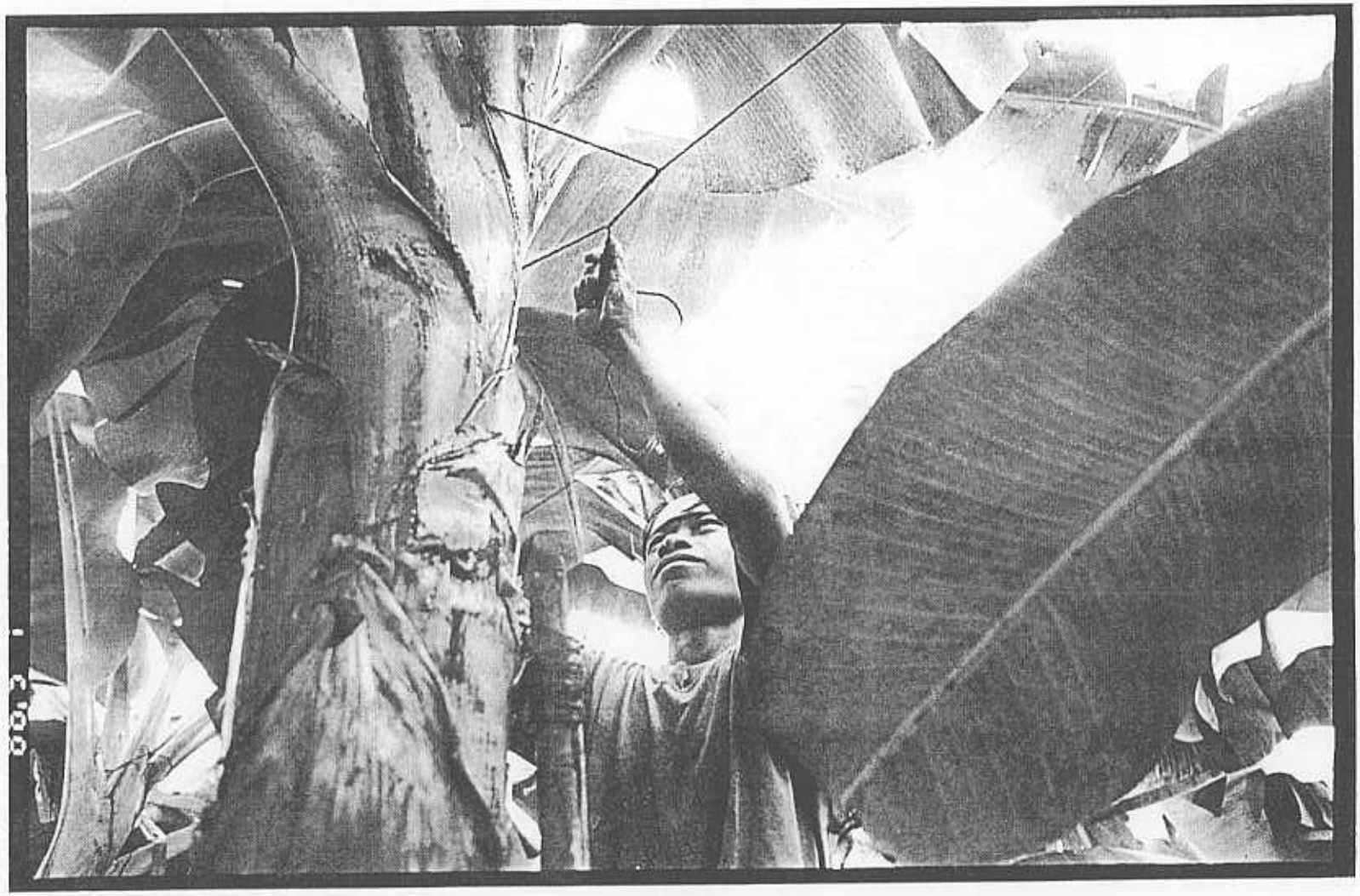


Slide 21



Slide 22

A young boy sells produce from his family's farm in a market in the northern Philippines after school, another traditional job for kids in farm families (Slide 22).



Slide 23

But in setting up commercial agriculture, this cultural and economic tradition is transformed (Slide 23). Benedicto Hijara is tying banana trees to a wire overhead on a plantation that produces for Dole Farming Company on the Philippine island of Mindanao. Banana trees will fall over from the weight of the fruit if they are not tied up. He does this for a wage that approximates—again, piece rate—four dollars a day. Benedicto is 13 years old. He stopped going to school 3 years before the photograph was taken.

Slide 24

Alan Algoso is nine years old, and works cleaning dead leaves away from the bottom of the banana trees (Slide 24). When my own daughter was nine years old, I was only just letting her use a knife in the kitchen. But Danilo is working with a very sharp knife cutting these dead leaves, where the chances of his slipping and hurting himself are hard to ignore.

Girly Pilones works in the banana shed (Slide 25). When bananas are grown, pieces of plastic are put between the bunches to protect them from birds and insects. The plastic is coated with pesticides. After they come into the shed, the plastic is taken out. Girly then takes the plastic and flattens it out so that it can be reused. She works for two hours before school, for a few hours after school, and on Saturdays and Sundays too. Her family cannot survive without the income this job brings in.

Slide 25

Slide 26

Bananas are grown on plantations in the Philippines for export (Slide 26). Scrap bananas are rejected in the packing shed, and taken into Manila where they will be sold. Only the scrap bananas are sold in the Philippines. The good bananas leave the country.

Some workers have tried to solve the problem of low wages by taking advantage of agricultural reform laws, which allow workers to take over the plantations (Slide 27). On this rubber plantation in the southern Philippines, workers took over the land and set up a cooperative. Workers are able to sell the raw latex they produce on the world market, and their coop has been able to prosper as a result.

Slide 27

Felix Bacalso was one of the banana strikers (Slide 29). He had 10 kids and said, 'If we can't get Dole to raise the price, I am going to have to send my kids into the fields,' as workers have done on some of the other plantations. For farmworkers, getting organized and forming unions and cooperatives is as much a factor in protecting their health and safety as access to information. Both in the United States and other countries, the world's trade and economic system is concentrated on creating favorable economic opportunities for investment. This system encourages low wages, low prices, and unrestricted use of chemical inputs. Supplying information to governments and companies will not protect workers' health and safety alone. They must be organized to assert their right to control the conditions in which they work. Fortunately, workers are not passive victims, and do try to organize and change conditions. Information about health hazards becomes useful to them when they have power and organization.

Slide 28

Workers also took over some of the Dole banana plantations (Slide 28). But the Dole Farming Company kept the cable ways that run above the trees, the plantation roads, and the packing sheds. When workers didn't like the price Dole offered for their bananas, and went on strike, Dole would not allow them to use the cable ways, packing sheds, and roads to produce for anyone else. Then the company called in the Philippines constabulary and threw the workers off of the land that supposedly belonged to them. The workers were outraged because Dole posted a sign on the gate into the plantation which said, 'Notice: Do Not Enter, Private Property.' The workers said, 'What do you mean, private property? This is supposed to belong to us now.'

Slide 29

Slide 30

Workers expelled from the plantation put up banners on the edge of the fields, demanding a higher price (Slide 30).

RT 228 DISCUSSION

MODERATOR: We do have time for a couple of questions, for any of the speakers.

PARTICIPANT: This question is for Dr. Johnson with Florida. Some of the previous presenters of this roundtable talked about neural tube defects in children in certain areas where pesticides are used. Specifically, they talked about spina bifida. I was under the impression that was related to maternal nutrition and the lack of folic acid in the diet. Has your database in Florida found any evidence of that kind of defect, or would that database be able to detect that?

JOHNSON: I do not believe the database could detect that. But Dr. Martin, who is standing right behind you there, oversees the Birth Defects Registry and she might be able to answer the question about the neural tube defects. In fact, she has some findings that support exactly what you are talking about.

PARTICIPANT: That is what I wanted to talk about. I'm Russ Martin with the Florida Department of Health. I am the coordinator of the State's Birth Defects Registry.

As Dr. Burns mentioned, we started doing birth defects surveillance a couple of years ago in Florida, and we now do have baseline data from 1996. What we found indeed is that there are elevated rates of neural tube defects, particularly in women of Mexican origin. This is consistent with what has been found in other states like California and Texas with large Hispanic populations. We found that the rates were two to four times elevated compared to either nonHispanics or compared to other Hispanic subgroups. It is particular to women from Mexico, but what we don't know at this point is why. We don't know if it is a genetic difference in the subpopulation, whether it is related to different dietary or other behavior, or whether it is due to environmental exposures. However, we do have baseline data now, and it is something that we are aware of and something that we can track over time so that we can target interventions once we can pinpoint the subpopulations at high risk.

PARTICIPANT: Concerning the presentation on demographics, you said 88 percent of the work force is male. Is there any change in the ratio relative to the type of crop? My experience in the field is that, for example with table grapes, over 50 percent are women, whereas in oranges it will be 100 percent men. Are there any breakdowns concerning the ratios per crop?

BARON: That information is available. I don't have it readily available to me. I think the trend over time has been that ratio of farmworkers is becoming increasingly more male. David may have more information on this. I think the grape industry is one that is better paid because of the importance of wine, the high price of wine, and the importance of having a good, stable work force that has a lot of experience. Because of these reasons, they are willing to pay workers a little bit more money in order to treat the crop much more carefully. So it is possible, in fact, in terms of table grapes, you're seeing part of the workforce that is higher paid and therefore has more experience and therefore represents more females. That is speculation. I don't know.

JOHNSON: I do not have anything to add to that.

BARON: David Bacon?

BACON: I think it varies from crop to crop a lot. In some crops, women are concentrated. As you say, in table grapes, there are very many women. But even with a particular crop, you know the work force is sort of segmented so that—you saw that with the broccoli machines—there are women who are working packing the broccoli, but the cutters who are actually running behind the machines are almost entirely men. There is a lot of segregation in terms of the crops and the types of jobs that people do. Statistically, I do not have the numbers.

MODERATOR: If there are no more questions, that concludes this morning's session. Thank you to everybody who came. If you have any questions you would like to ask any of the presenters, they will be here for a few minutes. If you are interested in any information about the AIHA Social Concern Committee, you can speak with me or Jean Grassman, who is in the back of the room.

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BIOGRAPHICAL NOTES

SHERRY BARON

Baron is an occupational physician who has worked at the National Institute for Occupational Safety and Health since 1988. She is board certified in occupational and internal medicine. At NIOSH, she is cochair of the National Occupational Research Agenda team, which is developing a research agenda for addressing the needs of special populations at risk for occupational injuries and illnesses, which includes farmworkers. Her research work at NIOSH has included the development of the first national survey of occupational injuries and illness of U.S.-hired farmworkers. She has also edited a recent NIOSH publication on ergonomic interventions for farmworkers. In addition to her work in the United States, she has worked with the Pan American Health Organization on the development of occupational health training programs in Mexico, including surveillance for pesticide intoxications.

ALLAN F. BURNS

Burns is professor and chair of Anthropology at the University of Florida. He received his Ph.D. from the University of Washington in 1973 and has written extensively on Mexico, Central America, and the United States, including three books and over 80 articles and book chapters. Dr. Burns has worked with Guatemalan immigrants to the United States, with farmworkers in both Mexico and the United States, as well as with many American Indian tribes. In addition to his publications, he has directed several documentaries on Mayan culture. He directs the Florida/Yucatan exchange program and holds adjunct positions in the University of Florida Center for Latin American Studies and the Program in Linguistics.

MARGARET REEVES

Reeves has a Ph.D. in Agricultural Ecology (1991) from the University of Michigan and was a Postdoctoral Fellow in Agronomy at Ohio State University (1991-1993). Before joining the Pesticide Action Network (PAN) in 1996, Margaret spent most of nine years in Central America teaching and conducting research in tropical agricultural ecology. Margaret worked with university colleagues and nongovernment organizations to improve productivity of low-input ecologically sound agricultural systems. Margaret has published her work (in both Spanish and English) in professional, peer-reviewed, and popular/educational journals. Margaret is currently a staff scientist and program coordinator at PAN, a global citizen pesticide reform movement of more than 400 associated organizations in over 60 countries advocating ecologically sound pest management in place of pesticide use. Margaret's main areas are workers' rights and organic cotton. She also serves as liaison between PAN North America and PAN groups throughout Latin America.

BIOGRAPHICAL NOTES

DAVID R. JOHNSON

Education:

University of Cincinnati, Cincinnati, OH
M.S. Degree—1991 Environmental Health

Wright State University, Dayton, OH
M.D. Degree—1983 School of Medicine

Wright State University, Dayton, OH
BSMT Degree—1977 Medical Technology

Post Graduate Training:

1989–1991, University of Cincinnati, OH

Dept of Environmental Health,
Residency in Occupational Medicine

Professional Experience:

1999–Present—Bureau Chief, Department of Health, Environmental Epidemiology

Board Certified in Occupational Medicine

Professional Affiliations:

Fellow of the American College of Occupational and Environmental Medicine

DAVID BACON

Bacon is a writer and photojournalist based in San Francisco. He is an associate editor at Pacific News Service, and writes for The Nation, The Progressive, LA Weekly, and the San Francisco Chronicle and Bay Guardian, among others. He shoots for the Impact Visuals agency in New York, and for many national publications. He has exhibited his work nationally. Bacon covers issues of labor, immigration, and international politics. He travels frequently to Mexico, the Philippines, and Europe.

For 20 years, Bacon was a labor organizer for unions in which immigrant workers made up a large percentage of the membership. Those include the United Farm Workers, the United Electrical Workers, the International Ladies' Garment Workers, and others. Those experiences have given him a unique insight into changing conditions in the work force, and how they influence the struggle for workers rights.

Bacon is former board chair of the Northern California Coalition for Immigrant Rights, and serves on the boards of the Media Alliance and the Santa Clara Center for Occupational Safety and Health. He belongs to the Newspaper Guild.

JIM ALBERS

Albers currently works for the City of Cincinnati in the Employee Safety Division, Office of Environmental Management. He previously worked for local government employers and labor organizations. Jim is certified in the comprehensive practice of industrial hygiene and he received a Master in Public Health from the University of Illinois at Chicago, School of Public Health.

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AIHA
PRESS
American Industrial Hygiene Association
AIHA Press
American Industrial Hygiene Association
2700 Prosperity Avenue, Suite 250
Fairfax, VA 22031
Tel: (703) 849-8888
Fax: (703) 207-3561
http://www.aiha.org
e-mail: infonet@aiha.org