

A TWO-PART STUDY OF AGRICULTURAL HEALTH
AND SAFETY COMMUNICATION THROUGH
SELECTED MASS MEDIA

By

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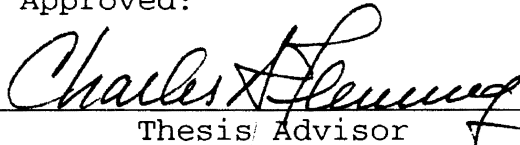
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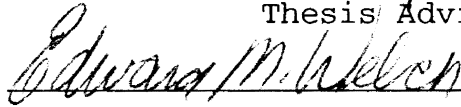
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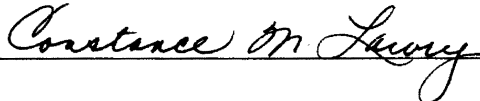
OKLAHOMA STATE UNIVERSITY

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CHAPTER I

INTRODUCTION

General

Farming is often depicted as natural, safe and serene. But according to the National Safety Council, agriculture is currently ranked as one of the nation's most dangerous industries. The National Safety Council estimated there were 42 deaths per 100,000 workers for all other occupations combined (National Safety Council, 1991). Agricultural workers are five times more likely to be killed on the job than all other workers combined.

The tragic toll of farm injuries is well documented. More than 1,400 agricultural workers are killed each year and approximately 140,000 non-fatal injuries result in temporary or permanent disability (National Safety Council, 1991). Everyday farm hazards include: machinery; chemicals; exposure to sun, heat and noise; livestock handling; and stress.

Agricultural hazards are of concern to various organizations. Local, state and federal government agencies provide information and services on a wide range of topics.

To some degree, most land grant institutions, like Oklahoma State University, provide their constituents with information about agricultural safety and health. Land grant universities serve the rural population through a network of Cooperative Extension Service offices located across the country. Oklahoma State University, through the main campus in Stillwater and its network of Extension offices in Oklahoma, provides information and assistance to the state farming community.

Background

In May 1991, U.S. Surgeon General Antonia Novello convened the first Surgeon General's conference in more than 50 years to focus on agricultural safety and health. Representatives from agriculture, education and the health field met to develop a national agenda for agricultural safety and health.

The Surgeon General's conference was but one example of a renewed interest in agricultural safety and health. State and federal organizations are committing resources to various agricultural safety and health programs. In 1990, the National Institute for Occupational Safety and Health (NIOSH), through the Centers for Disease Control, expanded its activities to develop a comprehensive research-based intervention program to reduce injury and disease among agricultural workers and their families.

In fiscal year 1991, NIOSH funded cooperative agricultural health promotion systems at 18 land grant universities across the country including Oklahoma State University. These programs utilize the existing networks between land grant institutions, the cooperative extension service and the agricultural population. While each institution uses a different method, the primary goal of the agricultural health promotion system is to communicate safety and health information to the agricultural community and thus, reduce the risk of agricultural accidents and deaths.

The Oklahoma State University Department of Agricultural Engineering, with funding from the National Institute for Occupational Safety and Health, has expanded its safety and health education program. The OSU-NIOSH program created Project S.A.F.E, Safety for America's Farm Environment, to communicate agricultural safety and health information to farmers, ranchers and their families. Project SAFE has developed and distributed computer and video-based educational materials focusing on safety and health. Project leaders collaborated with other universities and organizations to develop joint educational programs.

Statement of the Problem

A major obstacle to current efforts to lower the toll of agricultural injuries and deaths is a fundamental lack of knowledge of the causes and risk factors associated with these injuries (Layde, 1990). Because of the tremendous danger in the farm environment and the lack of knowledge of these risk factors, there is a great need to communicate information about agricultural safety and health to farmers and their families through the mass media.

Purpose of the Study

The purpose of this study is to determine how Oklahoma farmers prefer to receive agricultural health and safety information from the mass media. The study will also identify how university extension agricultural engineering departments communicate agricultural health and safety information to their various constituencies and which methods have proven the most successful.

Examining these two segments of the agricultural industry -- farmers and agricultural educator-communicators -- should lead to a better understanding of how effectively to communicate agricultural safety and health information.

Research Objectives

Through this research, the following questions will be answered:

1. From which mass media sources do Oklahoma farmers receive most of their general news, agricultural, and safety and health information?
2. From which mass media sources do Oklahoma farmers prefer to receive information about agricultural safety and health?
3. What are the attitudes of Oklahoma farmers regarding the OSU Extension television program "Sun Up?"
4. According to the extension agricultural engineering departments across the country, which mass media methods are utilized to communicate safety and health information?
5. Given adequate resources, how would agricultural engineering departments improve their existing safety and health program?

Methodology

In coordination with the OSU-NIOSH Project, a field survey was conducted from June - August 1992 of 170 farmers throughout Oklahoma. Survey workers questioned the farmers about how they currently receive and prefer to receive information about general news, agriculture and safety and health from the mass media. The questionnaire developed for this study was part of a comprehensive on-site farm

assessment. Survey workers canvassed the state and interviewed workers about their safety and health practices and attitudes. Topics included: chemical handling and storage, machinery, grain storage handling and livestock.

In October 1992, a second questionnaire was developed and distributed to extension agricultural engineering departments throughout the country. The questionnaire asked the departments to identify methods used to communicate agricultural safety and health information to farmers and their families.

Significance of the Study

By understanding how the Oklahoma farming community prefers to receive information through the mass media, Oklahoma State University, and other land grant institutions, can utilize the channels of mass communication more effectively.

The findings and recommendations generated by this study will contribute to the body of knowledge in the field of communications and will aid communicators of safety and health information in effectively reaching their target population.

The students, faculty and staff of land-grant institutions like Oklahoma State University will benefit from this research. The results of this study will also

provide supporting information for future grants and other funded projects.

Study Limitations and Assumptions

Farmer Survey. The results of the on-site farm assessment are limited by the fact that the farmers were initially selected as potential participants by their county extension directors. Even though the farmer was invited to participate in this voluntary survey, he/she may have felt pressured to respond in a particular way because of his relationship with the county extension director.

The study included farmers from 68 of the 77 counties in Oklahoma. Some county extension directors chose not to participate in the project.

Since the farmers volunteered to participate in the survey, it may be logical to assume that they are more knowledgeable about OSU and thus, more receptive to agricultural safety and health information.

Extension Agricultural Engineering

Department Survey. The survey sent to the departments of agricultural engineering throughout the country may not have been completed and returned for a number of reasons: busy faculty schedules, lack of interest or purely lack of an appropriate faculty member who concentrates in the safety and health area.

Outline of Remainder of the Study

In Chapter II, a comprehensive review of the literature on agricultural safety and health and communications programs will be presented. This will include the background of the problem and details on current efforts to address the issue of communicating agricultural safety and health information to the farming community.

Chapter III includes a description of the research methodology used in the study. The data collection plan and process are outlined.

Chapter IV reports the findings and detail the analysis of data.

Chapter V includes a brief summary of the study. Conclusions are stated and recommendations made to implement the findings of the study. Recommendations for further research are also defined. This chapter contains a brief conclusion to the thesis.

CHAPTER II

LITERATURE REVIEW

General

Throughout this chapter, a comprehensive review of the literature on agricultural safety and health will be presented. Chapter II will include the historical background of the problem and a summary of current efforts to address the issue of communicating agricultural safety and health. Various theories involved with health communication programs and the mass media will also be explored.

Health Communication Programs

According to Rose Mary Romano (1989) with the National Cancer Institute, communication plays an essential role in disease prevention and health promotion. Romano (1989) wrote that programs designed to promote changes in health behaviors and to encourage early detection and prompt treatment of illness have demonstrated that mass media and

other communication strategies can be effective in reducing the risk of serious illness.

Elaine Bratic Arkin (1989) wrote in Making Health Communication Programs Work - A Planners Guide that better use of existing health knowledge requires communication among health care and social service professionals, related organizations, government agencies, the private sector, and individual citizens.

According to Arkin (1989), communication can increase awareness of a health issue, problem or solution; affect attitudes to create support for individual or collective action; demonstrate or illustrate skills; increase demand for health services; and remind about or reinforce knowledge, attitudes or behavior.

Health communication programs cannot, Arkin (1989) wrote, compensate for a lack of health care services; produce behavior change without supportive program components; and be equally effective in addressing *all* issues or relaying *all* messages. (emphasis not added)

Public Perception of Health Messages

Understanding how the public perceives and responds to communication messages about health could help researchers develop and implement more successful programs in the future. The National Cancer Institute identified several

factors affecting public acceptance of health messages (Arkin, 1989).

Arkin (1989) wrote many people do not understand the concept of relative risk, and so personal decisions may be based on faulty reasoning. Arkin points out that the public tends to overestimate their risk of car and airplane accidents, homicides and other events that most frequently make the news, and underestimate their risk of less newsworthy, but more common health problems such as strokes and diabetes.

Arkin (1989) wrote the public responds to easy solutions. She explained how the ability to act to reduce or eliminate an identified risk not only can lessen actual risk, but can abate the fear, denial, or mistrust that may result from new health information. According to Arkin, the public is more likely to respond to a call for action if the action is relatively simple and less likely to act if the "price" of the action is higher, or the action is complicated.

Another factor affecting how the public perceives health messages is that some people do not understand probabilities; they want concrete information upon which they can make certain decisions. In the absence of firm answers from a scientist, Arkin (1989) wrote, the media will sometimes draw an inappropriate conclusion, providing the public with faulty but conclusive-sounding information that the public finds easier to accept and deal with.

New health information may not be integrated as one of an individual's priorities. When the National Cancer Institute conducted focus groups with retired shipyard workers, they found that a future threat of cancer from a long-ago exposure to asbestos paled in importance in comparison with their daily infirmities (Arkin, 1989).

Individuals may not feel personally susceptible to health risks. A National Cancer Institute survey found that 54 percent of respondents believed that a serious illness "couldn't happen to them" and considered their risk as less than that of the general public (Arkin, 1989).

Arkin (1989) also wrote that while an individual may believe that "it can't happen to me," he or she can still believe that "everything causes cancer," and, therefore, there is no way to avoid cancer.

Another factor which may affect the way the public perceives health messages is that individuals lack the basic tools required to understand and interpret some health information (Arkin, 1989). According to Arkin, technical and medical terminology, the variables involved in calculating risk, and the fact that science is not static, but evolves and changes over time, are all poorly understood by the public.

Relevant Communication Theories

According to Arkin (1989), health education models involve an exploration of the components of behavioral intention that will influence an individual's willingness to act. Arkin (1989) also wrote that mass communication theories help explain factors that influence message transmission between the source and the target audience and the expected effects.

Communication for Persuasion

Communication researcher William McGuire (1989) said to communicate the message successfully the following components all must work together: the credibility of the message source; the message design; the delivery channel; and the target audience and targeted behavior.

According to communications researcher Revelians Tuluhungwa(1981), mass media communication has been considered to have an important role in development, especially in conveying informative and persuasive messages from government to the public in a downward, heirarchical way.

Tuluhungwa (1981) wrote that the press can have a tremendous role in producing educational materials that facilitate behavioral change and disseminating proven and

efficient processes for community-based educational programs.

Theory of Diffusion

Communications researcher Everett Rogers (1983) defined diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. Channels of communication exist which make it possible for new agricultural information to reach interested farmers much more quickly than in years past. Slocum (1962) wrote that some farmers are so interested in new technology that they keep in touch with agricultural experiment workers and extension specialists for current information.

Diffusion occurs within a social system, because the social structure of the system affects the innovation's diffusion in a number of ways (Rogers, 1983). In this case, the social system is the farming community. It constitutes a boundary within which the innovation diffuses.

In order to effectively communicate information about agricultural safety and health, it is important to understand the process of diffusion. The four main elements are the innovation, communication channels, time and the social system (Rogers, 1983).

The Innovation. Everett Rogers (1983) described an innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption. Safe farming procedures may not actually be new, but they certainly could be considered new to a farmer who does not currently utilize these practices.

The innovation of safety and health on the farm may, in fact, be new to many Oklahoma farmers and ranchers. According to an Oklahoma Department of Health issue paper on the Prevention of Farm-Related Injuries (1991), there are no federal regulations or guidelines for the family farm concerning safety, basic or recurrent training, or child care provisions.

The various characteristics of innovations should be considered as educational extension programs are developed. It will be important for farmers to first understand the relative advantage of safe farming practices. If they do not perceive a clear benefit, the innovation will more than likely not be adopted (Rogers, 1983).

Once farmers understand the advantage, compatibility and complexity of safe farming practices, they may try out the ideas. According to Everett Rogers, an innovation that is trialable represents less uncertainty to the individual considering it for adoption (1983). Attempting to use the new idea or technique gives the farmer an opportunity to learn by doing.

Observability. Observability is another characteristic of innovation which leads to adoption. If farmers can see the results of the innovation, they are more likely to accept the idea. A 1979 California study showed that solar panels on a household's roof are highly observable and the typical solar adopter showed his equipment to about six of his peers (Rogers et al, 1979). Like the solar adopters, farmers who observe the safety innovations and realize the benefits may embrace them more readily.

How and by whom information about the innovation is communicated to the farming population is crucial to the success of the diffusion process. The mass media are an important link in this communication chain. The majority of farmers own television sets, and most, if not all, have radios. A large proportion of the farmers also read daily and/or weekly newspapers (Slocum, 1962).

While the mass media explosion has impacted how the farmer receives information, interpersonal channels are often more important in persuading an individual to adopt an idea, especially if the interpersonal channel links two or more individuals who are near-peers (Rogers, 1983).

Time. According to Rogers (1983), another important element in the diffusion process is time. The amount of time between when the individual learns about an innovation to the time it is actually adopted or rejected should be

considered as agricultural safety and health materials and messages are crafted.

A diffusion study was carried out by Iowa State University in the 1940s. The investigation focused on the diffusion of information about hybrid seed corn to Iowa farmers. Hybrid seed corn was the result of 20 years of genetic research by agricultural scientists. The new hybrid seed increased corn yields by about 20 percent, withstood drought better and was better suited to harvesting by mechanical corn pickers. In 1928, this high-tech seed corn was made available to Iowa farmers and was promoted by the Iowa Agricultural Extension Service and commercial seed companies. According to Rogers (1983), the hybrid seed spread rapidly and by 1941, the innovation was adopted by almost 100 percent of Iowa farmers.

In order to duplicate their successful diffusion efforts in other areas, the Iowa Agricultural Experiment Station sponsored a research project to give them some answers. They were interested in knowing, for instance, why some farmers waited 13 years to adopt while other adopted the innovation almost immediately (Rogers, 1983).

Researchers Ryan and Gross selected two small Iowa communities and interviewed all of the 259 farmers living in the area. Farmers were asked when they decided to adopt the hybrid corn, the communication channels used at each stage of the innovation-decision process and how much of their

corn acreage was planted in the new hybrid variety (Rogers, 1983).

According to the Iowa study, the average farmer heard about the hybrid seed from a salesman, but neighbors were the most frequent channel leading to persuasion. The farmer-to-farmer exchange of personal experiences with the use of the hybrid seed seemed to lie at the heart of the diffusion. When these positive experiences were accumulated by farmers (especially the innovators and early adopters) and exchanged within the community, the rate of adoption increased significantly (Rogers, 1983).

Research in the midwestern United States indicated that adopters have different characteristics from farmers who do not adopt new practices. A report in Rural Sociological Society (1952) showed that adopters have more education than others, have a high level of participation in general farm organizations and cooperatives and have children in 4-H Clubs or vocational agricultural programs. Innovation adopters also have contact with new ideas through bulletins, farm magazines and newspapers and are risk-takers rather than security seekers.

The social system. Farmers, like other people associated with a social system, usually share certain norms and values. DeFleur and Ball-Rokeach (1989) defined norms as the general rules that are commonly understood and followed by all members of a group. Rogers (1983) said

norms define a range of tolerable behavior and serve as a guide or standard for the members of the social system. For example, the members of a particular farm family will have a common set of values which may differ from families with different backgrounds or traditions (Slocum, 1962).

Communication channels. The mass media can greatly assist the diffusion process and help spread the word about safety and health. A 1963 study in Costa Rica investigated the relationship between mass media and the diffusion of agricultural, health and social educational innovations. According to Roy, Waisanen & Rogers (1969), on a voluntary basis, small groups of villagers listened to weekly radio programs, discussed them and summarized their discussion to the radio programmer while another group participated in a reading treatment. The agricultural innovations chosen for the communications included: soil conservation, use of fertilizers, use of tractors, general mechanization and use of insecticides. The radio farm forum and reading programs continued on a weekly basis for approximately one year.

The results of the study suggest that the radio forum technique has greater impact than the reading treatments. However, the findings were bound by a time dimension which was relatively short (Roy, Waisanen & Rogers, 1969). Although this was just one portion of the research, it does illustrate the influence the media can have in assisting to diffuse an innovation.

Health Education and the Media

Revelians Tuluhungwa(1981) wrote that there has been a growing recognition of the value of using media -- radio, television, tape recordings and other media -- to improve the flow of information, the system of education and the process of two-way communication in developing countries, particularly in rural areas.

According to researcher Charles Atkin (1981), the mass media in many nations present a wide array of public information messages designed to teach audiences about health. In general, Atkin wrote, the mass media have much greater potential for producing shorter-term and cognitive effects than longer-range behavior effects.

A model presented by Atkin (1981) provides a basis for examining the reasons why messages are selected and attended. Atkin (1981) wrote the first element that can be manipulated by the campaign planner is the source or spokesperson presenting the message. The second element is the message itself. Atkin (1981) states the three aspects of the message deserving central consideration are: frequency, style and content appeals.

Regarding frequency of presentation, Atkin (1981) wrote the total volume of messages about a topic is positively related to impact, although, with diminishing efficiency. Regarding style, the manner in which the content is packaged is particularly important in attracting attention to the

message (Atkin, 1981). Many traditional health campaigns, Atkin wrote (1981), suffer from dull, didactic, or complex mode of presentation.

A variety of approaches can be used regarding content appeals (Atkin, 1981). The most appropriate appeal, Atkin wrote, depends on the audience, the channel, the source, the topic and the intended effect.

According to Atkin (1981), rational appeals tend to work better in producing knowledge gain and in influencing highly involved audiences, while emotional appeals are superior in arousing motivation.

The final component of strategy selection, Atkin (1981) stated, is the selection of the channel of communication. He wrote that television is generally the most influential medium in developed countries, followed by newspapers, radio and magazines. Atkin (1981) believes television and radio are best suited for carrying stylistically entertaining messages which engage the tastes of the audience, assuring closer attention to the informational content.

Atkin wrote that television (and to a lesser extent radio) has a greater intrusiveness that compels exposure, while readers of newspapers and magazines can readily ignore messages they encounter. The print media, Atkin (1981) stated, are more appropriate for detailed, lengthy and technical material, while brief and simple ideas are better communicated via broadcast channels.

The various channels of communication differ in how they are received by the public. Atkin (1981) wrote that television and radio content tends to be passively consumed; the print media allow active consultation, re-reading and contemplation.

Other Relevant Theories

Theory of Social Organization & Group Norms. The American transition from rural-agricultural to urban-industrial was accomplished by people familiar with farming. According to Rohrer and Douglas (1969), farm and rural populations declined proportionally as industrialization and urbanization advanced in this country. Though not as strong in years past, the agrarian tradition is alive and well in rural America. Rohrer and Douglas (1969) described the institutions of the American countryside to include the small local government, homestead ownership, country schools and churches, individually owned small businesses, and a spirit of equalitarianism.

Like other groups, farmers have extremely complex standards of social organization. Communications researchers DeFleur and Ball-Rokeach (1989) wrote social groups may share the same views on political, educational, religious and economic issues. According to Lundquist and Carver (1927), city dwellers group themselves according to

class, occupational, or cultural lines, while rural dwellers tend to group themselves by neighborhoods. To the rural resident, they reported, space or distance is more important as a factor of separation than differences of occupation and culture.

By nature, farmers have strong independent, anti-regulation attitudes that make them suspect any government intervention. The geographic relationship between the farmer and his community breeds independence. In years past, self-sufficiency was not only possible but necessary for the isolated American farm family. According to sociologist Paul Johnstone, "the independent man was not only the equal of any other, the independent farmer literally was in partnership with God" (Rohrer & Douglas, 1969). Slocum (1962) wrote socialization involves internalization of social norms, roles and other aspects of culture, which occurs mainly through interaction with other persons. The way farmers interact may lead to clues about the most effective method to communicate information about agricultural safety and health.

Research shows there is a great difference between rural and urban family life in America. The ties that bind the farm family may also serve to strengthen the bond between individual family members. Urban families are often held together by affectional bonds, with emphasis on individual rather than group values. On the other hand, the traditional farm family is conceived to be held together

to a considerable extent by common participation in the farm enterprise and by emphasis on family solidarity and kinship ties. The farm family may be more likely to participate as a family group in neighborhood and community affairs (Slocum, 1962).

Former Oklahoma State University Extension Safety Specialist Pat Lewis confirmed that farmers conform to a rigid set of group norms. As the statewide safety specialist at OSU for more than 5 years, Lewis interacted with the rural farming community on a regular basis to spread information about agricultural safety and health. In an interview, Lewis described farmers as "set in their ways, resistant to change and suspect of any new innovations or ideas." Lewis said, "farmers are reluctant to adopt safe farming practices because they don't perceive the true dangers involved with the agricultural industry" (Lewis III, interview, 1992).

Oklahoma State University Agricultural Engineer Ed Barnes agreed that in general farmers are "self-sufficient, independent and live by traditional values." Barnes noted that, for the most part, farmers have a negative attitude toward government and are very resistant to change. Because of these characteristics, Barnes believes the communicator and the methods of communication are very important factors which influence farmer acceptance of new ideas or innovations (Barnes, interview, 1992).

Agricultural Health Hazards

According to the National Safety Council (NSC) there were 1,400 agricultural work deaths in 1991, of which 700 involved farm residents in farm work and 700 involved non-farm residents working on farms and anyone working in other industries classified as agriculture. The corresponding injury totals were 140,000 in agricultural work -- 70,000 involving farm residents and 70,000 involving non-farm residents (National Safety Council 1992). The National Safety Council uses the term "agriculture" to refer to the production of crops and livestock, and also agricultural services, forestry (logging is excluded) and fishing.

A 1991 study reviewed compensation claims from 1982 to 1986 in Washington state and found that agricultural workers had a higher risk of fatal and nonfatal injuries and illnesses compared with non-agricultural workers. Agricultural workers had a rate of 207.84 claims per 1,000 persons, about 50 per cent higher than the rate for non-agricultural workers, which was 139.76 (Demers & Rosenstock).

According to Meyers (1990), in the American Journal of Industrial Medicine, while estimates vary, all reporting agencies show agriculture having an occupational fatality rate three to five times higher than that of the general private sector. The National Institute for Occupational

Safety and Health (NIOSH), Division of Safety Research's National Traumatic Occupational Fatalities (NTOF) data base monitors occupational fatal injuries in all industries in the United States through death certificates. According to the article, uniform case-selection criteria are applied nationwide. NTOF reports that for the years 1980 through 1985, agriculture had a work-related fatality rate of 20.7 deaths per 100,000 workers compared with 7.9 deaths per 100,000 workers for the private sector U.S. work force.

Age-specific rates in the NTOF report indicate that the risk of a fatal occupational injury increases with age for agricultural workers. According to NTOF data, workers over 64 years old have an average annual rate of 55.7 deaths per 100,000 workers.

For the most part, the statistics mentioned above deal only with agricultural deaths and disabling injuries. There is a wide range of agriculturally-related diseases that have been well-documented in several epidemiological studies, but for which adequate state or national statistics are not available. These increased rates of work-related diseases affect nearly every body system. Farmers and farm workers suffer from increased chronic disease including chronic lung disease, certain cancers, arthritis, dermatitis, and noise-induced hearing loss. It is also important to note that accident and death statistics from the National Safety Council and the National Institute for Occupational Safety and Health do not include the

approximately 300 children killed each year while engaged in farm-related activities (National Coalition for Agricultural Safety and Health, 1989).

Data collected by the Oklahoma State Health Department from the State Medical Examiner showed that during the ten year period 1980-1989, a total of 824 farm-related deaths occurred in Oklahoma. Sixty-seven percent (551/824) of the farm-related deaths were considered unintentional, 18% were suicides, and 12% were homicides (Oklahoma State Department of Health, 1991).

Agriculture at Risk - A Report to the Nation, by the National Coalition for Agricultural Safety and Health, explored the reasons for the continual high incidence of agricultural-related accidents and deaths. The report is a summary of discussions held at the conference "Agricultural Occupational and Environmental Health: Policy Strategies for the Future" in September 1988, in Iowa City and Des Moines, Iowa. Approximately 170 scientists, policy makers and private citizens were involved in the conference. According to the report, there is a lack of federal and state funding for agriculture and the gap between federal funding of programs for agricultural safety and programs for other workers is growing (National Coalition for Agricultural Safety and Health, 1989).

The National Coalition for Agricultural Safety and Health report cited several reasons for the lack of an Agricultural Safety and Health Agenda in the United States.

According to the 1989 report, the general public is unaware of the health and safety problems of the agricultural community and is therefore unconcerned. Another issue mentioned was that agricultural safety and health is not recognized as part of the larger rural health agenda and the farm population has not raised the issues.

The National Coalition for Agricultural Safety and Health report explained that federal and state agencies have not become involved in safety and health issues because: there is no mandate to do so, agricultural concerns are divided among many agencies and there is a lack of leadership.

According to the 1989 National Coalition for Agricultural Safety and Health report, academia has not become involved because there are few research dollars and therefore few incentives to work in this area and there is no broad-based scientific forum to discuss the issues.

The Injury Epidemiology Division of the Oklahoma State Department of Health (1991) identified three major barriers to the prevention of farm-related injuries and deaths. The first barrier identified was the lack of accurate and reliable data. Researchers are unable to identify nonfatal farm-related injuries and causes and they lack the specific circumstances detailing an accident. A second barrier is the difficulty in targeting prevention programs to the broad and diverse range of injuries and age groups. The third, and possibly most important, barrier to preventing farm-

related injuries is the lack of effective information dissemination (Oklahoma State Department of Health, 1991).

Safety and health researchers Field and Purschwitz (1987) said it is time the expertise developed in other industries to address the injury problem is applied to agriculture. According to the article, "Cost of farm and rural injuries" in Public Health Report (1987), Field and Purschwitz wrote that more farmers die or are left permanently disabled due to their work than are longshoremen, fire fighters, police officers, pilots and persons in other high-risk occupations, including the armed forces.

A 12-year study in Wisconsin found that 739 patients were admitted to a referral trauma center as the result of injuries occurred while farming. According to Cogbill, Steenlage, Landercasper and Strutt (1991), the ages ranged from 1 to 89 years and the injury mechanism was a farm animal in 225 (30%) of the cases, farm machinery in 168 (23%), a tractor in 120 (16%), a fall in 77 (10%), a power take-off in 47 (7%), a corn picker in 42 (6%), and miscellaneous in 60 (8%) of the cases. The researchers reported that effective injury prevention must focus on farmer education, additional mandatory safety features on agricultural equipment, and appropriate design of rural trauma systems.

Agricultural Safety and Health Education Programs

Many education, health, agriculture and safety organizations develop and promote agricultural health and safety programs. The programs are as varied as the different geographic locations and leadership of the project directors. This section will describe a few of the many successful and innovative safety programs.

Agriculture and biology Professor Dennis Murphy (1979) explored the relationship of attitudes toward farm safety concepts and farm accident involvement. Murphy explained that many safety educators believe that good safety attitudes are important if people are to avoid accidents.

A random sample of 1500 Pennsylvania farmers were asked their attitudes toward 15 nationally recognized farm safety concepts (safe operating or working procedures, rules or practices). Using a semantic differential attitude test, 493 respondents indicated they had about the same attitudes toward farm safety concepts regardless of their accident involvement. According to Murphy (1979), the results of the study suggest that the apparent high priority farm safety educators give to safety attitude promotion should be re-examined. He wrote educators should deal with the subtle pressures which affect a farmer and often increase his chance of an accident. Murphy concluded that farm safety education programs should help farmers recognize and deal with these pressures.

In 1990, the National Institute for Occupational Safety and Health, Division of Safety Research (DSR), instituted an intervention program with the goal of reducing the incidence of fatal and nonfatal traumatic injury, chronic injury, and occupational diseases among the 3.4 million agricultural workers in the United States. This program, the Agricultural Health Promotion Systems (AHPS), is administered through cooperative agreements to land-grant Universities and the Cooperative Extension Service within the states. Through the AHPS, the land-grant universities will develop and disseminate and conduct programs to prevent illness and injury among agricultural workers and their families (Hard, Myers, Stout, Pizatella, 1989). In 1992, 18 states were conducting Agricultural Health Promotion System programs.

The University of Missouri - Columbia, with funding from NIOSH, developed and implemented a statewide Farm Women's Extension Safety Program. The primary purpose of the program is to prepare farm women to safely and efficiently deal with their farm operations. The secondary purpose of the program is to help farm women become more effective in encouraging their spouses and children to develop a more positive approach to safety and health (Baker, 1992).

The farm safety program at Kansas State University concentrates on Kansas farmers 60 years of age and older. To reach this population, volunteer agricultural safety and

health teams have been formed to deliver 5-to-10 minute safety messages at county agricultural meetings. To support these teams, eight farm safety tabloids and four 5-minute video tapes are being developed (Kramer, 1992).

Safety education professionals at Colorado State University (CSU) prepared guidelines for vocational-agricultural teachers to teach safe tractor driving for 14-to-16 year-olds. CSU safety experts also developed and sponsored a number of "Kids Farm Safety Day Camps" for area youth (Ayers, 1992).

The Center for Agricultural Disease and Injury Research and Prevention (CADIREP) at The University of Iowa, plans to create an national electronic bulletin board of programs in agricultural safety and health. Through the National Agricultural Safety and Health Network (NASHNET), callers can check the calendar of events for conferences and workshops that may be of interest. The directory is open to everyone and passwords are not necessary. As of summer 1992, the directory included programs in Iowa but in the future plans are to expand it throughout the nation (Snider, 1992).

The Ontario Farm Safety Association was established in 1973 and provides complete educational services to make all persons engaged in agricultural work in Ontario aware of occupational safety and health hazards. The Association has published a number of fact sheets dealing with safety topics and stocks a variety of films, videotapes and slide sets

which are available upon request. The Farm Safety Association is also involved in safety program evaluations, training courses, technical consulting, and research activities (Ontario Farm Safety Association, 1990).

With funding from the National Institute for Occupational Safety and Health, the Department of Agricultural Engineering at Oklahoma State University (OSU) has enhanced its agricultural safety and health program by developing Project SAFE, Safety for America's Farm Environment. Oklahoma State University, in coordination with Iowa State University, has developed a computer database of existing safety and health materials. The OSU-NIOSH Project produced a number of educational video and print materials on agricultural safety and developed a comprehensive agricultural safety and health video tape library which includes more than 60 video tapes. An on-site farm safety survey was conducted in the summer of 1992 to obtain information about the safety practices and media preferences of Oklahoma farmers (Oskam & Barfield, 1992).

During the Oklahoma State University On-Site Farm Safety Survey (1992), 209 farmers were interviewed from 68 of the 77 counties in Oklahoma (88%). Of the farms surveyed, 92% did not display "No Smoking" signs in fuel storage or refueling areas. Of the farms surveyed, 42% did not have fire extinguishers readily available and 47% did not have a first aid kit. Of the farms participating in the on-site program, 55% did not have appropriate warning labels

in crop and feed storage areas and 72% did not have fire extinguishers readily available in crop storage areas.

The OSU assessment found that 62% of the entrances to chemical storage areas were not posted to warn others of the hazards inside and 67% did not have No Smoking signs posted in and around buildings where chemicals were stored.

Of the Oklahoma farms checked in the survey, 58% did not have all combines equipped with fire extinguishers and 78% did not have tractors equipped with fire extinguishers. The survey also identified those areas which needed improvement.

The Mass Media and Agriculture

According to researcher Peter Layde (1990), a major obstacle to current efforts to lower the toll of agricultural injuries is a fundamental lack of knowledge of the causes and risk factors associated with these injuries. The mass media play an important role in the effective dissemination of information to the agricultural community. Like urban dwellers, rural residents depend on the mass media (radio, television, newspaper, magazines) for their sources of news and information.

Health educator Tuluhungwa (1981) wrote that studies in South America have shown there is a direct relationship between the level of education, the access to and use of

mass media, and the adoption of new ideas. Also, he added, studies in Africa and India have indicated that education, functional literacy, change-agent contacts and cosmopolitanism were consistently related to the adopting of agricultural and health innovations (Tuluhungwa, 1981).

The April 1989 Study of SUNUP - Oklahoma Cooperative Extension Services' Daily Television Agricultural News and Information Program focused on Oklahoma farmers and their interest in the news and information program. SUNUP is an agricultural television news program aired each week day on the Oklahoma Public Television Authority (OETA). SUNUP is sponsored by the Oklahoma Cooperative Extension Service (OCES) and is produced at Oklahoma State University's main campus in Stillwater and broadcast live to OETA's network member channels. The study wanted to determine Oklahoma farmers attitudes toward SUNUP and where viewers and non-viewers most frequently go to get their agricultural news and information.

The findings of the SUNUP study showed that 44% of the Oklahoma farmers and ranchers who participated were aware of SUNUP and 36 percent of them indicated they watch the agricultural television news and information program. The mean frequency and rank order data indicated that the Oklahoma farmers and ranchers who participated in the study ranked television as their number one source for agricultural news and information. Newspapers were ranked

second followed by state farm magazines and then regional or national magazines (Osborne, 1989).

A study of Iowa farmers also supported the issue of the importance of the mass media as an information source. From May of 1988 to April of 1989, a phone and mail survey of approximately 1,500 farmers and spouses was conducted to assess knowledge, attitudes and behaviors regarding agricultural safety and health. The Farm Family Survey was conducted in Iowa, New York, South Carolina and Washington state. As part of the study, farmers rated information sources for agricultural safety and health. Based on the results from 478 Iowa participants, farmers commonly turned to farm magazines and the Cooperative Extension Service for information about health and safety issues (Thu, Donham, Yoder & Ogilvie, 1990).

The Oklahoma State University agricultural health promotion system, funded by NIOSH, utilized video and broadcast technology to communicate information about agricultural safety and health. From September 1991 to September 1992, five educational video tapes and more than 40 television news reports focusing on a variety of safety topics were produced and distributed to agricultural and commercial broadcast networks. These educational video tapes are available through the Oklahoma Cooperative Extension Service. During 1991 and 1992, safety and health news segments aired on OETA (the Oklahoma PBS network), KOTV-TV (CBS) in Tulsa, and the nationally syndicated

agricultural programs The Morning Ag Report and Ag Day (Oskam & Barfield, 1992).

Iowa State University has developed a promotional campaign to support its broad safety and health program. A series of monthly fact sheets on 12 safety topics was produced in addition to a weekly radio interview program emphasizing a particular safety topic. Media packets containing news releases and a coordinated radio script were also distributed to the 107 field extension offices (Schwab, 1992).

Agricultural safety and health topics have been part of Successful Farming, a national farm magazine with a circulation of 485,000, since the early 1980s. In March 1984, Successful Farming became the first farm magazine to feature a regular rural health page covering topics from skin cancer to fitness to occasional non-farm related health issues such as lyme disease (Tevis, 1992).

Original research based on Successful Farming's 1200 member farm panel regarding farm safety attitudes and practices found that 65% of farm boys were driving tractors without supervision by age 12; over 70% of farm parents believe the risk to a child riding as a passenger on a tractor is very low; and more than 85% allow their children under age nine to ride (Tevis, 1992). The article about the research findings has been reprinted twice and has been circulated to 4-H clubs, farm families, Extension safety specialists and through Farm Safety 4 "Just Kids."

At the Center for Agricultural Disease and Injury Research Education and Prevention (CADIREP) Regional Conference in June 1992, Successful Farming Farm Issues Editor Cheryl Tevis explained that it is difficult for farm magazines to sustain coverage of agricultural safety and health without considerable research and activity accompanied by clear cut interest and positive feedback from readers. She said editors need a news angle or new research to cover, and cannot practice "reminder journalism", encouraging their audience to be careful.

According to Tevis, another issue for farm media is portraying proper safety and health practices in photographs and illustrations used. During the presentation, Tevis (1992) told the audience:

"It's an uphill battle. And we won't accomplish as much unless we all work together. The issue is not which group has done the most to encourage farm safety and health. We are all needed. Each group has its own strengths and weaknesses. We are working on an issue which affects people's lives. The perspectives of the entire spectrum of individuals committed to the cause of farm safety are appreciated."

Summary

This chapter has provided a brief summary of research relevant to the issue of communicating agricultural safety

and health to the farm community. Communication plays an essential role in disease prevention and health promotion (Romano, 1989).

Much valuable research has been done in the area of agricultural health and safety by noted scholars such as Mark Purschwitz, William Field, Kelley Donham, Dennis Murphy, John Meyers, and many others.

Successful programming efforts by land grant universities across the country continue to promote agricultural safety and health in new and innovative ways. Agricultural safety and health specialists like Paul Ayers at Colorado State University and Dave Baker at the University of Missouri - Columbia are involved with regional and national coalitions in an effort to reduce the number of injuries and deaths.

The National Safety Council, the National Institute for Occupational Safety and Health, the National Farm Medicine Center, Farm Safety for "Just Kids", The National Coalition for Agricultural Safety and Health, and the Ontario Farm Safety Association are but a few of the many organizations working to inform farmers about agricultural safety and health.

CHAPTER III

METHODOLOGY

Overview

Chapter III will outline the two-pronged research approach used in this study. Chapter III will describe the various methods used in this study to identify how farmers receive and prefer to receive information about agricultural safety and health through the mass media and how departments of agricultural engineering throughout the United States are communicating this information. This section will also explain the methods used to determine how Departments of Agricultural Engineering at land-grant institutions throughout the United States diffuse safety and health information. The information obtained from these two independent questionnaires -- the On-Site Farm Survey and the Agricultural Engineering Survey - will provide data about how safety and health materials are distributed and received by their target audience.

Research Method - Overview

Two separate surveys were conducted to generate data about farmers and how they receive and prefer to receive agricultural health and safety information from the mass media. The first survey was administered as a component of a comprehensive on-site farm survey which was funded by the National Institute for Occupational Safety and Health. As part of the comprehensive survey, participating farmers answered the questionnaire about safety and health information and the mass media. The overall goal of the on-site farm safety survey was to identify unsafe farming practices in Oklahoma and determine how those surveyed receive and prefer to receive safety and health information from the mass media. This study will concentrate on the mass media questionnaire.

A second questionnaire was sent to Departments of Agricultural Engineering at land grant universities throughout the United States. This questionnaire was designed to identify the various methods used to communicate agricultural safety and health information to the farming community.

The two research methods used in the study will be addressed separately throughout the remainder of Chapter III.

On-site Farm Survey

Research Design. The on-site farm survey was administered from May - August 1992 throughout Oklahoma. The questionnaire was developed to determine how farmers receive and prefer to receive information about agricultural safety and health from the mass media.

Three student workers from the OSU Department of Agricultural Engineering administered the survey during individual on-site visits. Data were collected through face-to-face interviews.

Training Session. A training session was held in April 1992 for the three student survey workers to familiarize them with the research instrument and the project. This curriculum for the training session included workshops by various members of the Department of Agricultural Engineering. Training session topics included: communication skills, farm accidents and injuries, presentation styles, travel policy, and general safety training.

An educational videotape was produced to serve as a demonstration or training tape for the survey workers. This videotape, entitled *Project SAFE: The Survey*, takes viewers through a mock survey with a Payne County, Oklahoma farmer. The video was designed to give survey workers an idea of how to interact with the research subjects.

Selection of Subjects. The subjects in the study participated on a voluntary basis. In all, 209 Oklahoma farmers from 77 counties in Oklahoma participated in the comprehensive farm safety study and 170 farmers completed the mass communication questionnaire. A letter about the project was sent to the Oklahoma Cooperative Extension Directors throughout the state. The letter asked Extension Directors to recommend farmers in their counties who may be willing to participate in the comprehensive study. These farmers were then contacted by either their local extension director or the survey staff. The farmers were assured that if they answered the comprehensive safety questionnaire and the mass media questionnaire, their identities would remain anonymous.

Research Instrument. A nine-question survey instrument was developed focusing on the role the various channels of mass communication play in diffusing information about agricultural health and safety. The questionnaire asked farmers to identify the following:

1. The primary and secondary sources of news and information
2. The primary and secondary sources of agricultural information
3. The preferred method of receiving information about agricultural health and safety.

The survey asked farmers which topics of agricultural safety and health they would like to receive more

information. Oklahoma farmers who participated in the questionnaire were also asked about their views of the OSU television program SUNUP.

Data Collection and Processing. The data from the questionnaire were collected by three graduate students in the Department of Agricultural Education. The completed questionnaire was submitted to project staff for recording. Once submitted, the survey data were displayed in percentages and frequency distribution.

Limitations. Many variables were considered during the development stages of this phase of the study. The fact that the mass media questionnaire was a portion of the comprehensive on-site farm safety survey could have had an influence on the survey results. Because of this, the voluntary research subjects may have been more open to discussion about the topic of safety and health.

The farmers who participated in the on-site farm survey may have also been influenced in one way or another by the survey worker. This personal interaction could have effected the farmer in a positive or negative manner. In some cases, the survey worker failed to ask farmers to answer the mass communications questionnaire for one reason or another.

Another limitation of the study was that the farmers participated in the study on a voluntary basis and not all

of the 209 farmers who agreed to the comprehensive safety survey completed the mass communications questionnaire.

Survey of Extension Agricultural Engineering Departments

Research Design. A questionnaire was sent to Departments of Extension Agricultural Engineering at land-grant universities throughout the United States. The survey was designed to indentify the various methods used by the departments to communicate agricultural safety and health information to the farming community.

Selection of Subjects. Extension Agricultural Engineering Departments were selected for this portion of the study because faculty and staff at land-grant universities are directly involved with the education and promotion of agricultural health and safety. The Cooperative Extension System, a national educational network established through legislation, is a partnership of the U.S. Department of Agriculture, State Land-Grant universities and county governments.

Utilizing the Directory of State Extension Agricultural Engineers, surveys were distributed to Extension Agricultural Engineering Departments in all 50 states and Puerto Rico.

Pilot Study. Selected faculty members from the Department of Agricultural Engineering at Oklahoma State reviewed the questionnaire and offered their input as to the content and format of the information. These faculty members were familiar with the issue of agricultural safety and health and this study.

Research Instrument. The questionnaire was developed to determine the methods used by Extension agricultural engineering departments to communicate safety and health information to the various farming communities. A cover letter and a pre-addressed stamped envelope were sent with the questionnaire. The cover letter explained the purpose of the research study and included contact names and telephone numbers for further information.

The eight-question survey instrument asked faculty and staff to identify the most commonly used methods to promote safety and health issues. The participants were also asked to gauge the effectiveness of these methods in communicating this information.

Survey subjects were questioned about their preferences for communicating information to farmers and ranchers through the mass media.

The survey instrument also included demographic questions about the departmental operating budget and staff size in an effort to establish relationships about the communication of safety and health information.

The questionnaire, cover letter and reminder notice can be found in the appendices of this document.

Data Collection and Processing. The cover letter, questionnaire and pre-addressed stamped return envelope were mailed October 10, 1992. The cover letter and questionnaire both listed October 26 as the deadline for returning the completed survey. A follow-up mailing was sent to the extension agricultural engineering departments that failed to respond to the initial mailing. This second mailing included a pre-addressed, stamped return envelope, questionnaire and reminder notice.

The results of the survey will be displayed in percentages and frequency distributions using tables and narration.

Limitations. This portion of the study was limited by the fact that completing the survey was entirely up to the initiative of the receiver. Time constraints and/or lack of interest on the part of the faculty member may have influenced the decision to complete and mail the survey form.

Summary. The two-pronged research approach identified how farmers receive and prefer to receive safety and health information from the mass media and how departments of agricultural engineering are communicating this information.

The two separate surveys conducted for the study generated data about the rural farming population and the academic community. Both surveys were administered after careful review by agricultural and communication professionals.

CHAPTER IV

ANALYSIS OF DATA

Introduction

This chapter will include the results of the two separate surveys, the on-site farm survey and the extension agricultural engineering survey. The surveys were conducted to generate data about how farmers receive and prefer to receive agricultural health and safety information from the mass media.

Chapter IV will identify how Oklahoma farmers who participated in the survey receive general news and information, agricultural news and, more specifically, agricultural safety and health news from the media. This section will also identify how Departments of Agricultural Engineering at land-grant institutions throughout the United States diffuse safety and health information to their clientele.

The findings of the two research efforts will be explained separately in this chapter. The results of each

question on the on-site farm survey questionnaire will be presented individually using narrative information and tables to illustrate the findings. Frequencies and percentages were calculated on the nominal and ordinal data.

On-Site Farm Survey

The on-site farm survey was administered from May - August 1992 throughout Oklahoma. A total of 170 Oklahoma farmers completed the media questionnaire for this study.

Participants in the study had been farming an average of 27 years and the average size farm was 1500 acres. The demographic section of the questionnaire also asked farmers to give the distance from their home to the nearest fire station. The average distance for respondents was 5.2 miles.

Table I shows which medium respondents ranked 1st for receiving their news and information.

TABLE I
OKLAHOMA FARMERS' RANK ORDER FOR RECEIVING
NEWS AND INFORMATION - 1ST CHOICE

| Rank Order | | Frequency | Percent |
|----------------------|---|-----------|---------|
| 1=top 1st choice for | | N=170 | |
| news & information | | | |
| Television | 1 | 79 | 46 |
| Magazines | 2 | 42 | 25 |
| Newspapers | 3 | 26 | 15 |
| Radio | 4 | 23 | 14 |
| No Response | - | 0 | 0 |
| Total | | 170 | 100% |

Simple chi square analysis showed a significant difference between most sources of news and information. Simple chi square analysis identified a genuine difference in all media sources except between newspaper and radio. Of the participants involved in the survey, 46 percent identified television as their 1st choice for news and information. Magazines were listed as first choice by 25 percent of the farmers, 15 percent listed newspapers as

their primary source for news and information and 14 percent picked radio as their first choice for news.

Table II illustrates the medium Oklahoma farmers' ranked 2nd for receiving their news and information.

TABLE II
THE MEDIUM OKLAHOMA FARMERS' RANKED 2ND
FOR NEWS AND INFORMATION

| Rank Order | | Frequency | Percent |
|------------------------|---|-----------|---------|
| 1=top 2nd choice | | (N=170) | |
| for news & information | | | |
| Newspapers | 1 | 51 | 30 |
| Radio | 2 | 46 | 27 |
| Television | 3 | 34 | 20 |
| Magazines | 4 | 31 | 18 |
| No Response | - | 8 | 5 |
| Total | | 170 | 100% |

Simple chi square analysis identified an overall genuine difference in media sources. However, simple chi square analysis showed there is no genuine difference between television and magazines and between newspaper and

radio. Of the Oklahoma farmers surveyed, 30 percent identified newspapers as their top 2nd choice for news and information, 27 percent chose radio, 20 percent picked television and 18 percent identified magazines as their 2nd choice for news and information.

Table III illustrates the medium Oklahoma farmers' ranked 1st for receiving their safety and health information.

TABLE III
MEDIUM OKLAHOMA FARMERS' RANKED 1ST FOR RECEIVING
SAFETY AND HEALTH INFORMATION

| | Rank Order | Frequency | Percent |
|------------|--|-----------|---------|
| | 1=top 1st choice for safety & health information | | |
| Magazines | 1 | 73 | 43 |
| Television | 2 | 65 | 38 |
| Newspapers | 3 | 25 | 15 |
| Radio | 4 | 6 | 4 |
| Total | | 170 | 100% |

Simple chi square analysis showed no genuine difference between magazines and television as sources of media.

Simple chi square analysis did identify a genuine difference between magazines and newspapers, magazines and radio, television and newspapers, television and radio, and newspaper and radio. Of the participating farmers, 43 percent of them designated magazines as their primary source for safety and health information. Television was listed as the primary source for health and safety information by 38 percent of the respondents, 15 percent of the farmers in the study identified newspapers as their 1st choice for safety and health information and 4 percent chose radio.

Table IV shows the medium farmers identified as their 1st source for receiving agricultural information.

TABLE IV
COMPARISON OF OKLAHOMA FARMERS' 1ST CHOICE FOR
SOURCE OF AGRICULTURAL INFORMATION

| | Rank Order | Frequency | Percent |
|-------------|---|-----------|---------|
| | 1=top source for agricultural information | (N=170) | |
| Magazines | 1 | 128 | 75 |
| Newspapers | 2 | 16 | 9 |
| Television | 3 | 13 | 8 |
| Radio | 4 | 12 | 7 |
| No Response | - | 1 | 1 |
| Total | | 170 | 100% |

Simple chi square analysis found no significant differences between television, newspaper and radio as sources of agricultural information. Simple chi square analysis did find a genuine difference between magazines and television, newspaper and radio as agricultural information sources. According to Table IV, 75 percent of the farmers

in the study received their agricultural information from magazines, 9 percent identified newspapers, and 8 percent chose television and 7 percent listed radio.

How do Oklahoma farmers prefer to receive their information? Table V illustrates farmers 1st preference for receiving information about agricultural safety and health.

TABLE V
OKLAHOMA FARMERS' 1ST PREFERENCE FOR AGRICULTURAL
SAFETY AND HEALTH INFORMATION

| | Rank Order | Frequency | Percent |
|-------------|--|-----------|---------|
| | 1=top 1st choice for agricultural safety & health information | (N=170) | |
| Magazines | 1 | 92 | 54 |
| Videos | 2 | 30 | 18 |
| Television | 3 | 26 | 15 |
| Newspapers | 4 | 10 | 6 |
| Radio | 5 | 9 | 5 |
| No Response | - | 3 | 2 |
| Total | | 170 | 100% |

Simple chi square analysis showed that overall, there is a genuine difference in media sources for safety and health information. According to simple chi square analysis, there is no difference between television and radio and between newspaper and radio. A genuine difference was found between television and newspapers, magazines and television, magazines and newspapers, magazines and radio, and magazines and video.

Table V illustrates that 54 percent of the farmers who participated in the survey prefer to receive agricultural safety and health information from magazines, 18 percent of the farmers prefer videos, followed by television (15 percent), newspapers (6 percent) and radio (5 percent).

Table VI illustrates the number of times per week farmers watch the Oklahoma State University produced television program SUNUP.

TABLE VI
NUMBER OF TIMES PER WEEK OKLAHOMA
FARMERS WATCH SUNUP

| Times Per Week | Frequency (N=170) | Percent |
|-------------------------------|----------------------|---------|
| Never | 91 | 54 |
| More than 2 times per week | 26 | 15 |
| Once a week | 25 | 15 |
| Everyday | 14 | 8 |
| No response | 14 | 8 |
| Total | 170 | 100% |

Simple chi square analysis showed there is a genuine difference in the number of farmers who never watch the program SUNUP and those who watch more than once a week. More than half of the participants (54 percent) said they "never" watch the program. Just over 15 percent watch SUNUP

more than twice-a-week; 15 percent also watch the program once-a-week; and 8 percent watch the agriculture-oriented program everyday.

Table VII shows what farmers identified as their favorite part of the SUNUP program from the following choices: marketwatch, agricultural news, safety and health reports, and other.

TABLE VII
FARMERS' FAVORITE SUNUP NEWS TOPIC

| Topic area | Frequency (N=170) | Percent |
|-----------------------|----------------------|---------|
| Marketwatch | 38 | 22 |
| Agricultural News | 29 | 17 |
| Other (Cattle,Export) | 3 | 2 |
| Safety/Health Reports | 1 | 1 |
| No Reponse | 99 | 58 |
| Total | 170 | 100% |

According to simple chi square analysis, there was no genuine difference found between the top two choices for farmers' favorite SUNUP news topic, marketwatch and agricultural news. Of the farmers involved in the study, 58 percent chose not to respond to this question. Of those who did, however, 22 percent listed the marketwatch feature as their favorite part of the program, 17 percent preferred agricultural news while 1 percent identified safety and health reports. Of the farmers who participated, 2 percent listed other areas such as: export discussions & cattle. One farmer responded that he doesn't receive the program at all.

Table VIII shows responses to the survey question which asked farmers to give their ideas for improving the SUNUP program.

TABLE VIII
FARMERS' SUGGESTED IMPROVEMENTS FOR SUNUP

| Topic area | Frequency of response | Percentage |
|---|--------------------------|------------|
| Add more agricultural news | 4 | 10 |
| Increase market analysis | 4 | 10 |
| Add more cattle news | 3 | 7 |
| Add more info on fruits and vegetables | 2 | 5 |

TABLE VIII (Continued)

Farmers' Suggested Improvements for SUNUP.

| Topic area | Frequency of response | Percentage |
|--|--------------------------|------------|
| Add more news on Farm communities | 2 | 5 |
| Add weather information | 2 | 5 |
| Add more sheep information | 2 | 5 |
| Increase crop production news & information | 2 | 5 |
| Add marketing news on cattle and crops | 2 | 5 |
| Add more news on agricultural news & information | 2 | 5 |
| Add information about legal aspects & agriculture | 2 | 5 |
| Increase information on environmental & policy issues | 2 | 5 |
| Add more forestry news | 2 | 5 |
| Program should air later | 2 | 5 |
| Advertise sales | 1 | 2 |
| Program should be longer | 1 | 2 |
| More news on aqua-culture | 1 | 2 |

TABLE VIII (Continued)

Farmers' Suggested Improvements for SUNUP.

| Topic area | Frequency of response | Percentage |
|---|--------------------------|------------|
| Continue program as is | 1 | 2 |
| Need new ideas | 1 | 2 |
| Increase information on field demonstrations | 1 | 2 |
| Increase information on herbicides | 1 | 2 |
| Add more gardening news | 1 | 2 |
| Total | 41 | 98% |

As Table VIII illustrates, this fill-in the blank question gave participants a chance to give their suggestions on issues of interest. The answers ranged from sheep, to agricultural research and weather forecasting. One farmer explained that he wanted an unbiased opinion on the show. He said, "SUNUP should give the facts and not just be a talk show." Another farmer suggested the show use a market analyst for market predictions. Others suggested

airing the program later, possibly from 12:30 until 1:00 p.m. when farmers are at home for lunch. One farmer watches SUNUP on tape because the southern part of McCurtain county in Southeastern Oklahoma does not receive the program. Another farmer was interested in 3 to 5 day weather forecasts.

Table IX identifies farmers' interest, by topic area, for receiving information from the mass media.

TABLE IX
FARMERS' INTEREST, BY TOPIC AREA, IN RECEIVING
INFORMATION FROM MASS MEDIA

| Topic area | Frequency | Percent |
|------------------|-----------|---------|
| Farm Chemicals | 102 | 60 |
| Farm Machinery | 88 | 52 |
| Animal Handling | 49 | 29 |
| Children on Farm | 47 | 28 |
| Sun Exposure | 41 | 24 |
| Noise Exposure | 41 | 24 |
| Other | 4 | 2 |
| Total | 372 | 219% |

Note: Farmers could choose more than one topic area.

As shown in Table IX, farmers were asked to identify the safety areas they would like to receive more information from the mass media. Participants could choose more than one topic, so the total adds to more than 100 percent. The safety area receiving the most interest was "farm chemicals" with 60 percent of the participants indicating they would like to receive more information on this topic from the mass media. Chemicals were followed closely by "farm machinery" at 52 percent; 29 percent of the farmers were interested in receiving information about "animal handling" while 28 percent were interested in "children on the farm." In addition to the choices given, falls, all-terrain vehicles, the elderly and respiratory hazards were also listed.

Table X includes the participants responses regarding preference for receiving the safety information they identified from the mass media.

TABLE X
OKLAHOMA FARMERS' MEDIA PREFERENCE FOR
RECEIVING SAFETY INFORMATION

| | Rank Order | Frequency | Percent |
|------------|--------------|-----------|---------|
| | 1=Top choice | | |
| Magazines | 1 | 99 | 58 |
| Television | 2 | 82 | 48 |
| Videos | 3 | 57 | 34 |
| Newspapers | 4 | 35 | 21 |
| Radio | 5 | 14 | 8 |
| Other | 6 | 4 | 2 |
| Total | | 291 | 171% |

Note: Farmers could choose more than one media source.

Table X shows how participants would like to receive the information they identified from the mass media. Farmers could choose more than one answer, so the total adds to more than 100 percent. Simple chi square analysis showed a genuine difference overall between the various media sources. The difference between magazines and television, however, was not significant according to simple chi square analysis. Of those involved in the study, 58 percent responded they would prefer to receive the information from

magazines, 48 percent preferred television; 34 percent listed videos; 21 percent identified newspapers and 8 percent of the farmers wanted to receive the information via the radio.

In Table XI, the responses are listed regarding whether or not the family had a VCR.

TABLE XI
WHETHER OKLAHOMA FARM FAMILIES HAVE
A VCR OR NOT

| | Frequency | Percent |
|----------------|-----------|---------|
| Have VCR | 158 | 93 |
| Don't have VCR | 12 | 7 |
| Total | 170 | 100% |

As Table XI shows, participants were asked whether or not they had a video cassette recorder (VCR). By a large margin, 93 percent of the farmers questioned had a VCR and 7 percent did not have a VCR.

As illustrated in Table XII, the final question on the questionnaire (#11) asked participants if they would be

interested in receiving more safety and health information from the mass media.

TABLE XII
FARMERS' INTEREST IN RECEIVING MORE SAFETY
INFORMATION FROM MASS MEDIA

| | Frequency | Percent |
|---|-----------|---------|
| Want more safety information from the media | 151 | 89 |
| Do not want more safety information from the media | 15 | 9 |
| No Response | 4 | 2 |
| Total | 170 | 100% |

According the findings of the study, 89 percent of the farmers answered "yes" -- that they would like to receive more farm safety information from the media; 9 percent said they would not like to receive safety information from the media and 2 percent did not respond to the question.

The respondents were also questioned about whether or not they or the members of their immediate family had ever

had any first aid training. Table XIII illustrates these results.

TABLE XIII
COMPARISON OF OKLAHOMA FARMERS' OR THEIR
FAMILY MEMBERS PARTICIPATION IN
A FIRST AID TRAINING COURSE

| | Frequency | Percentage |
|------------------------|-----------|------------|
| Had first aid training | 111 | 65 |
| No first aid training | 56 | 33 |
| No reponse | 3 | 2 |
| Total | 170 | 100% |

Of the farmers participating in the study, 65 percent answered that they or members of their family had a course in first aid training and 33 percent responded that they or their family members had not received any first aid training. Another 2 percent of the farmers did not answer to the question.

Survey of Extension
Agricultural Engineering Departments

A questionnaire was sent to the fifty-one Departments of Extension Agricultural Engineering at land-grant universities throughout the United States and Puerto Rico. 45 out of 51 institutions responded to the survey and completed the questionnaire for a response rate of 88 percent.

Of those who participated in the survey, 14 responded that their programs received an average of \$18,700 in state funding, 30 engineering departments received an average of \$18,100 and 22 departments reported they receive an average of \$87,100 in grant funding. Two of the departments reported they get an average of \$6500 from other sources. Some departments reported more than one source of income.

The average number of full time equivalents (FTE) involved in communicating safety and health educational information was 1.167 with some departments reporting no FTEs. The largest number of FTEs reported by a single department was 3.5.

The questionnaire was designed to identify the various methods used by the departments to communicate agricultural safety and health information to the farming community.

Like the last section of this chapter, the results of each question on the survey instrument will be explained in narrative and illustration form.

The first question, as Table XIV shows, asked participants to rank the audiences they target with agricultural safety and health information in order of importance.

TABLE XIV
COMPARISON OF AGRICULTURAL ENGINEERS' PRIMARY
AUDIENCES FOR SAFETY AND HEALTH INFORMATION
- 1ST CHOICE

| | Rank Order | Frequency | Percent |
|------------|------------|-----------|---------|
| Farmers | 1 | 30 | 67 |
| Educators | 2 | 5 | 11 |
| Youth | 3 | 4 | 9 |
| Other | 3 | 4 | 9 |
| No Reponse | 4 | 2 | 5 |
| Total | | 45 | 100% |

Simple chi square analysis showed a genuine difference between farmers and the other choices for primary audiences.

According to simple chi square analysis there was no significant difference, however, between the choices of educators and youth as primary audiences for safety and health information. Of those participating in the study, 67 percent of the Agricultural Engineering professionals identified farmers as their primary audience for safety and health information; 11 percent chose educators as their primary audience and 9 percent listed youth. Another 9 percent checked the "other" category as their primary audience for safety and health information. Health professionals, women, state agencies and extension agents were listed as "other" important primary audiences.

As shown in Table XV, question 2 asked the agricultural engineering respondents to identify the various methods they use to communicate agricultural safety and health information.

TABLE XV
VARIOUS METHODS USED TO COMMUNICATE
SAFETY AND HEALTH INFORMATION

| | Frequency | Percent |
|-------------|-----------|---------|
| Fact Sheet | 41 | 91 |
| Newspaper | 37 | 82 |
| Workshops | 37 | 82 |
| Videos | 36 | 80 |
| Newsletters | 34 | 76 |
| Radio | 32 | 71 |
| Television | 28 | 62 |
| Brochures | 24 | 53 |
| Magazines | 22 | 49 |
| Total | 291 | 646% |

Note: Respondents could list more than one method.

Of the agricultural engineering faculty members who responded, 91 percent of them use fact sheets to communicate safety information; 82 percent identified newspapers and workshops while 80 percent chose videos and 76 percent listed newsletters as methods they use to communicate information. Radio was listed by 71 percent of the population and 62 percent used television to communicate

their message. Brochures were used by 53 percent and 49 percent said they used magazines. Participants could choose more than one communication method, so the total adds to more than 100 percent.

Question 3, as Table XVI shows, asked respondents to rank, in order of their success, the media or methods of communicating agricultural safety and health information.

TABLE XVI
 MEDIA METHOD AGRICULTURAL ENGINEERS RANKED
 1ST FOR SUCCESSFULLY COMMUNICATING
 SAFETY AND HEALTH INFORMATION

| | Rank Order 1= Top choice | Frequency (N=45) | Percent |
|-------------|-----------------------------|---------------------|---------|
| Workshops | 1 | 23 | 51 |
| Videos | 2 | 8 | 18 |
| Newsletters | 3 | 5 | 11 |
| Radio | 4 | 3 | 7 |
| Fact Sheets | 4 | 3 | 7 |
| Newspaper | 5 | 2 | 4 |
| Television | 6 | 1 | 2 |
| Total | | 45 | 100% |

Simple chi square analysis identified a genuine difference between the media methods overall. However, simple chi square analysis found no significant difference between video and newsletters and between newspaper and television as the methods ranked first for successfully communicating safety and health information.

As shown in Table XVI, workshops were identified as the best medium to communicate information by 51 percent of the agricultural engineers. Videos were listed by 18 percent,

11 percent identified newsletters, 7 percent picked radio and fact sheets, 4 percent chose newspaper and 2 percent listed television as their most successful medium for communicating information.

In Table XVII, agricultural engineers ranked their 2nd most successful media form for communicating safety and health information.

TABLE XVII
METHOD AGRICULTURAL ENGINEERS RANKED
2ND FOR SUCCESS IN COMMUNICATING
SAFETY AND HEALTH INFORMATION

| | Rank Order | Frequency | Percent |
|-------------|------------------|-----------|---------|
| | 1=Top 2nd choice | (N=45) | |
| Fact sheets | 1 | 9 | 20 |
| Videos | 1 | 9 | 20 |
| Newspaper | 2 | 7 | 16 |
| Workshops | 3 | 5 | 11 |
| Newsletter | 4 | 4 | 9 |
| Television | 5 | 3 | 7 |
| Magazines | 6 | 2 | 4 |
| Brochures | 6 | 2 | 4 |
| Radio | 7 | 1 | 2 |
| No Reponse | 5 | 3 | 7 |
| Total | | 45 | 100% |

Simple chi square analysis identified no genuine difference between the various communication methods. As table XVII shows, 20 percent of the survey population identified fact sheets and videos as their 2nd most successful medium for communicating safety and health

information; 16 percent listed newspaper, 11 percent picked workshops, 9 percent identified newsletters, 7 percent chose television, 4 percent chose magazines and brochures and 2 percent picked radio as their 2nd most successful method of information dissemination. Another 7 percent of the participants did not respond to the question.

As shown in Table XVIII, respondents were asked to rank the methods used to evaluate the effectiveness of agricultural safety and health materials.

TABLE XVIII
 AGRICULTURAL ENGINEERS 1ST CHOICE OF
 MOST EFFECTIVE METHOD FOR EVALUATING
 SAFETY AND HEALTH MATERIALS

| | Rank Order 1=1st choice | Frequency (N=45) | Percent |
|---|----------------------------|---------------------|---------|
| Positive Client Reponse | 1 | 20 | 44 |
| # Clients Served | 3 | 8 | 18 |
| # Requests for Materials | 4 | 4 | 9 |
| Peer Review | 5 | 3 | 7 |
| Awards | 6 | 1 | 2 |
| Other (surveys, behavioral change, reports, pre/post tests) | 2 | 9 | 20 |
| Total | | 45 | 100% |

According to simple chi square analysis, a genuine difference was found between the positive client response and the other methods as the first choice for evaluating safety and health materials. Simple chi square analysis showed no difference among the other methods of evaluation.

The majority of the agricultural engineers, 44 percent, listed "positive reponse from clients" as their 1st choice

for the most effective method used to evaluate health and safety materials. Another 20 percent chose "other" and listed direct surveys, behavioral change, accident reports, pre & post tests as the most effective way to evaluate materials. The "number of clients served" was identified by 18 percent of the agricultural engineers, nine percent chose the "number of requests for materials", seven percent picked "peer review" and two percent chose "awards" as the most effective evaluation methods.

In Table XIX, the agricultural engineers second choice for effective evaluation methods is shown.

TABLE XIX
AGRICULTURAL ENGINEERS 2ND CHOICE FOR
MOST EFFECTIVE METHOD TO EVALUATE
SAFETY AND HEALTH MATERIALS

| | Rank Order 1= top 2nd choice | Frequency (N=45) | Percent |
|---|---------------------------------|---------------------|---------|
| Positive Client Reponse | 1 | 14 | 31 |
| # Clients Served | 2 | 12 | 27 |
| # Requests for Materials | 3 | 10 | 22 |
| Peer Review | 4 | 4 | 9 |
| Awards | 5 | 2 | 4 |
| No Reponse | 5 | 2 | 4 |
| Other (surveys, behavioral change, reports, pre/post tests) | 6 | 1 | 2 |
| Total | | 45 | 100% |

According to simple chi square analysis, there is a genuine difference between the various evaluation methods for safety and health materials. In comparing the survey

respondents 2nd choice of the most effective method used to evaluate health and safety materials, 31 percent of the agricultural engineers chose 'positive response from clients', 27 percent picked 'number of clients served', 22 percent identified the 'number of requests for materials', nine percent chose 'peer review' and four percent listed 'awards' as the 2nd most effective method for evaluating safety information.

Table XX shows the responses for survey question 5 which asked agricultural engineers to choose one method of information dissemination they would like to increase. In other words, what they would like to do more of.

TABLE XX
THE METHODS OF INFORMATION DISSEMINATION
AGRICULTURAL ENGINEERS WOULD LIKE TO INCREASE

| | Frequency | Percent |
|-------------|-----------|---------|
| Workshops | 21 | 25 |
| Videos | 17 | 20 |
| Television | 10 | 12 |
| Fact Sheets | 9 | 11 |
| Newsletters | 8 | 10 |
| Radio | 5 | 6 |
| Newspaper | 5 | 6 |
| Brochures | 5 | 6 |
| Magazines | 3 | 4 |
| Total | 83 | 100% |

Note: In some cases, respondents listed more than one method.

Since some educators listed more than one method, this data will be listed in frequency and percentage. The majority of the engineers, 25 percent, listed workshops, 20 percent identified videos and 12 percent listed television as the methods of information dissemination they would like to increase. Fact sheets were identified by 11 percent of the respondents, 10 percent listed newsletters, 6 percent

checked radio, newspaper and brochures. Of the engineers who responded to this question, only 4 percent indicated they would like to increase their use of magazines to disseminate information.

Question 6, as illustrated in Table XXI, asked agricultural engineers to list the single most important improvement needed for their safety and health program.

TABLE XXI
THE SINGLE MOST IMPORTANT IMPROVEMENT
AGRICULTURAL ENGINEERS WOULD MAKE
TO THEIR COMMUNICATIONS PROGRAM
FOR SAFETY AND HEALTH

| Improvement | Frequency (N=44) | Percentage |
|--|---------------------|------------|
| More TV/Videos | 9 | 20 |
| More Workshops/Demonstrations | 4 | 9 |
| Train community leaders | 2 | 5 |
| Develop and disseminate materials | 2 | 5 |
| Hire full-time safety specialist | 2 | 5 |
| Develop and mail monthly newsletter | 2 | 5 |
| Develop packaged programs | 2 | 5 |
| Add more staff | 2 | 5 |
| Develop survey instrument for accidents | 2 | 5 |
| Improve video library | 1 | 2 |

TABLE XXI (Continued)

| Improvement | Frequency | Percentage |
|--|-----------|------------|
| Youth hazard awareness | 1 | 2 |
| Develop extension brochures on safety topics | 1 | 2 |
| CPR & emergency training | 1 | 2 |
| Improve data gathering | 1 | 2 |
| Demonstrate safety equip. during evening meetings | 1 | 2 |
| Develop method to qualify impact of safety specialist | 1 | 2 |
| Hire Spanish speaking educator | 1 | 2 |
| Use extension telecommunications system | 1 | 2 |
| Resources for effective evaluation | 1 | 2 |
| Involve wives & children in prevention | 1 | 2 |
| Prepare and furnish county agents with safety materials | 1 | 2 |
| Attend meetings like National Safety Council | 1 | 2 |
| Stronger methods of unobtrusive evaluation | 1 | 2 |

TABLE XXI (Continued)

| Improvement | Frequency | Percentage |
|--|-----------|------------|
| Interactive simulation at county fairs | 1 | 2 |
| More safety visits to clients | 1 | 2 |
| Increase professionalism of materials | 1 | 2 |
| No Reponse | 1 | 2 |
| Total | 44 | 100 |

Of the 45 participants in the survey, 44 responded to this fill-in-the-blank question. As Table XXI shows, a number of answers were given including: produce more television and video materials (20 percent), hold more workshops and demonstrations (nine percent), train community leaders (two percent), develop and disseminate teaching aids (two percent), hire a full-time safety specialist (two percent), develop and mail a monthly newsletter (two percent), develop a survey instrument for agricultural accidents (two percent), and coordinate CPR and emergency training (one percent).

As shown in Table XXII, engineers identified hazardous areas in order of importance to their clients.

TABLE XXII
THE HAZARDOUS AREAS IN ORDER
OF IMPORTANCE TO CLIENTS

| Topic Area | Rank 1=most important | Frequency | Percentage |
|------------------|--------------------------|-----------|------------|
| Machinery | 1 | 32 | 73 |
| Chemicals | 2 | 4 | 9 |
| Animal Handling | 3 | 3 | 7 |
| Children on Farm | 3 | 3 | 7 |
| Other | 4 | 2 | 4 |
| Total | | 44 | 100 |

As shown in Table XXII, question 7 asked respondents to rank hazardous areas in order of importance to their clients. Of the engineers involved in the study, 71 percent chose machinery as their 1st and most important hazardous area; nine percent identified chemicals, seven percent chose animal handling, and seven percent picked children on the farm as their 1st and most hazardous area.

Areas listed under the "other" category included elderly, falls, all-terrain vehicles, and respiratory hazards.

Table XXIII identifies the responses given by agricultural engineers when asked whether their department could reach more of its clientele by communicating through the mass media.

TABLE XXIII
COULD YOUR DEPARTMENT REACH MORE
CLIENTELE THROUGH MASS MEDIA?

| | Frequency | Percentage |
|--|-----------|------------|
| Yes, could reach more clients through mass media | 33 | 73 |
| No, would not reach more clients through mass media | 8 | 18 |
| No Response | 4 | 9 |
| Total | 45 | 100 |

Survey participants were also asked why or why not they thought their department could reach more of its clientele

by communicating through the mass media. This open-ended question gave respondents the opportunity to give their opinion about the use of mass media as a communication method for safety and health information. A complete listing of the responses is included in Appendix C.

CHAPTER V
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

A two-part study was conducted during the summer and fall of 1992 to determine how Oklahoma farmers prefer to receive agricultural health and safety information and how extension agricultural engineering departments across the country are communicating this information.

Examining these two segments of the agricultural industry -- farmers and agricultural educators -- should lead to a better understanding of how to effectively communicate safety and health information.

Farming and the Field of Danger

Farming is often depicted as a field of dreams -- natural, safe and serene. But according to the National Safety Council, agriculture is one of the nation's most dangerous industries (1991). The National Safety Council (1991) estimated there were 42 deaths per 100,000 agricultural workers in 1991 compared with 11 deaths per

100,000 workers in other occupations. Agricultural workers are five times more likely to be killed on the job than workers in all industries combined.

In reality, the field of dreams could be called the field of danger. The tragic toll of farm injuries is well documented. More than 1,400 agricultural workers are killed each year and approximately 140,000 non-fatal injuries result in temporary or permanent disability (National Safety Council, 1991).

The On-Site Farm Survey.

An on-site survey was conducted from June - August 1992 of 170 farmers throughout Oklahoma. Farmers were interviewed about how they currently receive and prefer to receive information about general news, agriculture, safety and health topics.

In October 1992, a second questionnaire was developed and distributed to extension agricultural engineering departments throughout the country. The questionnaire asked the departments to identify methods used to communicate agricultural safety and health information to farmers and their families.

Research Objectives and Responses

This study asked a number of research questions and produced the following results:

1. From which mass media sources do Oklahoma farmers receive most of their general news, agricultural, safety and health information?

According to the results of the survey, approximately half of the farmers in the survey identified television as their primary mass media source for general news and information. A quarter of the farmers listed magazines as their main source for news and information followed by newspapers and radio.

More farmers (43 percent) identified magazines as their primary source for safety and health information than any other form of mass media. Television was listed as the primary source for health and safety information by 38 percent of the farmers followed by newspapers and radio.

The findings showed that three-quarters of the farmers receive their agricultural information from magazines, followed by newspapers (9 percent), television (8 percent) and radio (7 percent).

2. From which mass media sources do Oklahoma farmers prefer to receive information about agricultural safety and health?

According to the findings, more than half of the Oklahoma farmers involved in the survey prefer to receive general information about agricultural safety and health from magazines. Just under 20 percent of the farmers prefer to receive this information from videos, followed by television, newspapers and radio.

The farmers in the survey were also asked to identify the safety areas about which they would like to receive more information from the mass media. Participants could choose more than one topic. Farm chemicals were identified by more than half of the farmers as a safety area they would like to receive more information from the mass media. "Farm machinery" was also identified by more than half of the farmers followed by "animal handling" and "children on the farm."

While farmers identified chemicals as the safety area they would like to receive more information about, agricultural engineers participating in the study identified machinery as the safety area most important to their clients.

The farmers in the survey were asked how they would like to receive the information they identified from the mass media. Respondents could choose more than one source of media. More than half of the participants responded they would prefer to receive the information from magazines. Almost half of the farmers preferred television; one third of the farmers listed videos; under a quarter of the respondents preferred newspapers and 8 percent wanted to receive the information via the radio.

The questionnaire also asked participants if they would be interested in receiving more safety and health information from the mass media. Approximately 90 percent of the farmers answered yes -- they would like to receive

more agricultural safety and health information from the media.

3. What are the attitudes of Oklahoma farmers regarding the OSU Extension television program "SUNUP?"

According to the survey findings, more than half of the farmers never watch the program SUNUP. Approximately 15 percent watch the program more than twice a week, 15 percent watch the program once a week, while 8 percent watch the program everyday.

The questionnaire asked farmers to rate their favorite part of the SUNUP program from the following choices: marketwatch, agricultural news, safety and health reports, and other. More than half of the farmers did not respond to this question. Of those who did, however, 22 percent listed the marketwatch feature as their favorite part of the program. Agricultural news followed next in popularity with 17 percent while approximately 1 percent listed safety and health reports. Other areas listed included: export discussions and cattle. One farmer responded that he does not receive the program SUNUP on his television.

The questionnaire also asked farmers for their suggestions for improvements to the SUNUP television program. This fill-in-the-blank question gave participants a chance to give their opinions on issues of interest. The answers ranged from sheep, to agricultural research and weather forecasting. One farmer explained that he wanted an

unbiased opinion on the show. He said, "SUNUP should give the facts and not just be a talk show." Another farmer suggested the show use a market analyst for market predictions. Others suggested airing the program later, possibly from 12:30 until 1:00 p.m. when farmers are at home for lunch. One farmer watches SUNUP on tape because the southern part of McCurtain county in Southeastern Oklahoma does not receive the program. Another farmer was interested in 3 to 5 day weather forecasts.

4. According to the extension agricultural engineering departments across the country, which mass media methods are utilized to communicate safety and health information.

Agricultural Engineering respondents were asked to identify the various methods they use to communicate agricultural safety and health information. Participants could list more than one method. More than 90 percent use fact sheets; more than 80 percent identified newspapers, videos and workshops while 76 percent listed newsletters as methods they use to communicate information. Radio was listed by more than 70 percent of the survey population and more than 60 percent use television. Brochures and magazines were identified by approximately half of the respondents.

More than half of the survey participants picked workshops as the best method of communicating information

followed by videos, newsletters, radio, fact sheets, newspapers and television.

When asked what methods of dissemination they would like to increase, almost half of the engineers listed workshops, more than a third identified videos and almost a quarter listed television. Approximately 20 percent identified fact sheets, 18 percent listed newsletters, 11% checked radio, followed by newspaper, brochures, and magazines.

5. Given adequate resources, how would agricultural engineering departments improve their existing safety and health program?

The questionnaire asked agricultural engineers to list the single most important improvement needed for their safety and health program. While producing more television and video programs topped the list, there were a number of answers given including: hold more workshops and demonstrations, train community leaders, develop and disseminate teaching aids, hire a full-time safety specialist, develop and mail a monthly newsletter, develop a survey instrument for agricultural accidents, and coordinate CPR and emergency training.

Conclusions

Because, in general, Oklahoma farmers rely on television as their primary source for news and information educators should utilize this form of media to communicate to the farming community.

Health educators should also recognize magazines as effective mass media methods for communicating health and safety information to the rural population. This study showed that Oklahoma farmers identified magazines and television, respectively, as their primary sources for health and safety information.

In general, the Oklahoma farmers surveyed receive their agricultural information from magazines. Agricultural engineers should recognize this form of mass media as an important communication source for farmers.

Since farmers identified magazines, television and videos as important sources for receiving agricultural safety and health information, educators and health communicators should target their messages to these media.

An overwhelming majority of Oklahoma farmers are interested in receiving more agricultural safety and health information from the mass media. Communicators should develop and implement health education programs designed for use by the mass media. Mass media outlets should recognize the farming community as an important audience for their news and information messages.

More than half of the farmers did not respond to the question about whether or not they watch the television program SUNUP. This could be because they were not aware of the program. Oklahoma State University should recognize the importance of rural residents and develop a marketing plan to promote SUNUP. Many farmers gave suggestions for improving the SUNUP program and these ideas should be considered by the appropriate Oklahoma State University faculty and staff.

Departments of Agricultural Engineering should be aware of the mass media preferences and the areas of interest of their farming audience. Since Oklahoma farmers prefer to receive agricultural and health and safety information from magazines and television, agricultural engineers should utilize magazines and television to communicate agricultural health and safety information.

Educators should also strive to design health and safety programs with broad-based appeal to encourage diffusion by the mass media.

Recommendations

Health Educators

A. Health educators should develop and implement health promotion programs in coordination with media and communication specialists.

B. Health educators should utilize the mass media to communicate news and information to their target population.

C. Health educators should increase their use of magazines as a method of communicating health-related news and information.

D. Health educators should increase their use of television as a method of communicating health-related news and information.

E. Health educators should increase their use of videos as a method of communicating health-related news and information.

F. More funding should be devoted to the production and development of effective health communication programs.

G. More research is needed in the area of health communications and media methods in order to reach the appropriate target population.

Agricultural Educators

A. Agricultural educators should develop and implement health and safety programs in coordination with health professionals and media/communication specialists.

B. Agricultural educators should conduct research to determine how their rural constituents prefer to receive information about agricultural safety and health.

C. Agricultural educators should utilize the mass media to communicate news and information to their target population.

D. Agricultural educators should increase their use of magazines as a method of communicating agricultural-related news and information.

E. Agricultural educators should increase their use of television as a method of communicating agricultural-related news and information.

F. Agricultural educators should increase their use of videos as a method of communicating agricultural-related news and information.

G. More funding should be devoted to the production and development of effective agricultural-related communication programs.

H. More research is needed to determine the communication preferences of the rural population.

I. While the farmers in our study identified chemicals as the safety area they would like to receive more information about, agricultural engineers identified machinery as the safety area most important to their clients. Agricultural engineers should conduct research to determine the actual needs and interests of the farmers in their area.

Oklahoma State University - Agricultural Communications

A. Market research should be conducted to determine the effectiveness of SUNUP in communicating to Oklahoma farmers, ranchers and their families.

B. A marketing/promotional plan should be developed and implemented for SUNUP.

The Mass Media

A. The news media should recognize the farming population as an important audience.

B. The news media should communicate more information about health and safety issues.

C. Additional research is needed in the area of mass media and health communications.

Agricultural educators, health professionals and media specialists must work together to develop and implement effective communication programs. By coordinating our resources, we can promote agricultural safety and health and, together, turn the field of danger into a field of dreams.

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APPENDICES

APPENDIX A

ON SITE FARM QUESTIONNAIRE

ON-SITE FARM QUESTIONNAIRE

(Interviewer) I'd like to ask you a couple of questions about the media and where you get your information. We're trying to determine what role the various channels of mass communication play in spreading information about agricultural health and safety.

1. From which source do you receive most of your news & information? Please rank with 1 being your primary source and 4 the least used.

____Radio ____Television ____Newspapers ____Magazines

2. From which source do you receive the most information about health and safety? Please rank with 1 being your primary source and 4 the least used.

____Radio ____Television ____Newspapers ____Magazines

3. From which source do you receive the most information about agriculture? Please rank with 1 being your primary source and 4 the least used.

____Radio ____Television ____Newspapers ____Magazines

4. How do you prefer to receive information about agricultural health and safety? Please rank with 1 being your first preference and 5 your last.

____Radio ____Television ____Newspapers ____Magazines

____Videos

5. How often do you watch the television program SUNUP?

____Everyday ____More than twice a week ____Once a week

____Never

6. If you watch SUNUP, what is your favorite part of the show?

____Marketwatch ____Agricultural News

____Safety/Health reports _____Other

7. What would you like to see more of on SUNUP?

8. Which of the following safety areas would you like to receive more information from the mass media?

☐ Farm Machinery ☐ Farm Chemicals ☐ Sun Exposure

☐ Noise Exposure ☐ Animal Handling ☐ Children on farm

☐ Other

9. How would you like to receive this information?

☐ Radio ☐ Television ☐ Newspapers ☐ Magazines

☐ Videos ☐ Other

10. Does your family have a VCR? ☐ Yes ☐ No

11. Would you like to receive more information on farm safety and health from the media?

☐ Yes ☐ No

End of Questionnaire

APPENDIX B

AGRICULTURAL ENGINEER QUESTIONNAIRE
WITH COVER LETTER

October 10, 1992

Dear Colleague:

The attached questionnaire regarding communicating agricultural safety and health information is part of my Master's thesis, which I am pursuing at Oklahoma State University. The results of the study will be used to examine the methods utilized to communicate safety and health information.

In real life, I direct an educational safety and health program for the Department of Agricultural Engineering at Oklahoma State University. The program is funded by The National Institute for Occupational Safety and Health. My study is an integral part of the project.

Please complete the enclosed questionnaire and return it to me prior to October 26th, 1992. A pre-addressed envelope is included for your convenience. The information from the questionnaire will be kept confidential. The number on the questionnaire is for tracking purposes only and will be removed once the form is returned.

Thanks for your assistance in this research. I hope the results of the study will aid the Cooperative Extension Service and Departments of Agricultural Engineering in communicating safety and health information to their communities.

If you have any questions, please call me at (405) 744-5427 or write. My advisor is Dr. C.A. Fleming and he can be reached at (405) 744-8270 should you have any questions.

Sincerely,

Judy Oskam

Enclosure

AGRICULTURAL HEALTH AND SAFETY QUESTIONNAIRE

Your answers to this survey are confidential. The number in the corner of the page will be used for tracking purposes only.

Please return completed form to: Judy Oskam
by October 26, 1992 214 Ag Hall
 Dept. of Ag Engineering
 Oklahoma State University
 Stillwater, OK. 74078

1. Please rank the following audiences you target with information about agricultural safety and health. Please rank in order of importance with 1 being the primary audience or most important and 5 being least important.

___ Farmers ___ Ranchers ___ Educators ___ Youth

___ Agriculture-related businesses & their workers ___ Other _____

2. Please check the various methods you use to communicate this information. Check all that apply.

| | | |
|-----------------|----------------|----------------|
| ___ Fact Sheets | ___ Video | ___ Television |
| ___ Radio | ___ Newsletter | ___ Magazines |
| ___ Newspaper | ___ Brochures | ___ Workshops |

3. Please rank the following methods in order of your success in communicating agricultural safety and health information, with 1 being the most successful and 5 the least successful.

| | | |
|-----------------|----------------|----------------|
| ___ Fact Sheets | ___ Video | ___ Television |
| ___ Radio | ___ Newsletter | ___ Magazines |
| ___ Newspaper | ___ Brochures | ___ Workshops |

4. Please rank the methods used to evaluate the effectiveness of your institution's agricultural safety and health materials with 1 being the most effective and 5 the least effective.

| | |
|------------------------------------|------------------------|
| ___ Number of clients served | ___ Peer review |
| ___ Positive response from clients | ___ Number of requests |
| ___ Awards and commendations | ___ Other _____ |

Please turn the page.

5. If you could increase your use of one of these methods of information dissemination, which would you choose? That is, what would you like to do more of?

| | | |
|--------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> Fact Sheets | <input type="checkbox"/> Video | <input type="checkbox"/> Television |
| <input type="checkbox"/> Radio | <input type="checkbox"/> Newsletter | <input type="checkbox"/> Magazines |
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Brochures | <input type="checkbox"/> Workshops |

6. If given the resources, what single most important improvement would you make to your communications program for safety and health?

7. Please rank the following hazardous areas in order of importance to your clients with 1 being most important and 5 the least important.

| | | |
|---|---|--|
| <input type="checkbox"/> Machinery | <input type="checkbox"/> Chemicals | <input type="checkbox"/> Animal Handling |
| <input type="checkbox"/> Children on farm | <input type="checkbox"/> Grain handling/storage | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Electricity | <input type="checkbox"/> Building construction | |

8. Do you think your department could reach more of its clientele by communicating through the mass media?

☐ Yes ☐ No

Why or why not?

Demographic Questions

In your department, how many Full Time Equivalents are involved in communicating safety and health educational information? _____

Please provide the amount of funds your department receives for safety and health education (excluding salaries).

Amount

Source

| | |
|-------|------------------------|
| _____ | State Appropriations |
| _____ | Federal Appropriations |
| _____ | Grants |
| _____ | Other _____ |

End of Questionnaire - Thanks for your assistance!

APPENDIX C

RESPONSES TO QUESTION 8 OF AGRICULTURAL ENGINEERING SURVEY

Question 8 - part 2

Do you think your department could reach more of its clientele by communicating through the mass media? Why or why not?

Listed below are the various responses given when the answer was YES.

1. Could certainly reach more - not sure it would do much good, however.
2. Our clientele watch TV and read newspapers daily. Local rural communities usually have local newspapers that are widely read at that level.
3. Most people will read a safety article and hopefully some will heed the message.
4. Much attention needs to be given to how the material is presented. (I have included an approach that has proven beneficial)
5. More contacts, more exposure.
6. I believe they could and can be reached but the level of effectiveness is most likely very low through this means based on safety research literature.
7. Time constraints limit amount done.
8. Media serves as an awareness tool. We need to do a better job of preparing the media to ask the right questions, do their research, take photos that don't show unsafe acts. To change behavior it takes a long term, high exposure programming effort.
9. Exposure to all parts of our large state would occur through mass media.
10. Reach them, yes, but change their behavior - maybe.
11. We have an urbanizing state.
12. Effective to use existing network and partner.
13. Videos, television, radio and magazines are all widely read. I don't know how effective they are.
14. Safety manufacturers need to permeate the masses, not just the farm operators.
15. We use the mass media, but could do more.

16. We don't spend enough time on safety programming now.
17. More of the agricultural community would be aware of safety concerns.
18. Reach more, but not more effectively. Awareness is about all you can do with mass media.
19. Because it is the media for the masses.
20. Mass media is an effective method.
21. We have more of a rural safety problem than farm employees. Fatalities occur to the part-time farmer or retiree. firewood cutters, etc. 30 second public service announcements that make a strong emotional appeal leaves an impression on wives and children. These serve as constant reminders to the father, mother or sibling who make take chances otherwise.
22. TV would have more impact than written materials.
23. Especially effective through TV and videos.
24. More contact for a limited budget. If time permitted, additional radio, television and news releases could be produced.
25. If done correctly in modern format.
26. In some parts of the state, but agriculture in New Hampshire is very dispersed into non-farming population areas.
27. The more mass media coverage we attempt, the more we get. We've not taken advantage of television, radio; no doubt that represents missed clientele. Agricultural clientele mostly rural/remote.

Do you think your department could reach more of its clientele by communicating through the mass media? Why or why not?

Listed below are the various responses given when the answer was NO or NOT SURE.

1. Newspapers in mass aren't agricultural oriented.
2. There is already an overload of mass media communication. Mass media can't be specific enough.
3. Farmers indicate that they do not rely on mass media for information. (Wisconsin)

4. Don't know - this has always been part of our program.
We know it works.
5. Too much mass information overload already. But I would try it.
6. Not specific enough.
7. New Jersey is too urban. Growers always ask specialists before trying anything new.
8. Not sure.
9. People may be reached but limited amount of change in attitude and practice occurs.

APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL

FOR ON-SITE FARM SURVEY

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

118

Proposal Title: OSU-NIOSH PROJECT

Principal Investigator: JAMES P. KEY/ ANN GIBSON HORNE/ JUDY BARNES OSKAM

Date: 9-30-92 IRB # AG-93-005

This application has been reviewed by the IRB and

Processed as: Exempt ☒ Expedite ☐ Full Board Review ☐

Renewal or Continuation ☐

Approval Status Recommended by Reviewer(s):

Approved ☒

Deferred for Revision ☐

Approved with Provision ☐

Disapproved ☐

Approval status subject to review by full Institutional Review Board at
next meeting, 2nd and 4th Thursday of each month.

Comments, Modifications/Conditions for Approval or Reason for Deferral or
Disapproval:

Signature: Maria S. Tilley

Chair of Institutional Review Board

Date: 9-30-92

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL

FOR AGRICULTURAL ENGINEERING

DEPARTMENT SURVEY

**OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH**

120

Proposal Title: PROJECT SAFE

Principal Investigator: CHARLES FLEMING Ed.D/ JUDY OSKAM

Date: 9-5-92 IRB # AS-93-014

This application has been reviewed by the IRB and

Processed as: Exempt ☒ Expedite ☐ Full Board Review ☐

Renewal or Continuation ☐

Approval Status Recommended by Reviewer(s):

Approved ☒

Deferred for Revision ☐

Approved with Provision ☐

Disapproved ☐

Approval status subject to review by full Institutional Review Board at
next meeting, 2nd and 4th Thursday of each month.

Comments, Modifications/Conditions for Approval or Reason for Deferral or
Disapproval:

Signature: _____

Marvin L. Tilley
Chair of Institutional Review Board

Date: 10-6-92

VITA

Judith Barnes Oskam

Candidate for the Degree of

Master of Science

Thesis: A TWO PART STUDY OF AGRICULTURAL HEALTH AND SAFETY
COMMUNICATION THROUGH SELECTED MASS MEDIA

Major Field: Mass Communications

Biographical:

Personal Data: Born in Dallas, Texas, October 24, 1958,
the daughter of Joan and Alf Barnes. Married on
August 8, 1981 to Felix Geurt Oskam of The
Netherlands.

Education: Graduated from Conroe High School, Conroe,
Texas, in May 1976; received Bachelor of Arts
Degree in Speech with emphasis in
Radio/Television/Film in December, 1980 from the
University of North Texas; completed requirements
for the Master of Science degree at Oklahoma State
University in May, 1993.

Professional Experience: Television News Reporter,
KXII-TV, Ardmore, Oklahoma, January, 1981 to March
1982; Television News Reporter, KAMR-TV,
Amarillo, Texas, March, 1982 to March, 1984;
Assistant News Director and Public Affairs
Director, KTBC-TV, Austin, Texas, March, 1984 to
May, 1986; Director of News and Governmental
Relations Assistant, The University of Texas
System, Austin, Texas, June, 1986 to June, 1991;
Co-Principal Investigator and Project Director,
Department of Agricultural Engineering, Oklahoma
State University, June, 1991 to present.