

Identifying Constituents to Participate in a Project to Control Pesticide Exposure in Children of Farmworkers

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Farmers in Washington State use pesticides to control harmful pests that might interfere with the quality of their products. Farmworkers, who are primarily responsible for thinning, harvesting, and other agricultural work, are often exposed to these pesticides and take home pesticide residues on their clothing, shoes, and skin, potentially exposing children in the household to pesticides. We designed a project to reduce children's exposure by using a community organization model. To better understand the community views regarding pesticide exposure, we conducted a qualitative community analysis. Two methods of data gathering were used to collect information. Individual interviews were conducted with some respondents, and small group discussions were held with others. Analysis indicated wide disparity among involved groups in their views on pesticides; however, a number of themes common to the majority of the constituents were identified and discussed with a community planning group. Because of the contention around pesticides, the group recommended every constituent participate in decision making. The group noted it was important to emphasize that the research project could provide scientific information on pesticide exposure to everyone in the Lower Yakima Valley. Our study demonstrates both the widely varying views of different constituents around the issue of pesticide exposure and common themes that can form the basis for collaboration and consensus on approaching the issue. *Key words:* community organization, farmworkers, pesticides, qualitative analysis, rural communities. — *Environ Health Perspect* 109(suppl 3):443–448 (2001).

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Washington State has a large agricultural industry located in the Lower Yakima Valley (1–3). Fruit produced in the Valley has received national and international acclaim for its quality; however, to achieve that quality, farm owners use pesticides to control harmful pests (4–6). The primary pesticides used on the fruit crop are organophosphates such as azinphos-methyl, chlorpyrifos, parathion, phosmet, and carbaryl. In 1995, 774,000 pounds of azinphos-methyl, 593,000 pounds of chlorpyrifos, 291,000 pounds of carbaryl, and 179,000 pounds of phosmet were used in apple growing alone in Washington State (7,8).

Farmworkers, who are responsible for thinning, harvesting, and other agricultural work, are often exposed to these pesticides; 37% of pesticide-related incidents reported to the Pesticide Incident Reporting and Tracking Panel in 1995 and 73% of the pesticide-related incidents reported in the same year to the Department of Labor and Industries in Washington State were agricultural (9). Farmworkers also become part of a “take-home” pathway where pesticides and their residues are brought home on clothing (10–12) and skin (13,14) to children living in the house. Epidemiologic studies suggest that children exposed to pesticides have higher risks of childhood cancers (15–21), possible neurobehavioral effects (22,23), congenital malformations (24,25), and other health risks (26–28).

In an attempt to reduce the take-home pathway of pesticide exposure in children, we embarked on a community-based project in the Lower Yakima Valley in January 1999. An initial project goal was to organize a local community group to lead the project. A number of community studies indicate community intervention projects benefit from involvement of community members in intervention decisions and processes (29–32). Community organization is used often as a strategy for developing a partnership with communities involved in research (29,33).

A key to successful community organizing is recognizing that conflict is inevitable, especially at project start-up (34,35). A method of reducing the initial conflict in projects where individuals in the community have different viewpoints is to understand the positions of the major participants or groups, to find common ground among the parties involved, and to be aware that alienation of any group may adversely affect the project (36). This method is especially useful when an issue is controversial.

Within the Lower Yakima Valley, there is much dissension regarding pesticides. Numerous individuals believe pesticides are harmful to health, while others believe the danger of pesticides is highly overstated. Nowhere in the Valley is the controversy more apparent than between farmworkers and growers. For this project, we wished to

create a community partnership between community members and the research institution. To facilitate this, we planned to form a community board—one that represented all key stakeholders in the Valley—to lead the pesticide project. We conducted a comprehensive community analysis in order to understand community views about pesticides. Community analysis is the process of assessing community values, needs, resources, barriers, and facilitators required for community action regarding an issue (37). In this article, we report on qualitative information gathered from constituents in the Valley and how the information was used in the formation of the Community Advisory Board.

Methods

Setting

This research took place in the Lower Yakima Valley of eastern Washington State in the winter and spring of 1999. According to the 1990 census the Lower Valley has a population of about 60,000, of whom about 50% are Hispanic. Local figures suggest the population has grown considerably since the 1990 census (38), and Hispanics are the fastest growing population in the Valley. According to census data, most of the Hispanic population in the Valley is Mexican American (38).

Data Gathering

The first step in gathering information was to identify individuals to be interviewed. We

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began with organizations and individuals that previous literature in this field suggested were the most likely to be concerned about pesticide use; these included the people who use pesticides (growers), the people who regulate pesticides (government), and the people most likely to be exposed to pesticides (farmworkers). We contacted those agencies or individuals and asked to interview persons involved with some aspect of pesticides. We then used a “snowball” technique to identify other potential interviewees. Key informants are contacted, then provide recommendations for additional contacts (39,40). The snowball strategy is a useful technique for reaching key informants in a community, in this case, those most involved in the pesticide issue.

We used two methods of data gathering to collect information. Individual interviews were conducted with some respondents, and small group discussions that included only individuals of similar positions (e.g., farmworkers, growers) were held with others. An open-ended topic schedule was used to guide interviews and small group discussions; there was considerable freedom for the facilitators to explore issues that emerged in the interviews or discussions. The following topics were addressed:

- perceptions of pesticide use in the Valley
- perceptions of health risks related to pesticide exposure
- opinions of how the project might be perceived
- perceptions of barriers and facilitators for various constituents to work together
- recommendations for establishing a representative board

Potential participants were contacted by telephone or in person and asked to participate in an interview or small group discussion. Interviews and discussions were held in the interviewees' offices or homes or in the offices of a cancer prevention project also being conducted in the Valley. The interviews and discussions were led by one or more of four facilitators, who were considered to be key personnel on the project. They were trained in interviewing techniques and briefed on the interview and discussion topics by the principal investigator and a staff person with experience in qualitative data collection. They were given instruction in listening skills, and took part in role-playing exercises, being flexible when necessary, accepting all ideas and opinions as valid, being nonjudgmental, understanding, and sensitive to individuals who did not want to reveal information. These factors are thought to maximize trust of the interviewees (41).

Before the interview or discussion, the facilitator explained that the information would be used for research purposes and that the discussion would be audio recorded.

Participants were assured that their names would not be associated with the tape; rather, transcripts of the tape included only positions (e.g., grower, health department member). Because of the interest in maintaining anonymity, verbal consent rather than written consent was requested for participation; all attendees provided verbal consent. Where appropriate for the interview or discussion (e.g., with the farmworkers), the facilitators were bilingual and Hispanic. The Institutional Review Board at the Fred Hutchinson Cancer Research Center approved the interview as well as small group discussion content and the methods to conduct the study.

Community Planning Group

While conducting the interviews, we identified stakeholders who appeared qualified to serve on a community planning group. The objective of this group was to form a community advisory board for the project (42). Specifically, the group was charged with reviewing the findings of the qualitative interviews, recommending a recruitment plan for a community advisory board, and suggesting ways to present the project to the diverse constituents of the Valley.

Data Analysis

Analysis of the information was based on the audio tapes and field notes taken by the facilitator. After the interviews or discussions, transcriptions were made of the tape and field notes. These were reviewed by the other facilitators present at a particular interview or discussion. Audio tapes were shared only with the facilitators and were erased after transcription to maintain confidentiality.

Analysis of the information was made following principles of qualitative research as suggested by Morgan and Krueger (40) and Creswell (39). In each interview a matrix of the main topics was created. From the matrix, facilitators independently identified and coded key words and common themes that appeared throughout the interviews. After coding, themes and key words were identified by each facilitator. The four facilitators then met to review all the themes that were identified. If there was disagreement about a theme or key word, the item was discussed until consensus was reached. In reaching consensus the opinion of the facilitators present at the interview or discussion was given more weight than that of nonattendees.

To maintain the richness of the information obtained during the interviews, we present direct, relevant quotes in “Results.” In qualitative studies, it is customary to present direct quotes from participants to demonstrate their specific views (40). In this study, quotes representing prevailing interpretations, views, and themes are given. Although the specific words may not have been repeated by all interviewees, the meaning of the quote was supported. Where divergent opinions were expressed, they are noted in the text.

Results

A total of 44 individuals participated in the interviews or small group discussions. Table 1 is a list of the constituents represented in the interviews. Numbers of interviewees per constituent are not given so identification of specific individuals can be avoided. After independent analysis of the data, the four facilitators agreed that four groups of themes emerged: farmworker, farmworker advocate, grower, and regulatory agency.

Table 1. Constituents represented in interviews and discussions and their roles.^a

Constituents	Roles
U.S. Department of Agriculture	Train and certify applicators; enforce applicator standards
Department of Health	Monitor acute exposures through a statewide tracking system; report exposures to Department of Labor and Industries
Department of Labor and Industries	Investigate pesticide-related workers' compensation claims
U.S. Environmental Protection Agency	Work with growers and growers' consultants to find less toxic pesticides
Farmworkers	Tend and harvest crops that may have been sprayed with pesticides
Farmworker advocates	Represent farmworkers to union, legal groups, state enforcement organizations
Farmworker healthcare clinics	Provide healthcare for farmworkers, especially those who have no insurance
Farmworker Union	Represent farmworkers in reducing exposure to pesticides
Growers	Apply pesticides to protect their crops
Grower association	Represent growers, packers, and processors in legal issues; lobby for growers
Healthcare providers	Diagnose and treat pesticide-related illnesses
Legal representatives	Represent individuals who have pesticide-related illnesses
Newspapers	Produce articles on pesticides in the Valley
Northwest Horticultural Council	Track food quality protection; committee at federal level; monitor federal rules such as the Worker Protection Standards; work with U.S. EPA
Radio station (Spanish)	Reliable source of communication with farmworkers; provide regular programs on pesticide dangers and protective factors
University extension office	Provide research information to growers; provide information regarding best times to spray (relative to pest cycles)

^an = 44. Numbers of interviewees per constituent are not given so identification of individuals can be avoided.

Farmworker Themes

Farmworkers stated overwhelmingly that they thought there was much more awareness of pesticides now than there had been 30 years ago. They agreed that pesticides helped protect crops but resulted in ill effects for farmworkers. Symptoms of exposure mentioned by farmworkers included “skin and eye problems, itchy nose, nausea, stomach ache, and fatigue.”

Many farmworkers knew that regulations existed to protect them from pesticide exposure, but the majority (more than 70%) said there was little to no enforcement of the regulations. As one worker stated, “I have never seen an inspector in the 14 years I have been working in the field.”

Farmworkers also stated that all groups and agencies that were supposed to provide support to individuals with pesticide-related illnesses accomplished little in helping the worker: “If the doctors say to you ‘there is nothing wrong,’ then you know it must be the chemicals.” Another said, “L and I [Labor and Industries] do not recognize anything. One time, the front desk person told me that we Mexicans come only to this country to get these benefits.”

Farmworkers also stated that personal protective equipment, which is supposed to be worn in some job capacities, is hot and uncomfortable and rarely provided: “It depends on the foremen. Some of them do care and provide you with protective equipment; others do not provide you with anything.” Another added, “Growers don’t want to have certified applicators [those who apply pesticides to crops] because then they [the applicators] know about the risks and they start to demand more protective equipment.”

Farmworkers expressed fear about losing their jobs if they complained to their bosses about pesticide exposure. “I knew I was applying poison and that was not good for my health. I was really afraid of losing my job so I tried to please my boss.”

Farmworkers also noted that there was an ongoing machismo attitude about protecting oneself when in the fields: “If you complain or ask for protective equipment, they say you are very *pediche* [complainer] or *enfadoso* [an angry person].”

Finally, the farmworkers noted that there was a lack of trust between farmworkers and growers. In one of our small group discussions, we were unable to record the discussion because, as stated by one participant: “[The growers] could know about this meeting and take revenge.”

Farmworker Advocate Themes

Farmworker advocates were members of organizations that represented farmworkers. Such organizations were concerned with facilitating interaction between growers and

farmworkers so the interests of both groups could be realized. Representatives from farmworker advocacy groups noted it was important to give pesticide information to farmworkers in a safe way, that is, to provide accurate information without unduly alarming farmworkers. As one farmworker advocate stated, “Ask questions, start from their experiences, and don’t talk too much.” Farmworker advocates saw such an approach as important for reducing the potential for hysteria or misunderstanding about the effects of pesticides.

Farmworker advocates also emphasized the importance of farmworkers presenting an informed, united front in talking to growers and regulatory agencies about pesticide exposure and protection: “We need to speak together and loudly so they [growers, regulatory groups] can hear us.”

Grower Themes

Grower themes varied from those of the farmworkers and farmworker advocates. Although there were some differences, depending on grower, the majority stated that the pesticide issue was not very important. Many noted “protective groups and agencies may be politically motivated.” Some growers expressed the opinion that it was not clear that pesticides were a problem. There also was some concern expressed about informing people about pesticide protection. As one grower stated, “People who don’t have much information about pesticides tend to react to education by becoming paranoid and overly concerned.” Another grower commented, “We need to be careful not to start hysteria.”

Many growers stated that pesticides could be used safely. One noted, “Because some products are carcinogenic, it makes sense to limit exposure.” Another stated: “The project [For Healthy Kids] should be promoted as something to build safety . . . it should promote respect for chemicals.”

Growers stated that it was the farmworkers who chose not to use the personal protective equipment: “The project [For Healthy Kids] should enforce farmworker use of protective equipment.” “There is a macho attitude that influences protective practices.”

Growers also were very concerned with economic issues. As stated by many, “Our industry relies on illegal [undocumented] aliens” and “We are very receptive to new things if they reduce costs.”

Regulatory Group Themes

Regulatory groups in the Valley are mandated to enforce the Worker Protection Standards of the U.S. Environmental Protection Agency (U.S. EPA), a regulation aimed at reducing the risk of pesticide poisonings and injuries among agricultural workers and pesticide

handlers. Most representatives of regulatory groups saw “regulations as good, but enforcement poor.” More than the farmworkers or growers, they saw culpability in both farmworkers’ and growers’ actions. When it came to farmworkers, the regulatory agencies believed more training was required: “Sometimes farmworkers have been dealing with pesticides for years and they don’t know the certification process.” To overcome that problem, the regulatory agencies provide regular training and certification classes for mixers and applicators. Regulatory agencies also criticized the growers: “Most companies provide some protection for sprayers, but in many cases it is not the right equipment.”

Echoing the sentiment of growers and their economic outlook, regulatory agency personnel stated that “most growers believe that pesticides are causing some problems.” Further, economics drives the use of alternative methods of pest control (e.g., mating disruption). “Growers who have an economic cushion are more willing to use innovative methods of pest control.”

Finally, personnel representing regulatory agencies noted that more training needed to be done in farmworker clinics to identify exposure and to take immediate action when a worker with acute symptoms came into the clinic. Currently, there is very little training among healthcare providers in recognizing the symptoms of pesticide exposure.

Common Themes

From the qualitative interviews, a number of themes common to the majority of the constituents were identified. These are summarized in Table 2. From the common themes, the Community Planning Group made several recommendations for the membership of the Community Advisory Board. The group thought it was important to obtain representation from every constituent, because the pesticide issue had a history of being a contentious issue in the Valley. Therefore, it was important that everyone participate in decision making. Because of disagreements in the past, the group recommended moderates be chosen from every constituent. The group believed moderates would be more likely to listen to alternatives and reach consensus on issues, thereby building trust. The Community Planning Group took responsibility for recruiting moderates from groups that had a history of strong disagreements around the pesticide issue. Occasionally, leaders of groups expressed concern if they were not included. Such cases were handled by planning group members on an individual basis; in some cases more than one representative was put on the board, whereas in others, group leaders agreed to send a representative. Planning group members noted it was important to recruit board

Table 2. Themes mentioned by various constituents.

Theme	Farmworkers	Farmworker advocates	Growers	Regulatory agencies
Lack of information about pesticide effects	Yes	Yes	Yes	Yes
Importance of pesticides	Yes	Yes	Yes	Yes
Belief that protective equipment is not used	Yes	Yes	Yes	Yes
Belief that protection from pesticides is possible	Yes	Yes	Yes	Yes
Lack of trust between constituents	Yes	Yes	Yes	Yes
Interaction between various groups is needed	Yes	Yes	Yes	Yes
More training is needed	No	No	Yes	Yes
Farmworkers can and should have a voice in addressing pesticide issues	Yes	Yes	No	No

members by emphasizing that the project was a research project that could provide scientific information on pesticide exposure to everyone in the Valley. This approach helped diffuse some of the concern felt by various stakeholders in the Valley.

The Community Planning Group also made recommendations about presenting the project to the community. Of key importance was to frame the project as a “kids” project that would focus on the risks to children of pesticide exposure. Noting that “nobody was against kids,” the group said the project should emphasize that it was presenting messages and strategies that farmworkers could use to protect themselves and their children from pesticide exposure. The group was persuasive in arguing that the project take a nurturing rather than punitive approach. As such, the project needed to make clear to all concerned that there would be no attempt to try to eliminate pesticides.

Community Advisory Board

On the basis of information in the interviews and the recommendations of the Community Planning Group, a permanent community advisory board was formed. Board members were recruited by planning group members and, in a few cases, by the project staff. This board is intended to be operational throughout the life of this project. Many members of the Community Planning Group elected to join the Community Advisory Board. This provided a nice overlap in project functions. The project was discussed with new members at their first board meeting; however, old members were helpful in providing history for the new members and giving further explanation where needed. The constituents represented by the board are summarized in Table 3 and provide a good mix of the relevant parties involved in some aspect of the pesticide issue. From summer 1999 through summer 2000, the board met every 1–2 months. The board is very involved in every aspect of the project. It has made contributions to the baseline survey, hired the project coordinator in the Valley, suggested numerous intervention activities, and participated directly in project activities (e.g., judging entries for a calendar contest).

Discussion

This project was built on the principle that people are most likely to become involved in a research project that has potential to affect their community when they are full partners in the research (35,43,44). To build a partnership, we conducted a qualitative analysis of the Yakima Valley to identify constituents who should be represented in a partnership. After identifying several key informants, we used a snowball technique to identify and interview 44 people in the Valley. The analysis of these interviews suggests there was considerable diversity in the views of the four major constituent groups affected by pesticide issues. Indeed, it was clear that the pesticide issue was quite contentious. The interviews, however, also had commonalities, and these became the focus of presenting the project to the community. On the basis of common themes and recommendations from a community planning group, which was convened to provide a process for recruiting a community advisory board, we were able to form a board that to date has operated very well.

Many research projects have successfully formed community boards or groups (45–47). Few, however, have successfully organized community groups with equal decision-making authority around controversial issues (48–51). Organizing ethnic minority groups has been done even less frequently (52–54), and rarely around extremely contentious issues. Both contentious issues and projects involving ethnic minorities require considerable advance knowledge before recruiting and convening a community advisory board. Because we wished to understand the community, this community analysis was conducted. From the analysis we were able to work together with community members to form an advisory board.

A sound community analysis is the basis for obtaining representation from all key individuals and groups involved in an issue. Unfortunately, community analysis frequently becomes an add-on activity to be conducted in a relatively short period after funding has been received (42). Unlike many other projects, we had sufficient time to conduct a comprehensive community

Table 3. Constituents represented on the community advisory board.

Organization/group	Constituents represented
U.S. Department of Agriculture	Regulatory agency
Department of Health	Regulatory agency
U.S. Department of Health and Human Services	Farmworkers
Department of Labor and Industries	Regulatory agency
U.S. Environmental Protection Agency	Regulatory agency
Farmworkers	Farmworkers
Farmworkers' clinics	Farmworkers
Farmworkers' Union	Farmworkers
Growers	Growers
Growers' League	Growers
Local legal services	Farmworker advocate
Migrant Council	Farmworkers
Spanish radio station	Farmworker advocate

analysis well in advance of planning and implementing intervention activities. This allowed us not only to identify the important community groups to involve, but also to assess community barriers and facilitators to working together. The latter is key to beginning any project (36).

The qualitative data gathered in this study reiterated the importance of understanding all germane groups in a project built around a divisive issue. Further, it emphasized the importance of including all relevant constituents on a community advisory board. This meant putting individuals together who previously had been on opposite sides of an issue to work toward a common goal. From the beginning of this project, we knew that the use of pesticides was a source of disagreement among many factions in the Valley. It was, therefore, imperative that we remained as objective as possible in listening to the concerns of various constituents. All the interviewees were trained to only gather information, not to dispel myths, provide more accurate information, or in any other way interfere with the process of understanding the beliefs and opinions of the people interviewed. Such respect for the different values of diverse community members and groups is thought to contribute to community empowerment, that is, community involvement in social action around an issue (30,44,50).

The outcome of a good community analysis is a partnership able to collaborate effectively and reach working consensus on project goals (36,37). We presented all the themes we identified in the qualitative data gathering to a planning group. The planning group and members of the research team reached consensus on themes that should be emphasized for the project and on a process for recruiting community advisory board members.

A few other studies have examined the disparate approaches to farm chemicals held by various constituents. Quandt and

colleagues (55) identified farmer themes similar to those identified by the growers we interviewed. In that study farmers claimed there was no problem with pesticide exposure because all rules and regulations regarding mixing, spraying, and re-entry were followed. Similar to our findings, the study found that farmers believed pesticides and herbicides could be used safely. Another study among applicators found most users unsure about the risks of pesticide use (56,57). A recent study indicated beliefs about pesticides had a significant effect on intentions to protect oneself from exposure (57). Especially important was the belief farmers were too busy to use personal protective equipment when using pesticides and the belief a pesticide would not be on the market if it were not safe (58).

Our findings of farmworker beliefs are similar to some other studies. Lantz and colleagues (59), in a series of focus groups with 55 Hispanic farmworkers, found farmworkers were concerned about the ill health effects of farm chemicals, especially acute exposure and effects on pregnant women and children. As in our interviews, farmworkers felt powerless to reduce exposure by demanding the protection to which they are entitled, for fear of losing their jobs. Farmworkers are very aware that if they complain and are fired, there will be many others willing to do the job. Other studies, however, have identified different themes. A study in North Carolina found farmworkers divided as to whether exposure to pesticides is a problem (55). Many farmworkers, however, were concerned with acute pesticide exposure. Unlike our study, farmworkers in North Carolina believed response to exposure was highly individualized; our farmworker interviewees were unanimous in stating pesticide exposure was bad for everyone. A study in California found farmworkers believed in God or luck to protect them, although they acknowledged some personal actions could reduce the chances of injuries (60).

Limitations

This study has some limitations. The study includes 24 communities and labor camps; however, we were not able to interview individuals from each of these areas. This could result in bias if some perspectives were omitted. However, given the diversity of occupations of the interviewees and the homogeneous characteristics of the population in the Valley, it is likely that culture is shared among the various areas and unlikely the situation in other communities and labor camps differed significantly from the one we observed.

Nonrandomized samples of interviewees were taken for the qualitative data collection; however, this approach is characteristic in qualitative research (39,40). The primary goal of this study was to understand how

farmworkers and those influential in farmworker safety shared common perspectives, and how those perspectives could be used so the groups would work together. Although the repetition of themes by respondents gave us confidence in the reliability of the information, this method of sampling makes it difficult to make inferences and generalizations of the results beyond the participants of the study.

Another potential limitation lies in the different methods used to gather data from various groups of respondents. In some cases we interviewed individuals, whereas in others we used small focus groups. Individual interviews represent one person's ideas and beliefs; however, the views may not have been tested against other individuals in the same occupational level. Focus groups, on the other hand, emphasize interaction; it is likely that individual views will be modified as participants listen to each other. Nevertheless, there were individual interviews among all the groups represented, and few new concerns were raised.

The characteristics of the groups of respondents were substantially different in terms of ethnicity, occupation, and education. This may have contributed to some differences in responses. However, the qualitative questions were asked of all constituents and explanations in English or Spanish were given, providing some confidence that the meaning of the questions was similar regardless of data collection method used.

Implications

Community projects require community participation. Participation is not complete until all the constituents with a stake in the project are represented in a decision-making body. Community analysis is a good technique for identifying the various constituents as well as the barriers and facilitators to involvement in a project. Our study demonstrates both the widely varying views of different constituents around the issue of protecting children from pesticide exposure and common themes that can form the basis for collaboration and consensus on approaching the issue. Although community analysis should be requisite for any community project, it is even more important in projects that include contentious and potentially divisive issues. Understanding of the community will contribute to community empowerment, an equal partnership, and decision making that is in the best interest of all groups represented.

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