Characteristics of a farm safety awareness program for youth: A regional Delphi study

by

Richard Wayne Steffen

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CHAPTER I.

INTRODUCTION

Many people consider the farm an idyllic place to raise children. Clean air, open spaces and the seeming remoteness to the inner city plagues of drugs, gangs and crime, lull farm families into a false sense of security. In reality, many farms are a myriad of hazards waiting for the next victim.

On any given day, many rural newspapers run articles reporting the death or injury of a person in a farm-related accident. These reports are so commonplace, they are often relegated to a small block of print buried in the later pages. This is indicative of the apathy most people have toward farm accidents. The number of these articles listing the age of the victim as being less than 16 years old is alarming.

While exact statistics are difficult to find, the numbers cited by Tevis and Finck (1989) seem typical. They place the number of children killed each year in farm related accidents at 300, with an additional 5,000 seriously injured. A similar number of fatalities was cited by Ingersoll (1989), but he placed the number of injuries at 23,500. Regardless of the exact numbers, as Tevis and Finck (1989, p. 18B) proclaim, "These statistics leave a black mark on Agriculture."

Even more disheartening are the accident rates for farm youth adjusted for the amount of time exposed to the hazards. When calculated in this way, children 5 - 14 accounted for 31.2 percent of the accidents in an Iowa study (Williams, 1983), 35.6 percent in a Cornell University study (Tevis & Finck, 1989) and 46 percent in an Indiana study (Field & Tormoehlen, 1982). In fact, this was the only age group with an accident rate significantly different than the other age groups in all three studies.

One would think, given these sobering statistics, that farm parents would be extremely cautious about allowing their children unsupervised access to all parts of the farm and to operate or be around machinery. According to a study by Successful Farming magazine (Tevis & Finck, 1989), this is not the case. They found that 95 percent of the parents allowed boys 7 to 9 years old to ride on a tractor with a parent, and 37 percent allowed 7- to 9-year-old children within 10 feet of rotating parts, even though the percentage of parents that consider these activities to be moderate to high risk were 30 and 69 percent respectively.

Several reasons are often cited as contributing to this inconsistency between perceptions and action. They include:

1. The proximity of the work place with the home.
2. Familiarity, by parents, with complicated pieces of equipment which leads to a lack of respect for the hazards they represent.

3. A desire to provide children with a strong work ethic.
4. The hostility of farmers toward the Occupational Safety and Health Administration or other government intervention.
5. The independent nature of farmers in general.

(Tevis & Finck, 1989; Ingersoll, 1989; Field & Tormoehlen, 1982; & Letts, 1989).

Whatever the reasons given for their actions, the fact remains that the economic and emotional loss that occurs when a child is a victim of a farm accident is catastrophic. As Field and Tormoehlen explained,

> "There are few losses, if any, that can result in a greater impact on a farm family or farm business. The trauma, emotional stress, and long-term guilt often associated with serious accidents involving children have disintegrated many families and destroyed many farm businesses" (1982).

Tevis and Finck (1989, p. 18B) quoted William Field of Purdue University, "The farm community will be embarrassed when the situation comes to light. No other industry tolerates children being killed and maimed."

A recent newspaper editorial in the Des Moines Register began to provide that light. In response to a crackdown on child-labor law violators, announced by U.S. Labor Secretary Elizabeth Dole, the editorial said,

> "Iowa has relatively small numbers of child-labor violations. That may be partly because a large segment of the state's major industry -- agriculture -- is exempt from the labor laws that are designed to protect children. Exemptions for family farms mean that children of any age may

> operate all manner of machinery, which would be prohibited in any other industry, even small family operations."
>
> "As a direct result, children are killed and maimed in gruesome accidents almost monthly in the state" ("Hazardous Work," March 21, 1990).

The major debate becomes what is the best method to attempt to reduce the number of farm accidents involving youth? One possible avenue would be enforcement of child-labor laws that would have jurisdiction over the now exempt family farm. The problems with this approach are recognized in "Hazardous Work" (1990, p. 13), "child-labor laws for family farms would be next to impossible to enact and difficult to enforce."

The second approach is engineering. Much has been accomplished on the engineering front and new equipment is undoubtedly safer than earlier equipment (Schneider, 1980). While this trend is likely to continue, the fact that equipment on many farms may be 20 years old means equipment that is less safe will continue to be used.

Education is the third part of the farm safety triad. A number of safety education programs are presently available. Many schools participate in fire or electrical safety programs offered by local electrical companies or fire departments. In addition, 4-H and vocational agriculture both offer good programs on the topic of farm safety. However, two major problems arise when examining these programs.

First, not all rural youth participate in these organizations. Second, the 4-H tractor driving program is designed for 14 to 15 year old youth, and, most children who participate in vocational agriculture, are in Jr. high or high school (14 to 18 years old). Therefore, if children are operating tractors at age 7, and don't participate in tractor safety training until the age of 14 or 15, they have 7 years to develop bad habits which will be difficult for any instructional program to overcome. As Dennis Murphy (1980, p. 92) explained, "They receive little or no safety education at the beginning of their work experiences when it is most important. And, the only role models most will have are other adults who model unsafe behaviors."

As the National Coalition for Agricultural Safety and Health (1989, p. 23) pointed out,

> "Programs for the farmers and agricultural workers would best start among the youth. Given the facts that the farm is one of our most dangerous work places, and that children routinely play and help with the farm chores in this work place and thus are constantly at risk, such programs are critically important."

Statement of the Problem

The farm safety programs presently available for youth tend to be single topic, one shot approaches with limited accessibility and often questionable effectiveness. What is needed is a <u>comprehensive</u> safety education system starting with programs designed to develop awareness in children of

the hazards found on the farm, and impressing upon them the speed and severity of the accidents that can occur.

It appears that new safety education programs are needed to address the problem of safety education for children prior to 4-H or vocational agriculture experience and to serve as a basis for further safety education programs.

The goal of this study was to determine the characteristics of a farm safety awareness program for 9 to 14 year old youth.

The objectives of this study include:

1. To determine if the goal of developing safety awareness is appropriate.
2. To determine the objectives for the program.
3. To determine the topics that should be covered.
4. To determine the learning activities that should be utilized in the program.
5. To determine what format is appropriate for delivery of the program.
6. To determine what resource materials are available for use in the program.

Definition of Terms

For the purpose of this study, the following definitions were used.

safety education - For this study, the definition used by Worick (1975, p. 3) was used.

"Safety education is the sum of experiences that favorably affects the development of habits, skills, attitudes, and knowledges conducive to safe behavior."

safety awareness - a familiarity with hazards and a sensitivity to the results of accidents occurring from interaction with those hazards.

safety training - education that stresses specific rules, operational steps and procedures pertaining to the use of a specific hazardous item.

farm - For this study, a more encompassing, generic definition of a farm was used. A farm was defined as any farm or farmstead in a rural setting containing typical farm hazards.

CHAPTER II.

REVIEW OF LITERATURE

This literature review is divided in three major sections; farm accidents, safety behaviors and attitudes, and safety education.

Farm Accidents

One of the problems faced by those studying farm accidents is the lack of reliable data and the problem of categorizing these accidents in such a way as to give a clear picture of the true farm accident situation for the study of farm safety. The problem of consistent classification of farm accidents was studied by Purschwitz and Field and they stated:

> "Because farms are work sites, recreational sites, and residences, accidents may occur on farms which involve work, recreation, or home-related activities. These accidents may involve farm operators or farm workers; farm residents or family members; persons from other businesses who are on the farm providing services; or visitors. In addition, some farm-related accidents occur off the farm, due to the need to transport equipment on roads, or travel to town for various farm business reasons" (1989, p. 1).

Murphy (1989) pointed out that the National Safety Council (NSC) and the National Institute of Occupational Safety and Health (NIOSH) do not include young victims in their calculation of work-related deaths. He also pointed out that both use the death certificate as a primary data source. As

he stated, "The most important point to recognize is that quantifying agricultural occupational fatalities is anything but an exact science" (1989, p. 1).

This means that agriculture's dubious distinction of being classified as the most hazardous occupation is, if anything, even more secure.

A major portion of the problem lies in the unique characteristic of farming in which the work place and the family living area are one in the same. This leads to further confusion of such statistics as the National Safety Council's Farm Residents Accidents. These exclude accidents which occur to non-residents, whether they be workers or visitors (National Safety Council, 1989).

One study that attempted to determine the accident rates of children on the farm was conducted by Field and Tormoehlen (1982). They examined fatal and non-fatal accidents involving children using a number of sources including death certificates and the 1976 Indiana Farm Accident Survey. They found that children 15 and under accounted for 25 percent of the sample population and accounted for 16 percent of non-fatal accidents. When calculated on a basis of the number of accidents per million hours of exposure, the accident rate for children 5 to 14 was three times the level of all other age groups.

Examination of 12 years of fatal accident statistics found that there were 73 fatal accidents between 1970 and 1981. Eighty-two percent of these involved farm tractors or machinery.

Four specific findings of Field and Tormoehlen (1982) are of exceptional interest to this study. They are listed here.

1. The highest rate of accidents occurred between 4 and 6 p.m. (37% of fatal accidents.) As they stated,

> "Again, this finding appears to reflect the level of exposure children had to farm hazards, with the lowest levels being during normal sleeping periods and when children are normally in school and the greatest being the time children arrive home from school until supper time" (p. 8).

2. The highest risk group was male 15 and under with 29 accidents per million hours worked.
3. The most frequent activities associated with accidents were chores and field work.
4. Children 5 to 14 were injured more often by "sharp objects, falls and being caught between two objects" (p. 10).

In addition, Field and Tormoehlen (1982) summarized five other studies. Field and Tormoehlen cited a study by Doss and Pfister which found tractor operators under 14 were involved in 9 times as many accidents as the 25 to 44 year old group. They also found that youth 15 and under had an

estimated one fatality for each 1.11 million hours versus 2.86 million hours for all other groups.

Also cited by Field and Tormoehlen (1982) was a 1981 Minnesota study by Aherin and Schultz in which it was found that children 15 and under were involved in 25 percent of the accidental farm-related deaths.

A study by the Ontario Farm Safety Association cited by Field and Tormoehlen (1982) found 15 year olds accounted for the largest number of fatalities between 1975 and 1981. Extra riders accounted for 50 percent of the tractor-related deaths. In contrast, a Texas study reported that children were involved in 18 percent of the 94 fatalities in Texas for 1981. Sixty percent were drownings or firearm-related and only 17 percent were tractor or machinery related.

Twenty-five percent of the tractor deaths in Wisconsin in 1980 involved children according to a study cited by Field and Tormoehlen (1982).

In their conclusions, the researchers pointed out two items of particular interest to this study.

1. Young children (under 5) have considerable levels of exposure to extremely hazardous work sites.
2. Many children who die of farm-related accidents, die alone, the authors state,

> "The lack of supervision of small children and the placing of unrealistic physical and intellectual expectations to behave and react as an adult appear to be a contributing

> factor in many serious and fatal accidents" (Field & Tormoehlen, 1982, p. 12).

In 1975, a study by Phillips, Stuckey, and Pugh was conducted in Ohio to analyze accident data for 1967 and 1972. Using the Ohio Farm Accident Survey which had been conducted every 5 years since 1957, interviews with randomly selected farm families were conducted quarterly utilizing cooperative extension personnel. They found that size of family and size of farm were both related to accident rates. They suggested it was related to the levels of exposure in both cases.

Huizinga and Murphy (1988) reported findings from a pilot project that utilized a personalized mail survey to collect farm accident, work exposure, and tractor use data. The 1987 Pennsylvania Farm Work Exposure and Injury Data Survey collected data from a stratified random sample of 1200 Pennsylvania farms. They found that children 5 to 14 accounted for only 3.3 percent of the injuries reported.

They also found that hired workers had a slightly higher injury rate when adjusted for hours of exposure. They did not report the accident rate adjusted for exposure for other groups. The researchers concluded,

> "This survey suggests that while hired labor had less than 20 percent of the total injuries and a relatively low rate of injury per farm, their rate of injury per million hours of work was slightly higher than that of family members. This may have implications for workman's compensation rates and safety training for employees" (Huizinga & Murphy, 1988, p. 11).

They also stated,

> "Taken together, the farm injury data were clearly pointing to the tractor as the greatest source of serious injury on the farm. In light of the many tractor safety education programs conducted over the years, the effectiveness of these programs needs to be seriously examined" (Huizinga & Murphy, 1988, p. 12).

Hoskin and Miller (1979) conducted a study of farm accidents involving livestock in 21 states based on the data from NSC Farm Accident Surveys. They used a data base searching process (TREESEARCH) developed by the NSC to identify frequencies with statistically significant differences than what was expected. One interesting finding was that more accidents involving cattle, except cows (adult females), happen to people who had 8 to 14 days of experience and between the 2nd and fourth hour of exposure for the day. Again, levels of exposure were cited as a major factor in accident rates. The researchers pointed out that accident reduction must center on changing human behavior and the working environment, as little can be done to change the behavior of the animals.

They concluded,

> "Educational programs should be initiated to remind farmers of the hazards in animal handling, particularly in regard to eliminating actions that may trigger an accident, as well as inspecting facilities to remove physical hazards" (Hoskin & Miller, 1979, p. 13).

Three accident studies were of particular interest to this research. In all three cases, the NSC Farm Accident Survey Data were compared to educational level, and participation in various farm safety programs to determine if participation in educational programs was related to accident involvement.

Riesenberg and Bear (1980) used the 1978 Minnesota farm accident survey in their examination. They found 12.4 percent of tractor operators were under the age of 15 years old and that this age group "contributed significantly more work related farm accident victims than expected based on the amount of labor they contributed to the farming operation" (p. 139). They also found that the levels of participation in vocational agriculture programs were low, especially with regards to the under 15 year old age group. This would be expected since Vocational Agriculture is traditionally taught in the high school (14 to 18 year olds) and few young people under 15 years of age would have exposure to the curriculum. They also found low participation in the 4-H power program (7.9%) and the tractor and machinery safety training program for 14 to 15 year olds (7.9%).

In their findings, Riesenberg and Bear (1980) found that there was no difference in involvement for 4-H and the machinery safety programs. They pointed out, however, that low numbers of tractor operators have undergone the training. The researchers also found no significant difference in the

level of formal education and accident involvement. This was not consistent with the findings of Phillips, Stuckey and Pugh (1975), who found that better educated farmers tended to have more accidents due to increased exposure since they tended to operate larger farms. The major surprise in Riesenberg and Bear's (1980) study was a positive relationship between accident involvement and vocational agricultural participation. While the strength of the association was weak, (Cramer's V=.07) as the author's noted, "the direction of the association is most surprising" (Riesenberg & Bear, 1980, p. 141). The authors concluded, "The ongoing programs in vocational agriculture do not impact enough on the farm population to serve as the only vehicle for delivering accident prevention programs" (1980, p. 143). They continued,

> "The present ongoing Vocational Agriculture programs are not structured to impact the under 15 age group concerning accident prevention, however, many Vocational Agriculture departments and FFA Chapters conduct safety programs which may merit study as an avenue for reaching the less than 15 year old group" (p. 144).

In a similar study in Iowa completed by Silletto (1976) using 1975 Farm Accident Survey Data, similar hypotheses were tested. Silletto (1976) found no difference in the level of education by accident involved and non involved groups. Likewise no difference was found for those completing safety training; 4-H safety training; vocational agriculture safety training; and the hazardous occupational safety training.

Silletto (1976) reported the following findings using comparisons of Iowa data to those of other states.

1. One accident occurred per 5.66 farms.
2. Youth of less than 15 had the highest accident rate.
3. Men and boys were reported as having the most accidents.
4. Mid morning and mid afternoon were found to be the times when most accidents occurred.
5. Slip and fall accidents were involved in nearly one-fourth of the accidents.
6. Most accidents occurred in May and August, the least occurred in December.
7. Saturday was a high accident day, the least number of accidents occurred on Sunday.
8. Hand tool accidents were more numerous than power tool accidents.
9. Legs, head, feet, and fingers were parts of the body most frequently injured.
10. The average accident cost the victim 9.68 days lost from normal activities.

Silletto (1976) then identified the following implications to safety education.

1. Safety must be an integral part of all daily activities of persons who work and play in the agricultural environment if that environment is to be a safe place in which to live and work.

2. Safety education is especially important for young persons.
3. Women and girls should receive safety training.
4. Slips and falls cause nearly one-fourth of the accidents.
5. Persons involved in agriculture need to be able to identify hazardous situations.
6. Safety education must be continued so that a larger number of our society have an opportunity to develop a more positive attitude toward safety.
7. There is a need for general farm safety education for adults working in agriculture.
8. Safety education must be presented in such a way as to help people develop a positive attitude about safety practices and safety regulations which are for the good of workers.

Williams (1983) used data from the Iowa Farm Accident and Illness study conducted in 1981. Using procedures developed by the NCS and very similar to those reported by Silletto (1976) and Riesenberg and Bear (1979), he found that agricultural accident frequencies were significantly related to:

1. Size of farming operation.
2. Farm type.
3. Exposure to agricultural work.

4. Age.
5. Sex. Males had more accidents than females and noted this discrepancy could not be explained entirely by levels of exposure.
6. Exposure. Like Silletto (1976) and Field and Tormoehlen (1982) he also found that when adjusted for hours of exposure 5 to 14 year old youth had nearly twice as many accidents as any other group.

Silletto also found no significant relationship between accident frequencies and level of formal education and completion of 4-H or vocational agriculture, or hazardous occupations order training. Williams' findings also supported the findings in Silletto's (1976) and Riesenberg and Bear's studies (1979).

Another accident survey was conducted by Donald Jensen in Wisconsin. This study used data collected from newspaper clippings from 1944 to 1978 verified by extension personnel, vocational agriculture teachers, and others.

He found that overall accidents dropped significantly from 168 in 1945 to 48 in 1978 and the most common accidents by far involved tractors and machinery.

When broken down by age of the victims, Jensen (1980) found that the 45 to 64 year old age group had the most fatalities (27%) and the over 65 and 5 to 14 year old age group followed, each with 17 percent. He stated:

> "When we look at the three E's of safety; engineering, education, enforcement, it is evident that the farm family, farm operator, farm employee, farm organizations, agricultural services, youth and women's organizations, teachers, agricultural industry, and others must concentrate educational efforts on the human factors which lead to most of the fatal farm accidents" (Jensen, 1980, p. 126).

In a Canadian study of 32 children treated by the Juvenile Amputee Clinic in Winnipeg, Manitoba for PTO and auger-related injuries over a 10-year period, it was found that only 4 children were injured while actually working on the farm. The rest were injured while, "observing, playing in the farm yard, or simply 'along for the ride'" (Letts, 1989, p. 358).

Letts stated,

> "There is a unique, hypnotic fascination of the grain disappearing into the auger for the inquisitive child, and unfortunately the result is frequently severe extremity injury. There are few 'minor injuries' sustained when a limb comes into contact with this type of machinery" (1989, p. 357).

Safety Behaviors and Attitudes

When assessing the effectiveness of safety programs, as well as attempting to develop a new safety program, it is necessary to examine the attitudes and behaviors that influence safety. Therefore, an examination of literature related to safety behaviors and attitudes was necessary.

Schafer and Kotrlik (1986) conducted a study in Louisiana to determine the variables that influenced the use of

safety practices. Using all principal operators of farms in Beauregarde Parish Louisiana as the population, the researchers selected a systematic random sample of the population from which to collect data using a personal interview questionnaire developed from farm safety literature and safety professionals.

A safety index score was developed by asking professionals to weight the items of the questionnaire. Respondent scores and percentages of the total possible score were calculated. Among their findings several items bear scrutiny:

1. 85.1 percent of the subjects believed a farm safety program was needed.
2. 83.1 percent indicated they would attend a safety program.
3. 27.3 percent had attended a safety program.
4. 32.5 percent were aware of the existence of the farm safety program.
5. 9.1 percent had been involved in a farm accident.
6. 4.5 percent had a family member or hired worker involved in a farm accident.

Three factors were found to be significantly related to high safety index scores, acres cultivated, higher income, and participation in a safety program. This finding was interesting when compared to the studies cited in the previous section where farm size and income level were both good

predictors of farm accidents. The question then arises, would larger farmers have more accidents if attitudes were more in keeping with the norm? Schafer and Kotrlik (1986, p. 127) concluded,

> "Since participation in a farm safety program was a significant predictor of higher safety index scores, it appears that a farmer's participation in the farm safety programs conducted in Beauregarde Parish is related to safe farm work practices. This may mean that participation in farm safety programs results in improved safety practices, or it may mean that farmers who engage in safe practices are more likely to participate in a farm safety program."

Bettis (1972) developed and tested a semantic differential scale similar to Osgood et al.'s (1964). By using this scale, Edward's social desirability test, the Bennett mechanical aptitude test, high school rank, cumulative college grade point average, ACT score, age, the course enrolled in (Agriculture Mechanization 254 and Agriculture Mechanization 253) and an accident survey; he was able to predict a student's predisposition to have an accident and account for 15 to 23 percent of the variance for 125 students at Iowa State University. He stated,

> "Students who may have low opinions of themselves tended to have more accidents. . . therefore the author concludes, there must be some relationship between a student's opinion of himself, his emotional stability or his level of adjustment to his environment, and his accident experience" (Bettis, 1972, p. 72).

When discussing the importance of attitudes in accident prevention, Miller (1982, p. 9) stated,

> "As in all good teaching, teachers cannot simply present cognitive material (facts, figures, and safety lists) and automatically expect the result to be the development of positive safety behaviors. Ones attitudes, value system, background, and skills must not be overlooked. When striving toward effective safety instruction, new teaching strategies need to be applied."

Strasser et al. (1973, p. 63) contended that for a person to exhibit safe behaviors, it must be part of that person's "philosophy of life." They defined this philosophy as,

> "The integration of all his acquired knowledge and experience into a pattern of human behavior. The behavior is controlled by values, attitudes, the habits that, in turn, are developed and modified by the acquisition of new knowledge and experience" (Strasser et al., 1973, p. 63).

The authors pointed out that,

> "Safety, as a part of a person's philosophy of life, becomes a way of responding to new experiences and a way of approaching the unknown, rather than following a set of safety rules or slogans" (Strasser et al., 1973, p. 64).

Strasser et al. (1973, p. 80) identified four important aspects of an attitude.

1. It is always directed toward some object.
2. It is not an act within itself but is a predisposition to react a certain way.
3. It is enduring and tends to perpetuate itself.
4. It is for or against.

They also discussed two other levels of behavior control; habits and values. Habit was defined as a pattern of behavior developed by repeated response to stimulus until that response becomes automatic and beyond the realm of conscious thought. They pointed out that habits are difficult to change and, "must be changed by making the person aware of his action and by working to remove the habit from the automatic response category" (Strasser et al., 1973, p. 87).

In discussing values, the authors stated,

> "The importance of values to accident prevention cannot be overemphasized. Accidents often occur when a person is faced with a new situation. This is particularly important in this changing world of new jobs and new recreational activities. People are confronted continually with an entirely new series of hazards. Often, past experiences are unrelated and a person must rely on his knowledge of safety and the value he places on safe human behavior in determining his course of action. If safe behavior is part of his value system, he will respond to the new situation in a manner that will limit the potential hazard" (Strasser et al., 1973, p. 87-88).

This has implications to farm safety, as farmers are continually facing novel situations which present an accident hazard. Strasser et al. (1973, p. 88) identified implications to education.

1. Traditional education programs that simply involve the presentation of factual information to be memorized or studied for understanding and application are not adequate for safety education.

2. Student involvement coupled with group pressures, seem to provide the greatest promise for

the modification of human behavior within the limits of our present educational system.

3. As a result, safety education testing often becomes a simple evaluation of understanding and recall, instead of the changes that have taken place in the personality characteristics that control behavior.

The effect of emotion on accidents was explained by Florio and Stafford (1969, p. 38),

> "Unrestrained emotions are a frequent cause of accidents because they divert attention from the task at hand and lead to carelessness. The worried employee who fails to keep his mind on his work becomes more vulnerable to injury."

In a 1937 study by Hersey (Worick, 1975), it was found that 20 percent of the observed accidents occurred when workers were in an elated emotional state and about 50 percent occurred when workers were in a low emotional state. Worick (1975 p. 37) stated, "Therefore, people should automatically become more cautious during such periods."

Emotion is also a possible tool for developing positive safety attitudes. Palmer (1980) discussed the impact of first-person narrative magazine articles as a tool for developing positive safety behavior. He contended that those who are concerned with safety have tended to treat safety consciousness as a rational procedure. He stated,

> "The trouble is, a working farmer is too preoccupied with other concerns for his reasoning to protect him. I suspect he is better protected by his emotions. I doubt that there is any more effective protection than a healthy fear of a whirling drive shaft; of hillsides too steep for safe opera-

> tion of a tractor; or of an open spinning auger" (Palmer, 1980, p. 25).

This point was echoed by Barker (1980, p. 13), "It is my conclusion that the farm accident problem is 'irrational' and as a result, has elluded our normally anticipated response."

This position was also supported by Murphy (1980, p. 90) in his discussion of human behavior and agricultural safety,

> "Unless you subscribe to the discredited theory that all people are suicidal in nature, one would think that a higher value would be placed on the alternative that would protect decision-makers. And it surely would if all safety decisions were made in a rational, cool, detached, and objective manner. But this simply is not the case in real life. Many of the decisions involving safety behavior which lead to accidents are made in moments of high stress, considerable aggravation, and acute uncertainty. The result is that safety decisions are often made while the decision maker is anything but a rational being."

Murphy (1980, p. 92) went on to discuss the problem of safety behavior in children on the farm,

> "They receive little or no safety education at the beginning of their work experiences when it is most important and, the only role models most will have are other adults who model unsafe behaviors. Consequently, unsafe acts and unsafe behavior as a common way of work, can become firmly entrenched in a young person's mind by the time he reaches his teens" (1980, p. 92).

The dilemma of creating and maintaining desired behaviors is not unique to the farm safety field. In a research study on behavior analysis and public health, Hovell et al. (1986, p. 292), stated,

> "Implicit in the traditional health education model is the assumption that, once educated, individuals will sustain protective behavior and/or permanently discontinue risk behavior."

The authors continued in a somewhat satirical tone,

> "To establish and maintain protective behavior (or avoid risk behavior) one simply teaches children the appropriate health habits; once learned, they practice through adulthood. Casual inspection of most adults illustrates the limitation of traditional education."

Another study of interest was done by Erisman and Huffman (1972), when they attempted to determine the correlation between accident involvement and emotional immaturity. They used the Revised Huffman Inventory (RHI), data on age and size of farm, and a five-year accident history to study the link between emotional immaturity and the accident involvement of 2,547 male farm operators in an 11 county area of Illinois and 381 female farm residents from one county. They found that emotional immaturity was fairly closely linked to farm accident involvement for both males and females. One interesting finding was the fact that those who farmed large farms tended to have the lowest level of emotional maturity as measured by the RHI. As the authors stated,

> "It is possible that common indices of emotional immaturity, such as impulsiveness, aggression, and exhibitionism suit a man for operation of a larger farm and may even be necessary traits for successful job performance" (Erisman & Huffman, 1972, p. 131).

Erisman and Huffman (1972) pointed out these are also the traits that have been shown to be associated with increased accident involvement.

The second finding, while not as surprising, was important. As expected, they found a significant association between emotional immaturity and the age of the farmers. They reported that younger farmers tended to be more likely to be involved in accidents. They stated,

> "Projection of the findings of this study indicates an ominous future for the agricultural accident problem. Economic factors are generating a trend toward larger farms with the concomitant increased hazard exposure. Emotional immaturity appears to be a trait that suits a man to the operation of such larger enterprises, as well as one that plays a significant role in agricultural accident involvement" (Erisman & Huffman, 1972, p. 131).

Safety Education

While many studies have been completed and much has been written about safety education in general, there was a lack of solid information about farm safety education. However, much could be gained by reviewing the available literature.

One study of farm safety education was done by Durkes (1982). He examined the level of instruction, instructor knowledge and participation, teacher's perceptions of which education techniques are most effective, and to what extent selected safety materials were used by Indiana Vocational Agriculture teachers.

The areas most often taught were found to be shop safety, tractor safety, chemical safety, and machinery safety. He reported that over one-half of the teachers had specific times in the curriculum they taught safety. He found that at least 54 percent of the Indiana teachers were unaware of, or had not used 8 of the 9 available films and slide sets and a similar number were unaware of all the safety publications available from Purdue University. The researcher also found that teachers felt films and class discussions were most effective.

Two of the more interesting findings were; the extremely low level of participation in a number of safety activities such as the Cut Corners - Cut Accidents, Fire Safety Contest, and Tractor Operator Certification Programs, and the number of Vocational Agriculture teachers that felt the FFA Chapter Safety Award program is not an effective farm safety tool.

Among Durkes' (1982) recommendations were:

1. Update and improve farm safety audio-visual materials.
2. Actively promote on a state-wide basis, farm safety during farm safety week.
3. Develop a calendar of instructional materials and ideas.
4. Publish a regular newsletter mailed to all Vocational Agriculture teachers outlining available material.
5. Create workshops to explain the availability and use of safety materials.
6. Develop a directory of safety resources.

7. Develop a brochure of available safety publications.
8. Encourage Vocational Agriculture teachers to subscribe to farm safety literature.
9. Create additional instructor kits on safety topics.
10. Simulate dangerous habits leading to accidents in the classroom to show the possible results.
11. Specify times in the Vocational Agriculture curriculum to teach safety.

In his conclusions, Durkes (1982, p. 75) stated, "From the results received, there appears to be a long way to go in improving farm safety education in high school vocational agriculture programs." He continued, "There is an indication, however, that there is more program potential involving farm safety education in many high school Vocational Agriculture departments."

In a related study, Gliem (1976), examined the effectiveness of a student reference in teaching ladder safety to high school vocational education classes. He used a pretest - post test methodology with a cognitive test to evaluate the effectiveness of the reference. He found no significant difference in the students' scores, the teacher's preparation time, and the class time required to teach the unit between the experimental group and the control group.

In contrast, Gliem (1976) cited a study by Herr that evaluated the effectiveness of a safety, sanitation, and

conservation of agriculture program in elementary schools in which the group who had the resource unit and subject specialist had a higher score than the classroom teacher using the resource unit. These groups also had a higher score than the groups with the teacher not using the unit and the control group (no formal program). The conclusion was that the program was effective, but more effective when presented by the subject specialist.

Using sound educational methods that work when teaching safety is vital. Determining those methods is more difficult. Miller (1982, p. 287) stated,

> "Memorization of safety rules represents a low level of cognitive learning, and it is doubtful if this kind of instruction is the most effective in bringing about changed safety behavior patterns."

He went on to discuss other methods and stated a warning against those who use graphic visual materials such as films depicting mangled bodies and lots of blood.

> "This type of audio-visual material is of questionable educational value, as the student who is not comfortable with the sight of blood and other kinds of 'gore' is more likely to spend the time hiding his or her eyes from that which is on the screen than watching the film for educational purposes."

A similar point of view was echoed by Wayne (1982, p. 15) when he stated,

> "Information about the scope and nature of accidents is not sufficient to guarantee their prevention. One of the major goals of safety education in the elementary school should be to help the

> students develop positive attitudes for safe living, attitudes that will predispose them to safe behavior, not just in the school years but throughout their lives. Safety education is citizenship education.
>
> Knowledge about rules and regulations, potential hazards, and possible risks does not ensure that this knowledge will be used to avoid or prevent accidents. Teaching what to do or not to do in a particular situation is only part of safety education. The major task is helping students develop attitudes that will predispose them to use the information they have to practice desirable behavior patterns or to change undesirable ones. Of all the goals of safety education, the development of attitudes of safe living is probably the most critical."

When discussing teaching methods for safety education, Wayne (1982, p. 30) stated,

> "The use of scare tactics or fear appeals as a method is questionable. Horror stories about the consequences of accidents may shock children, but their effect on behavior is almost always short lived. Children should be aware of the possible consequences of accidents but should not be 'scared straight'."

Bekkum and Hoerner (1980) suggested activities to involve students while teaching shop safety. Among their suggestions:

1. Safety poster contests.
2. Safety survey to determine the cause of tool related accidents in shops, homes, and businesses.
3. Safety inspections to locate hazards.
4. Assigning a student to be a safety superintendent responsible for identifying safety hazards.
5. Safety meetings where students organize and conduct a meeting for parents, friends, and neighbors.

Florio and Stafford (1969, p. 343) outlined four specific objectives to guide farm residents in acquiring knowledge, attitudes, and behavior patterns that would safeguard them from the numerous hazards of agriculture.

1. To help students recognize and understand the many hazards on the farm.
2. To help them develop a sense of responsibility for their own safety and that of other farm residents.
3. To help them acquire the skills and habits essential to the safe performance of the many tasks required of farm workers.
4. To teach them to respect and value order and to observe careful, safe procedures in all their activities around the farm, including a periodic inspection of equipment and plans for necessary repairs or renewing.

A review of safety materials for youth on the farm revealed a limited number of readily available references and programs. A few were of particular interest.

One of the most complete programs found was the rural Ontario Safety Kit. This curriculum guide, designed for use in rural schools, was published by the Farm Safety Association Incorporated of Guelph, Ontario, Canada (1980). The purpose of this kit was described as that of developing awareness of

hazards and safe procedures and development of positive attitudes and behaviors.

This kit contained a teacher's guide with suggested activities, lists of film and slide resources, brief explanations of subject content, transparency masters, and student questions and worksheets. Also included in the kit were four boxes of resource materials, such as brochures, pamphlets and fact sheets from a variety of sources. Examination revealed that a broad range of topics were covered. Many of the resource materials were at the children's level, such as comic books, color books, etc.

A second resource reviewed was a recently developed curriculum guide designed for use in the vocational agriculture programs written by Kamp (1990). This guide included lesson plans, suggested activities, and reference list. Included in the student manual were student activities, safety tests, and case studies. An accompanying computer program (Kamp & Carlson, 1990) provided a chance for students to sharpen and test their knowledge of safety topics. Included in this guide were the following topics; human factors, agriculture mechanics, hazardous materials, animal safety, agriculture business, and recreational safety.

One reference found for use with the farm safety programs was Safe Operation of Agricultural Equipment by Silletto and Hull (1988). This reference, along with the accompaning instructor's manual (Silletto & Hull, 1990) was designed to be

used for tractor operator training under the Fair Labor Standards Act. Contained in the reference was a thorough discussion, including many photographs and figures of farm safety, particularly in the tractor and machinery area. Also included were student worksheets. The teacher's manual contains suggested activities, teaching plans, quiz and exam keys, and reference lists.

Another reference available for farm safety reviewed was Fundamentals of Machine Operation: Agricultural Safety, 2nd ed. by Deere and Company. This book contained a thorough coverage of safety topics related to the farm, and contained many color photographs and figures accompanying the text. Slide sets are available for use with the material in the text.

Summary

In summary, a review of literature related to farm safety revealed a number of important implications related to this study. They included:

1. Children are involved in a disproportionate number of accidents when adjusted for the level of exposure.
2. Five to 14 year old males are the highest risk category.
3. People's perception of self-worth are found to be related to safety attitudes and predisposition to have an accident.

4. The personality characteristics that tend to be associated with successful farmers are also those that were associated with higher accident rates.
5. To be effective, safety education must strive to influence the effective domain and become a part of a person's "philosophy of life."
6. Emotion can be a valuable tool in developing positive safety behaviors.
7. Present safety education programs are ineffective in reducing accident rates.
8. While many farmers feel attending safety programs is important, few actually do so.
9. There is a distinct lack of good farm safety programs for youth.
10. Cognitive types of lists of rules and regulations are ineffective.
11. Methods recommended for farm safety education involve student activity and student involvement.
12. Key points that should be emphasized in safety education programs include, identification of hazards and human factors related to accident prevention.

CHAPTER III.

METHODOLOGY

Design

The design chosen for this study was the Delphi technique. Developed in the early 1950's by Dalkey, Helmer, and their associates at the Rand Corporation, the Delphi technique was originally used to "obtain group opinions about urgent National Defense problems" (Bunning, 1979, p. 174).

Since first developed, the Delphi technique has been used in a variety of ways for many purposes. Delbecq et al. (1975) listed several areas in which Delphi has been used successfully: technological forecasting, development planning and helping to identify problems, setting goals and priorities and identifying problem solutions. It has also been used to identify research needs (Brooks, 1979: Buriak and Shinn, 1988) and for educational planning and curriculum development (Fendt, 1978: Helmer, 1966).

Dalkey (1969, p. v) described the Delphi technique as ". . . a method of enlisting and refining group judgements" based on the adage that "two heads are better than one."

Dalkey (1969) also identified three features of the Delphi process; anonymous response, iteration and controlled feedback, and statistical group response. By keeping the participants anonymous, bias caused by dominate personalities was eliminated according to Dalkey.

Statistical feedback on the responses, as well as summarized comments and opinions provide a basis for the individuals to adjust their responses on subsequent rounds, allowing consensus to be reached (Delbecq et al., 1975; Helmer, 1966; Dalkey, 1969).

The typical methodology of the Delphi model involves the use of a series of questionnaires. The first round uses open-ended questions to allow the generation of a wide range of opinions. These are summarized by the researchers and used to generate the second round which typically contains the summarized opinions. On the second round, the participants are asked to rank the items (Delbecq et al., 1975; Dalkey, 1969; Brooks, 1979; and Helmer, 1966) or use a Likert-type scale to rate the items (Bunning, 1979; Buriak & Shinn, 1988). Subsequent rounds contain feedback from the previous questionnaires and ask for defense of extreme ratings or rankings. "This process stops when consensus has been approached among participants, or when sufficient information exchange has been obtained" (Delbecq et al., 1975).

This study used the methodology described above. A first round questionnaire containing open-ended questions and two additional rounds which asked the participants to rate each item on a Likert-type scale was used.

Population

The population for this study was derived from the 1989 membership roster of the National Institute for Farm Safety Incorporated (NIFS). This organization consists of safety specialists, consultants, engineers, representatives of insurance and farm equipment manufacturers, and others with an interest in farm safety. The population was defined as those members whose mailing address identified them as residing in a corn-belt state. The Encyclopedia Americana (1986) definition of corn-belt was used resulting in all members from the states of Iowa, Illinois, Indiana, Missouri, Ohio, Kansas, Nebraska, Minnesota, and South Dakota being selected. This resulted in an initial population of 49 individuals.

Sample

All 49 members of the population were sent the first round questionnaire and cover letter explaining the study. The sample was defined as all members who agreed to participate in the study. This process resulted in a sample size of 22.

Research by the Rand Corporation determined that the process reliability of the Delphi technique is a function of group size (Figure 1). As noted in Figure 1, when the group size was greater than 13, the reliability was greater than 0.80 (Dalkey, 1969).

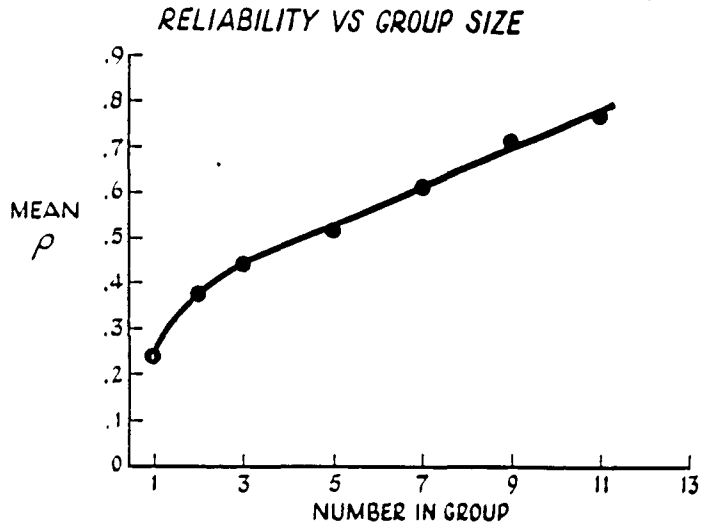

Figure 1. Reliability as a function of group size: mean correlations (from Dalkey, 1969)

Based on this, the sample size of 22 was deemed to be sufficient. Attrition in the second round reduced the number to 19 and in the third round one other person withdrew for a final N of 18. Again, this number was deemed to be sufficient to maintain reliability.

Instrumentation

The first round questionnaire was developed by the researcher with input and suggestions from Agricultural Education and Agricultural Engineering faculty members and Agricultural Education graduate students. The questions were tested by a panel of professors in the Agricultural Engineering Department and suggested changes were incorporated. The final version of the questionnaire consisted of one question

with a five-point Likert-type scale asking the respondents to rate their agreement or disagreement with the overall goal of "developing awareness of farm safety for a farm safety program for youth," and five open-ended questions which solicited the safety experts' opinions about program objectives, topics, activities, reference materials, and formats.

The second questionnaire was developed by the researcher based on the summary of responses from the first questionnaire. Included in this round were two demographic questions (Brooks, 1979). This questionnaire consisted of 14 objectives, 20 topics, 19 activities, and 7 formats. The results of the first round concerning reference materials were not included. This was done for three reasons:

1. The activities and objectives indicated which materials were most appropriate.
2. All the listed references could be deemed valuable for student use, as an activity or as a presenter reference.
3. Inclusion of all suggestions would have made the questionnaire excessively long.

A five-point scale was included to allow respondents to rate each item. The descriptors extremely important, very important, moderately important, slightly important, and not important were used because it was felt that most responses would be positive and few would have an opinion of extreme disagreement with including an item in the program. This

questionnaire was also tested by the panel of professors and changes were made.

The third questionnaire consisted of the second questionnaire with comments and opinions added underneath each item and the statistical results of the second round included under each rating category. In addition, an eighth format was included. This was done as a result of comments and a very good rationale for the suggestion made in the second round.

Data Collection

For the first round, a mailing list was created from the NIFS membership roster. Each person was sent a questionnaire, a personalized cover letter explaining the study, and a return envelope (see Appendix). The first mailing was on the 27th of March, 1990 with a reminder letter (see Appendix) sent approximately two weeks later. On April 17, the summarization of the first round began and the second round questionnaire was created.

A second mailing list was created from the first round responses and the second questionnaire along with a personalized cover letter (see Appendix), a return envelope, and a bag of tea were sent on April 30, 1990. A follow-up letter was sent two weeks later and analysis began on May 21, 1990.

The mailing list was revised to reflect attrition and the third questionnaire was created and sent along with a

personalized letter (see Appendix), return envelope, and two sticks of gum about May 27, 1990. A follow-up letter was sent about two weeks later. Summarization began on June 21, 1990. One of the third-round participants returned the questionnaire indicating the previous responses probably would not change and therefore had not completed questionnaire number three.

The process was ended at this point for two reasons. For many items, the spread of responses had narrowed significantly, indicating a nearing of consensus, and the number of blanks in the responses to the last two sections on the third round indicated fatigue on the part of the participants. Therefore, it was felt little would be gained by another round.

Data Analysis

The data collected from the participants were coded, entered, and analyzed at the Iowa State University Computation Center. The data were analyzed using the Statistical Package for the Social Sciences (SPSSX) (Norusis, 1988). The procedure deemed most appropriate to analyze the data was FREQUENCIES. This program also generated valid percentages which were used to accept or reject each item. This is consistent with the methods recommended by Buriak and Shinn (1988).

An a priori level for acceptance of each item as a characteristic of a Farm Safety Program for Youth was set at 50 percent of respondents rating each item as extremely important or very important. This is similar to the procedures outlined by Buriak and Shinn (1988).

The original data were then grouped using the recode command into a More Important (MI) group (extremely important and very important) and Less Important (LI) group (moderately important, slightly important, and not important). The division line between the groups was named the Group Division Line (GDL). These terms were created to aid in the description of the data in the following chapters. Data shown in Figure 2 illustrate the relationship of the groupings and division line defined above.

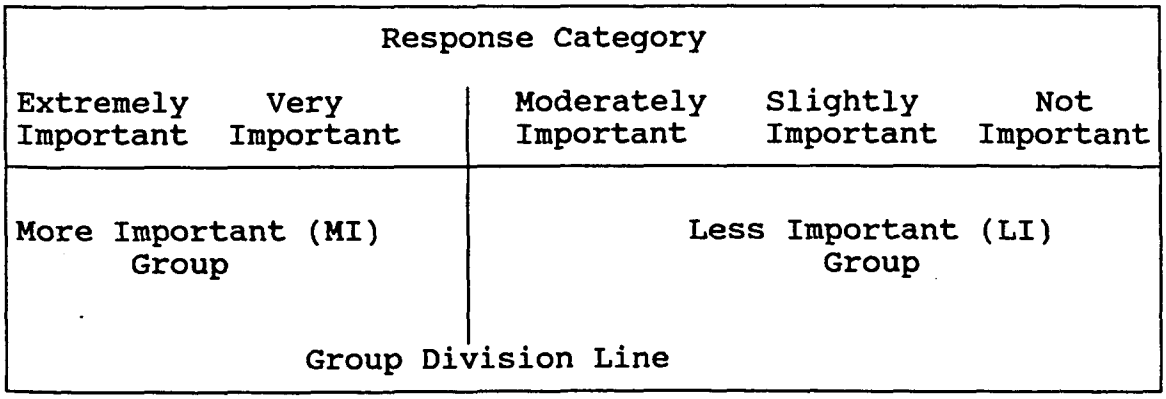

Figure 2. Relationship of rating categories to category groupings and Group Division Line

Frequencies were again run and the valid percentage used as a test for acceptance or rejection of each item.

CHAPTER IV.

FINDINGS

The primary purpose of this study was to determine the characteristics of a farm safety awareness program for youth. The data obtained from this study and the results of the analysis were used to fulfill the objectives:

1. To determine if the goal of developing safety awareness is appropriate.
2. To determine the objectives for the program.
3. To determine the topics that should be covered.
4. To determine the learning activities that should be utilized in the program.
5. To determine what format is appropriate for delivery of the program.
6. To determine what resource materials are available for use in the program.

Frequencies and percentages (Buriak & Shinn, 1988) were used to test the importance of each item as perceived by the respondents against the a priori level of 50 percent of respondents indicating an item to be extremely or very important.

The data examined in this study were collected from the questionnaires returned by the participants in the three rounds of the Delphi study. The number of participants

returning questionnaires was 22, 19, and 18 for rounds 1, 2, and 3 respectively.

Demographic Data

Demographic data were collected with the second round questionnaire. Two questions were asked of the respondents and the third demographic characteristic was determined from their mailing addresses. State of residence was derived for all three rounds from the participant's addresses. Information in Table 1 shows a breakdown of the state of residence for the respondents for the three rounds.

Table 1. State of Residence of the Respondents by Rounds

	Rank[a]	Round 1		Round 2		Round 3	
		N	%	N	%	N	%
Iowa	1	6	27.3	6	31.6	6	33.3
Indiana	2	4	18.2	4	21.6	4	22.2
Illinois	3	6	27.3	4	21.6	3	16.7
Ohio	4	2	9.1	2	10.5	2	11.1
Missouri	5	1	4.5	1	5.3	1	5.6
Nebraska	5	1	4.5	1	5.3	1	5.6
Wisconsin	5	1	4.5	1	5.3	1	5.6
Kansas	8	1	4.5	0	0.0	0	0.0
Total		22	100.0	19	100.0	18	100.0

[a]Rank for Third Round.

Iowa, Indiana, Illinois, and Ohio were the states of residence of the majority of the respondents. This parallels the definition of the corn-belt according to the Encyclopedia Americana (1986) which listed these states as being the

primary corn-belt states. The corn belt also consists of "parts of Missouri, Nebraska, Kansas, Minnesota, and South Dakota" (Encyclopedia Americana, 1986, p. 802). The initial population contained no names of people residing in South Dakota, therefore, that state was not included in the study. Two members of the population were listed as residents of Minnesota, however, neither of those experts chose to participate, therefore, Minnesota was not included in the study.

The category for Wisconsin, which was not included in the definition of the corn belt, was included in the study because the one respondent from Wisconsin had only recently moved from Indiana. The Round 1 Questionnaire was sent to the Indiana address and was forwarded to Wisconsin. The respondent returned the questionnaire asking to participate. It was felt by the researcher that since the respondent had done much work in Indiana, inclusion would not jeopardize the results of the study.

Items on Questionnaire 2 were used to determine the respondent's job category and the type of organization to which they belong.

Respondents were first asked to indicate the term that best described their position. The results indicated that one-third (33.3%) of the respondents considered themselves to be safety specialists, followed by 16.7 percent each for educator and engineer. The percentage of respondents marking more than one category, indicating multiple responsibilities

was also 16.7. Information in Figure 3 shows the percentage of the respondents indicating each category for position.

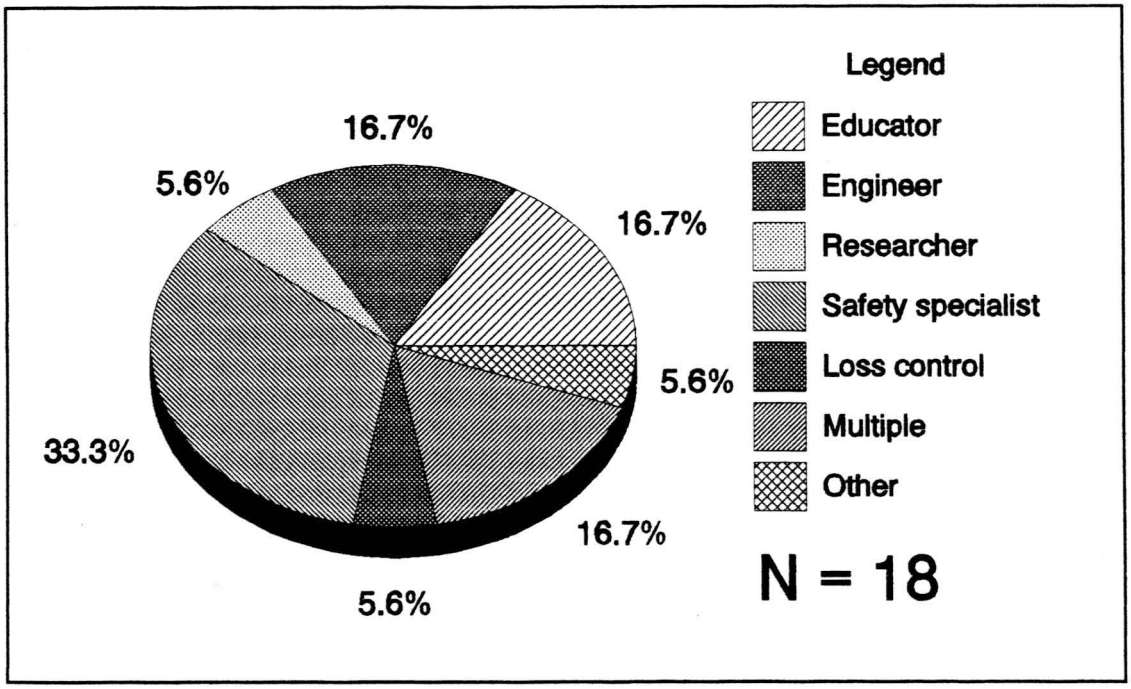

Figure 3. Percentage of respondents indicating each category for type of position held

The other demographic question asked the respondents to indicate their perceptions of the category to which their employing organization belonged. The categories were; industry, extension, university, insurance, and other. Again, in one instance one respondent indicated more than one category. This respondent indicated the organizations to be university and extension and was coded in the data as multiple.

As noted in Figure 4, the largest percentage of responses was 31.6 percent of the participants who indicated their classification as other. Examination of these responses

revealed that two of the six were employed as consultants, one was employed by a private, non-profit safety promotion organization, one worked for a farm safety information center, one worked for a farm organization, and one was employed by an organization that dealt with medical research. The next largest categories were industry and university, each with 21.1 percent. Shown in Figure 4 is the percentage of respondents indicating each category for organization.

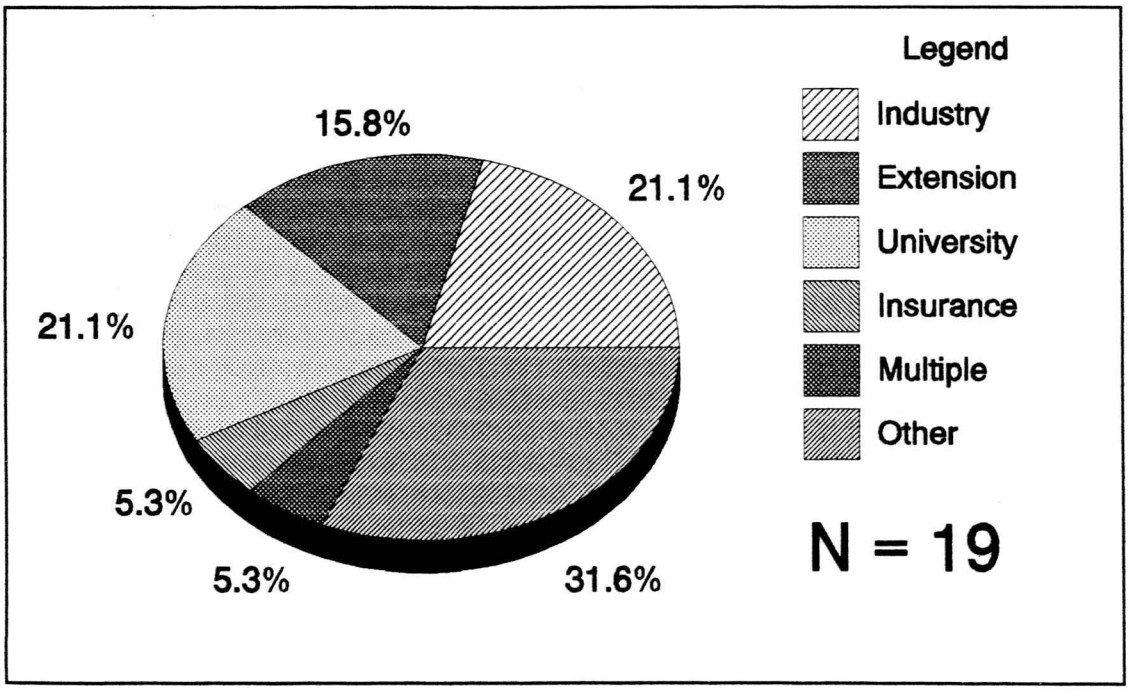

Figure 4. Percentage of respondents indicating each category for type of organization

Results for Round 1

Analysis of the questionnaire from round 1 was intended to determine whether respondents perceived the goal, To develop an awareness in 9 to 14 year old children of the

safety hazards found on the farm, as important, and to discover their opinions concerning each of the five open-ended questions. The respondents were asked to rate the goal on a five point Likert-type rating scale which used the descriptors, Strongly Agree, Moderately Agree, Slightly Agree, Moderately Disagree, and Strongly Disagree. Space was provided for the respondents to list the objectives, topics, activities, references, and formats that should be used in a farm safety awareness program for youth.

Analysis of the question on perceived importance of the goal revealed that 14 (73.7%) of the respondents strongly agreed, 4 (21.1%) moderately agreed and one (5.3%) mildly agreed. An a priori acceptance level of 50 percent of respondents indicating the top two rating catagories of Strongly Agree and Moderately Agree, was used. Analysis of the data revealed that 94.8 percent of the respondents rated the goal in these categories. Based on these results the goal, To develop an awareness in 9 to 14 year old children of the safety hazards found on the farm, was considered a valid goal.

Analysis of the five open-ended questions in the first round questionnaire yielded fourteen objectives, twenty topics, nineteen activities, and seven formats which were summarized from the responses. Analysis also yielded 26 resources (see Appendix). The lists of objectives, topics, activities, and formats were the basis for the second and

third round questionnaires, and these lists can be found in Tables 2, 3, 4, and 5.

Results for Rounds 2 and 3

Examination of the data from rounds 2 and 3 began with the calculation of frequencies and percentages. The results were scruitinized for general trends and discrepancies.

The data were then recoded, grouping the ratings Extremely Important and Very Important into a More Important (MI) group, and the other three ratings, Moderately Important, Slightly Important, and Not Important into the Less Important (LI) group. In this study, the line between these two groups will be referred to as the Group Division Line (GDL).

The recoded results were entered into a microcomputer and bar graphs were generated using Word Perfect's Draw Perfect program. This provided a visual reference on which to compare the results.

In general, those items whose results were above the acceptance level in the second round, increased in the third round. Those graph bars below the line, decreased. This tended to indicate consensus among the participants, especially when the consensus was at either end of the rating scale.

Objectives Identified by the Respondents

Of the fourteen objectives identified in the first round, all but one, To work with the media to promote farm safety, met or exceeded the a priori acceptance level in the second round (see Figure 5). In Round 3, all fourteen objectives met or exceeded the a priori level, with, To work with the media to promote farm safety, meeting only the minimum level of acceptance.

The movement of the graph bar representing the MI group for Objective 7. To work with the media to promote farm safety, was interesting in the fact that it moved in a direction contrary to the general trend. Upon closer examination of the breakdown of ratings in Table 2, it was found that this reflected a movement toward consensus, but with the consensus centered on the GDL.

Objective 4. To identify emergency procedures and basic first aid steps, was the other objective for which movement in the graph bar representing the MI group was in the direction opposite to the general trend. Again, examination of Table 2 revealed this movement was a result of nearing consensus centered on the GDL.

Two objectives had percentages in the MI group of 100 percent on both rounds. The data in Table 2 show that 76.5 percent of respondents felt the first objective, To develop the skills necessary to recognize safety hazards, was Extremely Important and 23.5 percent felt it was Very

Figure 5. Percentage of participants' ratings in the More Important Group for fourteen objectives

1. To develop the skills necessary to recognize safety hazards
2. To demonstrate human limitations and reaction time
3. To dramatize typical farm accident situations
4. To identify emergency procedures and basic first aid steps
5. To understand causes of accidents and near misses
6. To develop respect for safety hazards
7. To work with the media to promote farm safety
8. To encourage the development of procedures and solutions for eliminating hazards
9. To identify the six leading causes of accidental death
10. To respect limits set by parents
11. To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents
12. To dramatize and explain the environmental and emotional conditions which increase accident potential
13. To create a sense of responsibility for the youth as a "safety guardian" on his/her farm
14. To identify the typical farm hazards children are exposed to

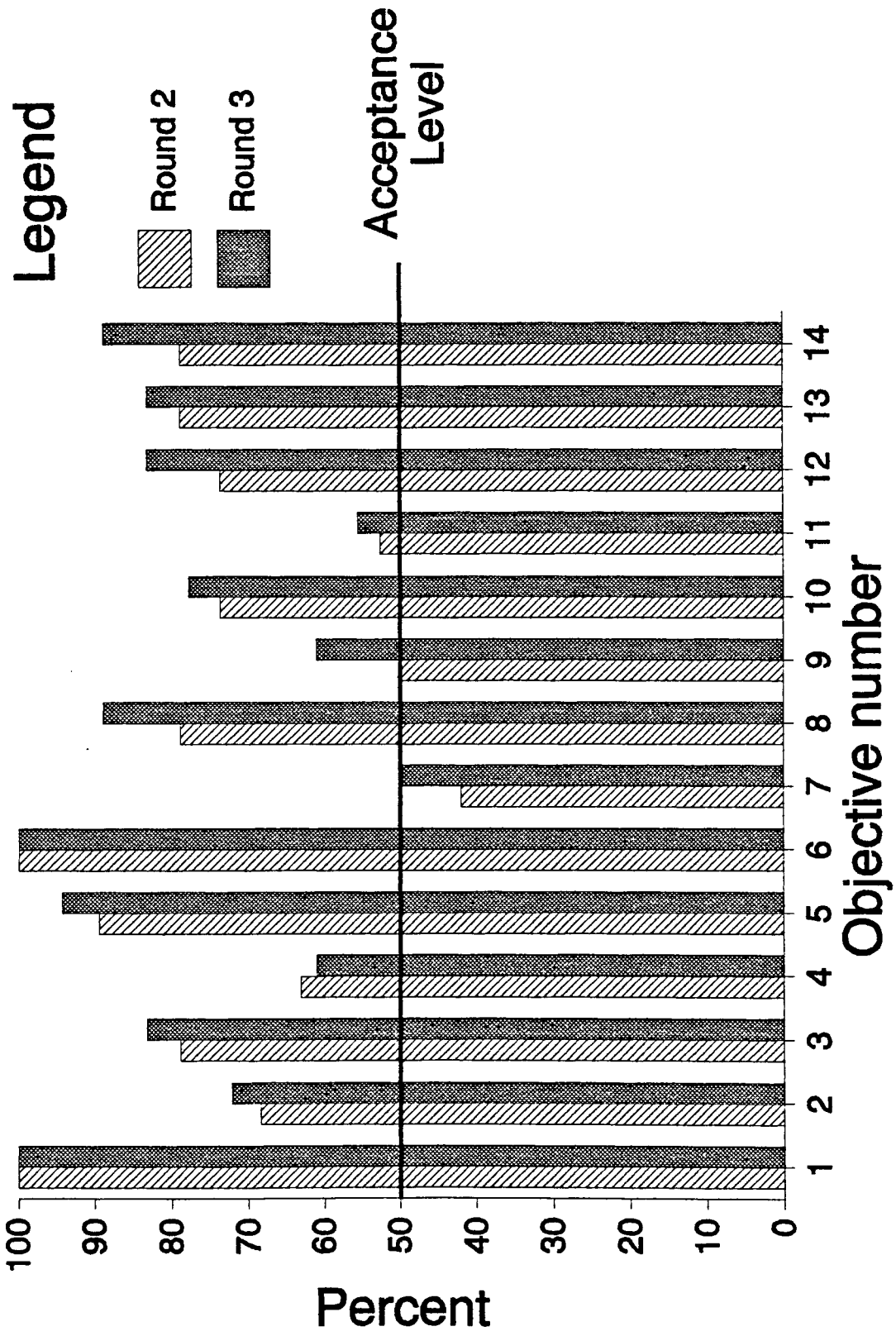
Legend
Round 2
Round 3
Acceptance Level
Percent
100
90
80
70
60
50
40
30
20
10
0
Objective number
1
2
3
4
5
6
7
8
9
10
11
12
13
14

Table 2. Second and third round rank and ratings by selected safety experts for fourteen objectives

Objective	Round #	Rank	N
To develop the skills necessary to recognize safety hazards	Round 2	1	19
	Round 3	1	17
To demonstrate human limitations and reaction time	Round 2	10	19
	Round 3	10	18
To dramatize typical farm accident situations	Round 2	7	19
	Round 3	6	18
To identify emergency procedures and basic first aid steps	Round 2	11	19
	Round 3	11	18
To understand causes of accidents and near misses	Round 2	3	19
	Round 3	3	18
To develop respect for safety hazards	Round 2	2	19
	Round 3	2	18
To work with the media to promote farm safety	Round 2	14	19
	Round 3	14	18
To encourage the development of procedures and solutions for eliminating hazards	Round 2	5	19
	Round 3	5	18
To identify the six leading causes of accidental death	Round 2	13	18
	Round 3	12	18
To respect limits set by parents	Round 2	8	19
	Round 3	9	18
To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents	Round 2	12	19
	Round 3	13	18
To dramatize and explain environmental and emotional conditions which increase accident potential	Round 2	9	19
	Round 3	8	18
To create a sense of responsibility for the youth as a "safety guardian" on his/her farm	Round 2	6	19
	Round 3	7	18
To identify the typical farm hazards children are exposed to.	Round 2	4	19
	Round 3	4	18

Extremely Important		Very Important		Moderately Important		Slightly Important		Not Important	
N	%	N	%	N	%	N	%	N	%
14	73.7	5	26.3	0	0.0	0	0.0	0	0.0
13	76.5	4	23.5	0	0.0	0	0.0	0	0.0
3	15.8	10	52.6	5	26.3	1	5.3	0	0.0
2	11.1	11	61.1	5	27.8	0	0.0	0	0.0
4	21.1	11	57.9	2	10.5	2	10.5	0	0.0
5	27.8	10	55.6	2	11.1	1	5.6	0	0.0
5	26.3	7	36.8	4	21.1	2	10.5	1	5.3
3	16.7	8	44.4	6	33.3	1	5.6	0	0.0
10	52.6	7	36.8	2	10.5	0	0.0	0	0.0
14	77.8	3	16.7	1	5.6	0	0.0	0	0.0
10	52.6	9	47.4	0	0.0	0	0.0	0	0.0
9	50.0	9	50.0	0	0.0	0	0.0	0	0.0
2	10.5	6	31.6	8	42.1	1	5.3	2	10.5
1	5.6	8	44.4	8	44.4	0	0.0	1	5.6
5	26.3	10	52.6	2	10.5	2	10.5	0	0.0
3	16.7	13	72.2	2	11.1	0	0.0	0	0.0
1	5.6	8	44.4	7	38.9	1	5.6	1	5.6
1	5.6	10	55.6	5	27.8	2	11.1	0	0.0
5	26.3	9	47.4	4	21.3	1	5.3	0	0.0
6	33.3	8	44.4	3	15.7	1	5.6	0	0.0
3	15.8	7	36.8	6	31.6	2	10.5	1	5.3
2	11.1	8	44.4	6	33.3	1	5.6	1	5.6
4	21.1	10	52.6	4	21.1	1	5.3	0	0.0
2	11.1	13	72.2	2	11.1	1	5.6	0	0.0
4	21.1	11	57.9	3	15.8	1	5.3	0	0.0
3	16.7	12	66.7	3	16.7	0	0.0	0	0.0
9	47.4	6	31.6	3	15.8	1	5.3	0	0.0
14	77.8	2	11.1	2	11.1	0	0.0	0	0.0

Important. The ratings for the fifth objective, To understand causes of accidents and near misses, were evenly split with 50 percent in each of the two rating categories of the MI group. In both cases, little movement in ratings was seen between the second and third rounds.

Five objectives, To work with the media to promote farm safety, To encourage the development of procedures and solutions for eliminating hazards, To identify the six leading causes of accidental death, To dramatize and explain the environmental and emotional conditions which increase accident potential, and To identify the typical farm hazards children are exposed to, experienced the largest shift in ratings across the GDL as consensus was approached.

The ratings for two objectives made major shifts toward consensus within the group categories. These objectives were, To understand causes of accidents and near misses, and To identify the typical farm hazards children are exposed to (see Table 2).

All fourteen objectives met or exceeded the minimum acceptance level of 50 percent of the ratings in the MI group on the third round, with three objectives, To develop the skills necessary to recognize safety hazards, To understand causes of accidents and near misses, and To develop respect for safety hazards, exceeding 90 percent. Five objectives, To dramatize typical farm accident situations, To encourage the development of procedures and solutions for eliminating

hazards, To dramatize and explain the environmental and emotional conditions which increase accident potential, To create a sense of responsibility for the youth as a "safety guardian" on his/her farm, and To identify the typical farm hazards children are exposed to, had an MI rating of between 80 and 89.9 percent. Two objectives, To demonstrate human limitations and reaction time, and To respect limits set by parents, had MI ratings of 70 to 79.9 percent. Two objectives, To identify emergency procedures and basic first aid steps, and To identify the six leading causes of accidental death, had MI ratings of 60 to 69 percent. And two objectives, To work with the media to promote farm safety, and To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents, had a MI rating in the 50 to 59.9 percent range.

The rank for each objective, as noted in Table 2, was determined by placing the objectives in descending order according to the percentage of responses in the MI group. In cases where two or more objectives had the same percentage for the MI rating, the order was determined by the percentage of ratings in the Extremely Important category.

The fourteen objectives meeting the criteria of 50 percent of the responses in the MI group were, in order of rank;

1. To develop the skills necessary to recognize safety hazards

2. To develop respect for safety hazards
3. To understand causes of accidents and near misses
4. To identify the typical farm hazards children are exposed to
5. To encourage the development of procedures and solutions for eliminating hazards
6. To dramatize typical farm accident situations
7. To create a sense of responsibility for the youth as a "safety guardian" on his/her farm
8. To dramatize and explain the environmental and emotional conditions which increase accident potential
9. To respect limits set by parents
10. To demonstrate human limitations and reaction time
11. To identify emergency procedures and basic first aid steps
12. To identify the six leading causes of accidental death
13. To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents
14. To work with the media to promote farm safety

Topics Identified by the Respondents

Twenty topics were identified from the open ended question in the first round questionnaire. These were presented in the second and third round questionnaires for the respondents to rate. Sixteen exceeded the minimum level of acceptance on the second round (see Figure 6).

One additional topic, Human behavior in relation to safety, met the minimum level of acceptance on the third round. Upon examination of the data shown in Table 3, it was

Figure 6. Percentage of participants' ratings in the More Important Group for twenty topics

1. Machinery safety
2. Tractor safety
3. General farmyard and structures hazards
4. Livestock safety
5. Grain handling and storage safety
6. Chemical safety
7. Farm recreation safety
8. Emergency preparedness
9. Proper clothing and personal protective equipment
10. Confined spaces safety (silos and manure pits)
11. Electrical safety
12. Gun safety
13. Fire safety
14. Lawn mower safety
15. Tornado safety
16. Human behavior in relation to safety
17. Safety laws and regulations
18. Causes of deaths/injuries in rural youth
19. Labeling and operation of machine shut-offs
20. Appropriate tasks for the 9 - 14 year old age group

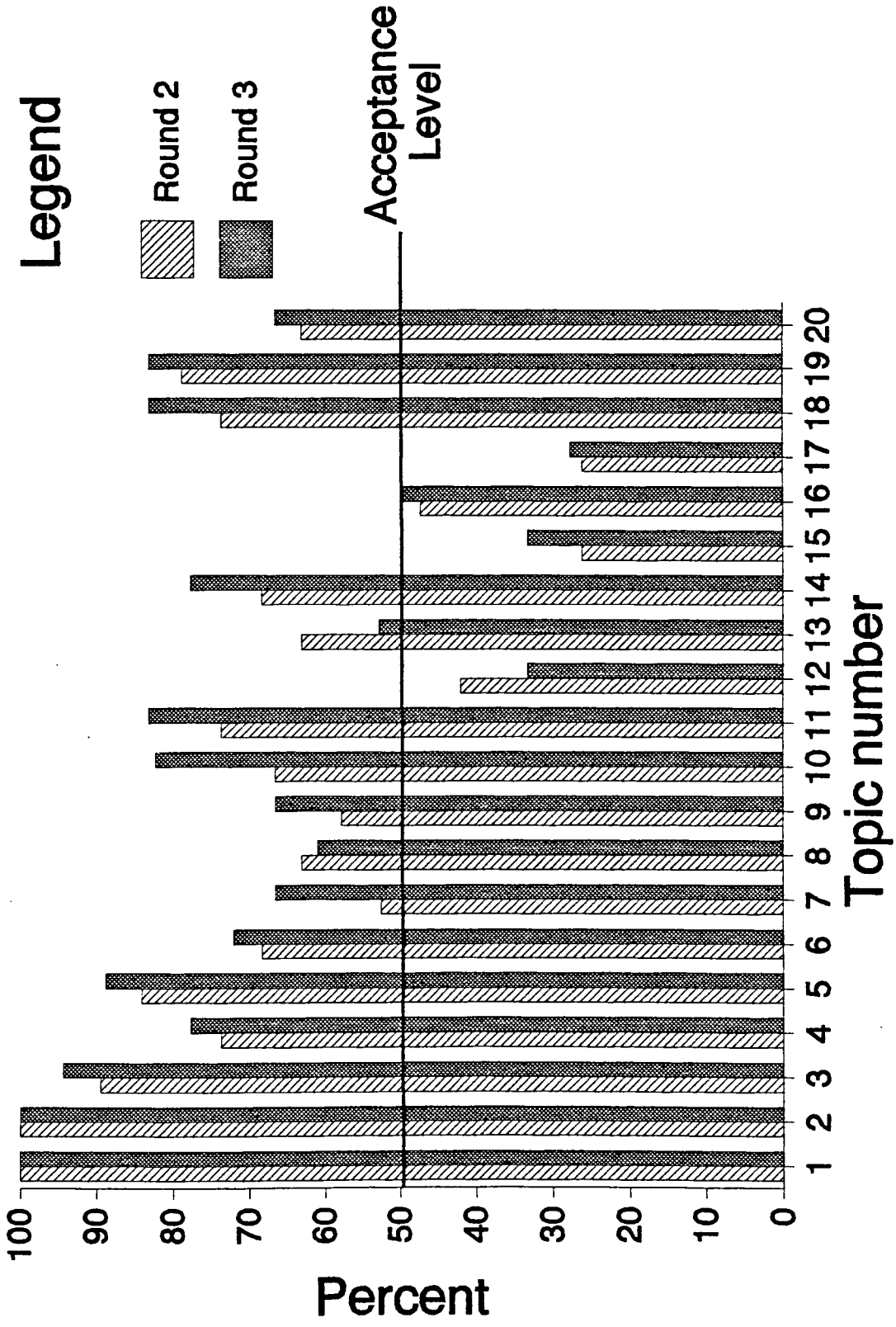
Legend
Round 2
Round 3
Acceptance Level
Percent
100
90
80
70
60
50
40
30
20
10
0
Topic number
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Table 3. Second and third round rank and ratings by selected safety experts for twenty topics from round 1

Topics	Round #	Rank	N
Machinery safety	Round 2	2	19
	Round 3	2	17
Tractor safety	Round 2	1	19
	Round 3	1	18
General farmyard and structures hazards	Round 2	3	19
	Round 3	3	18
Livestock safety	Round 2	6	19
	Round 3	9	18
Grain handling and storage safety	Round 2	4	19
	Round 3	4	18
Chemical safety	Round 2	9	19
	Round 3	11	18
Farm recreation safety	Round 2	16	19
	Round 3	14	18
Emergency preparedness	Round 2	13	19
	Round 3	15	18
Proper clothing and personal protective equipment	Round 2	15	18
	Round 3	13	18
Confined spaces safety (silos and manure pits)	Round 2	11	19
	Round 3	8	17
Electrical safety	Round 2	7	19
	Round 3	5	18
Gun safety	Round 2	18	19
	Round 3	18	18
Fire safety	Round 2	12	19
	Round 3	16	17
Lawn mower safety	Round 2	10	19
	Round 3	10	18
Tornado safety	Round 2	19	19
	Round 3	19	18
Human behavior in relation to safety	Round 2	17	19
	Round 3	17	18

Extremely Important		Very Important		Moderately Important		Slightly Important		Not Important	
N	%	N	%	N	%	N	%	N	%
16	84.2	3	15.8	0	0.0	0	0.0	0	0.0
16	94.1	1	5.9	0	0.0	0	0.0	0	0.0
18	94.7	1	5.3	0	0.0	0	0.0	0	0.0
17	94.4	1	5.6	0	0.0	0	0.0	0	0.0
5	26.3	12	63.2	2	10.5	0	0.0	0	0.0
4	22.2	13	72.2	1	5.6	0	0.0	0	0.0
4	21.1	10	52.6	5	26.3	0	0.0	0	0.0
4	22.2	10	55.5	4	22.2	0	0.0	0	0.0
6	31.6	10	52.6	3	15.8	0	0.0	0	0.0
5	27.8	11	61.1	2	11.1	0	0.0	0	0.0
6	31.6	7	36.8	5	26.3	1	5.3	0	0.0
5	27.8	8	44.4	5	27.8	0	0.0	0	0.0
2	10.5	8	42.1	6	31.6	2	10.5	1	5.3
1	5.6	11	61.1	4	22.2	2	11.1	0	0.0
5	26.3	7	36.8	5	26.3	2	10.5	0	0.0
3	16.7	8	44.4	6	33.3	1	5.6	0	0.0
3	15.8	8	42.1	6	31.6	2	10.5	0	0.0
2	11.1	10	55.6	5	27.8	1	5.6	0	0.0
7	38.9	5	27.8	5	27.8	1	5.6	0	0.0
7	41.2	7	41.2	3	17.6	0	0.0	0	0.0
3	15.8	11	57.9	4	21.1	1	5.3	0	0.0
3	16.7	12	66.7	3	16.7	0	0.0	0	0.0
2	10.5	6	31.6	8	42.1	2	10.5	1	5.3
2	11.1	4	22.2	9	50.0	2	11.1	1	5.6
5	26.3	7	36.8	7	36.8	0	0.0	0	0.0
2	11.8	7	41.2	8	47.1	0	0.0	0	0.0
3	15.8	10	52.6	5	26.3	1	5.3	0	0.0
1	5.6	13	72.2	3	16.7	1	5.6	0	0.0
1	5.3	4	21.1	8	42.1	5	26.3	1	5.3
1	5.6	5	27.8	6	33.3	5	27.8	1	5.6
1	5.3	8	42.1	9	47.4	1	5.3	0	0.0
0	0.0	9	50.0	8	44.4	1	5.6	0	0.0

Table 3. (cont.)

Topics	Round #	Rank	N
Safety laws and regulations	Round 2	20	19
	Round 3	20	18
Causes of deaths/injuries in rural youth	Round 2	8	19
	Round 3	7	18
Labeling and operation of machine shut-offs	Round 2	5	19
	Round 3	6	18
Appropriate tasks for the 9 - 14 year old age group	Round 2	14	19
	Round 3	12	18

Extremely Important		Very Important		Moderately Important		Slightly Important		Not Important	
N	%	N	%	N	%	N	%	N	%
0	0.0	5	26.3	9	47.4	5	26.3	0	0.0
0	0.0	5	27.8	9	50.0	4	22.2	0	0.0
2	10.5	12	63.2	2	10.5	3	15.8	0	0.0
1	5.6	14	77.8	2	11.1	1	5.6	0	0.0
5	26.3	10	52.6	3	15.8	1	5.3	0	0.0
3	16.7	12	66.7	3	16.7	0	0.0	0	0.0
5	26.3	7	36.8	5	26.3	1	5.3	1	5.3
6	33.3	6	33.3	6	33.3	0	0.0	0	0.0

found that this movement was perhaps more a result of attrition in the number of respondents, than of significant shifts in the ratings by the participants.

As noted in Figure 6, four other topics exhibited movement contrary to the general trend. The results for two topics, Emergency preparedness and Fire safety, responded in this manner as consensus, centered on the GDL, was approached. For one topic, Tornado safety, responses moved away from consensus slightly (note Table 3), and in the process one respondent moved across the GDL causing the bar graph in Figure 6 to move upward. The movement seen in the bar graph for Topic 17 is again a case where the little movement seen is probably a result of attrition, and not because of a shift in the respondents' perceptions.

A more dramatic shift was seen in the results representing, Confined spaces safety. Examination of Table 3 showed the number of responses in the Extremely Important catagory remained stable, while a combination of two respondents moving across the GDL and the difference in total N, (1 due to a missing case and 1 due to attrition) caused a significant increase in the percentage of respondents in the MI group.

The results for Topic 7. Farm recreation safety, also showed a significant shift from Round 2 to Round 3. Information in Table 3 revealed that this was caused by nearing consensus on the rating Very Important.

In a few cases, substantial movement toward consensus was made within the MI or LI group, which was not reflected in Figure 6. The topic, Lawn mower safety, was one such case, with consensus occurring at the rating of Very Important.

Of the twenty topics, seventeen exceeded the minimum acceptance level on the third round. Three topics; Tractor safety, Machinery safety, and General farmyard and structures hazards, exceeded 90 percent of responses in the MI group. Five topics, Grain handling and storage safety, Electrical safety, Labeling and operation of machine shut-offs, Causes of deaths/injuries in rural youth, and Confined spaces safety (silos and manure pits), had MI ratings of between 80 and 89.9 percent. Three topics, Livestock safety, Lawn mower safety and Chemical safety, had MI ratings between 70 and 79.9 percent. Four topics, Appropriate tasks for the 9 - 14 year old age group, Proper clothing and personal protective equipment, Farm recreation safety and Emergency preparedness had MI ratings between 60 and 69.9 percent. And two topics, Fire safety and Human behavior in relation to safety, had MI ratings of between 50 and 59.9 percent.

Three topics failed to reach the acceptance level. The topics Gun safety and Tornado safety, had a MI rating between 30 to 39.9 percent while Topic 17. Safety laws and regulations, was between 20 to 29.9 percent of ratings in the MI group.

The seventeen topics meeting the acceptance criteria, were, in order of rank:

1. Tractor safety
2. Machinery safety
3. General farmyard and structures hazards
4. Grain handling and storage safety
5. Electrical safety
6. Labeling and operation of machine shut-offs
7. Causes of deaths/injuries in rural youth
8. Confined spaces safety (silos and manure pits)
9. Livestock safety
10. Lawn mower safety
11. Chemical safety
12. Appropriate tasks for the 9 - 14 year old age group
13. Proper clothing and personal protective equipment
14. Farm recreation safety
15. Emergency preparedness
16. Fire safety
17. Human behavior in relation to safety

Activities Identified by the Respondents

On the first round questionnaire, nineteen activities were identified. Of these, 11 exceeded the minimum level of acceptance on the second round, note Figure 7. None of the activities, however, managed to reach 100 percent of

responses in the MI group on the second round as had been seen with the objectives and topics.

No activity that had not been in the acceptance level in round two, crossed the acceptance level in the third round. The bar graph of only one activity, Computer/video games, moved in a direction contrary to the general trend. Closer examination of the information in Table 4 revealed the movement of the results for this activity in Figure 7 was, again, more a result of attrition than any meaningful shift in opinion.

The influence of attrition is seen throughout this section of the study. Several participants returned questionnaires with blanks in their responses, which caused a change in the N for many of the topics. Examination of the information in Table 4 indicates these instances were primarily responsible for many of the shifts in the results from Round 2 to Round 3, seen in Figure 7. The data in Table 4 reveal that there was indeed, little movement in ratings between Round 2 and Round 3. There were, however, a couple of exceptions to this observation.

Examples of movement toward consensus included Activity 12. Take-home worksheets, which moved toward consensus at the Very Important rating. One activity, Skits, moved toward consensus at Moderately Important, and the activity, Hazard scavenger hunt, moved away from consensus, as noted in Table 4.

Figure 7. Percentage of participants' ratings in the More Important Group for nineteen activities

1. Slide/tape presentations
2. Hands-on activities
3. Films
4. Field trips
5. Videotapes
6. Hazard scavenger hunts
7. Working models
8. Static (non-working) models
9. Classroom/group discussions
10. Audio tapes
11. Classroom work sheets, pamphlets and booklets
12. Activities, pamphlets, booklets and stickers for students to take home for family involvement
13. Accident demonstrations using actual machinery and straw/paper dummies
14. Computer/video games
15. Accident simulations created by computer graphics
16. Poster/speech/essay contests
17. Skits
18. Talks by accident victims describing their accident and its influence on their lifestyle
19. Lectures by safety experts

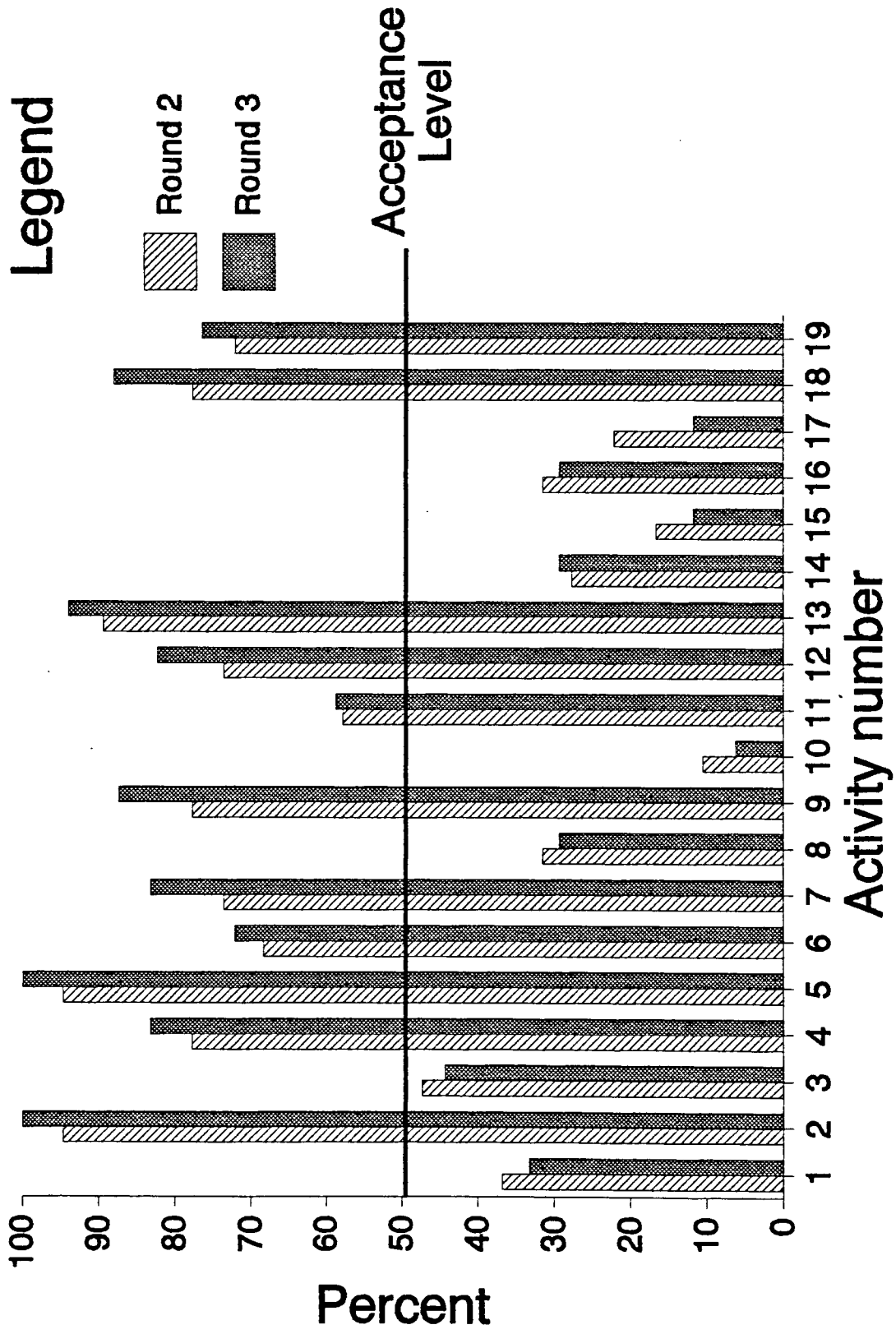
Legend
Round 2
Round 3
Acceptance Level
Percent
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Activity number

Table 4. Second and third round rank and ratings by selected safety experts for nineteen activities

Objective	Round #	Rank	N
Slide tape presentations	Round 2	13	19
	Round 3	13	18
Hands-on activities	Round 2	1	19
	Round 3	1	18
Films	Round 2	12	19
	Round 3	12	18
Field trips	Round 2	5	18
	Round 3	6	18
Videotapes	Round 2	2	19
	Round 3	2	18
Hazard scavenger hunts	Round 2	10	19
	Round 3	10	18
Working models	Round 2	7	19
	Round 3	7	18
Static (non-working) models	Round 2	14	19
	Round 3	14	17
Classroom/group discussions	Round 2	6	18
	Round 3	5	16
Audio tapes	Round 2	19	19
	Round 3	19	16
Classroom work sheets, pamphlets and booklets	Round 2	11	19
	Round 3	11	17
Activities, pamphlets, booklets and stickers for students to take home for family involvement	Round 2	8	19
	Round 3	8	17
Accident demonstrations using actual machinery and straw/paper dummies	Round 2	3	19
	Round 3	3	17
computer/video games	Round 2	16	18
	Round 3	15	17
Accident simulations created by computer graphics	Round 2	18	18
	Round 3	18	17
Poster/speech/essay contests	Round 2	15	19
	Round 3	16	17

Extremely Important		Very Important		Moderately Important		Slightly Important		Not Important	
N	%	N	%	N	%	N	%	N	%
1	5.3	6	31.6	10	52.6	1	5.3	1	5.3
0	0.0	6	33.3	11	61.1	1	5.6	0	0.0
10	52.6	8	42.1	1	5.3	0	0.0	0	0.0
11	61.1	7	38.9	0	0.0	0	0.0	0	0.0
2	10.5	7	36.8	9	47.4	1	5.3	0	0.0
1	5.6	7	38.9	9	50.0	1	5.6	0	0.0
8	44.4	6	33.3	3	16.7	1	5.6	0	0.0
8	44.4	7	38.9	3	16.7	0	0.0	0	0.0
7	36.8	11	57.9	1	5.3	0	0.0	0	0.0
7	38.9	11	61.1	0	0.0	0	0.0	0	0.0
2	10.5	11	57.9	5	26.3	1	5.3	0	0.0
1	5.6	12	66.7	2	11.1	3	16.7	0	0.0
7	36.8	7	36.8	3	15.8	1	5.3	1	5.3
7	38.9	8	44.4	3	16.7	0	0.0	0	0.0
2	10.5	4	21.1	7	36.8	4	21.1	2	10.5
1	5.9	4	23.5	7	41.2	4	23.5	1	5.9
4	22.2	10	55.6	4	22.2	0	0.0	0	0.0
3	18.8	11	68.8	1	6.3	1	6.3	0	0.0
0	0.0	2	10.5	9	47.4	5	26.3	3	15.8
0	0.0	1	6.3	7	43.8	5	31.6	3	18.8
2	10.5	9	47.4	6	31.6	2	10.5	0	0.0
1	5.9	9	52.9	6	35.3	1	5.9	0	0.0
6	31.6	8	42.1	4	21.1	1	5.3	0	0.0
4	23.5	10	58.8	2	11.8	1	5.9	0	0.0
6	31.6	11	57.9	1	5.3	1	5.3	0	0.0
6	35.3	10	58.8	1	5.9	0	0.0	0	0.0
1	5.6	4	22.2	8	44.4	2	11.1	3	16.7
1	5.9	4	23.5	7	41.2	3	17.6	2	11.8
0	0.0	3	16.7	9	50.0	5	27.8	1	5.6
0	0.0	2	11.8	8	47.1	7	41.2	0	0.0
0	0.0	6	31.6	11	57.9	0	0.0	2	10.5
0	0.0	5	29.4	11	64.7	0	0.0	1	5.9

Table 4. (cont.)

Objective	Round #	Rank	N
Skits	Round 2	17	18
	Round 3	17	17
Talks by actual accident victims describing their accident and its influence on their lifestyle	Round 2	4	18
	Round 3	4	17
Lectures by safety experts	Round 2	9	18
	Round 3	9	17

Extremely Important		Very Important		Moderately Important		Slightly Important		Not Important	
N	%	N	%	N	%	N	%	N	%
0	0.0	4	22.2	10	55.6	4	22.2	0	0.0
0	0.0	2	11.8	12	70.6	3	17.6	0	0.0
9	50.0	5	27.8	4	22.2	0	0.0	0	0.0
10	58.8	5	29.4	2	11.8	0	0.0	0	0.0
2	11.1	11	61.1	3	16.7	2	11.1	0	0.0
1	5.9	12	70.6	2	11.8	2	11.8	0	0.0

One surprising finding was the data for Activity 19. Lectures by safety experts, which showed 70.6 percent of the respondents felt that this was a Very Important activity. Upon examination, there was concern that this question was poorly worded, and actually represented two questions. The researcher hypothesized that the respondents placed emphasis on "expert" rather than "lecture".

Of the nineteen activities developed from the first round questionnaire, eleven exceeded the minimum acceptance level in the third round. The activities, Videotapes and Classroom/group discussions, achieved levels of 90 to 100 percent of respondents rating it in the MI group. Activity 13. Accident demonstrations using actual machinery and straw/paper dummies, received between 80 to 89.9 percent of the ratings in the MI group. Six activities, Field trips, Working models, Classroom/group discussions, Activities, pamphlets, booklets and stickers for students to take home for family involvement, Talks by accident victims describing their accident and its influence on their lifestyles, and Lectures by safety experts received between 70 to 79.9 percent of responses in the MI group. Activity 6. Hazard scavanger hunts, received between 60 to 69.9 percent of responses in the MI group. And one Activity, Classroom work sheets, pamphlets and booklets, received between 50 to 59.9 percent of the ratings in the MI group.

The other activities failed to reach the acceptance level and were distributed across the LI group. Activity 3. Films, received between 40 and 49.9 percent of the responses in the MI group. Three activities, Slide/tape presentations, Static (non-working) models and Poster/speech/essay contests, received 30 to 39.9 percent of the responses in the MI group. The activities, Computer/video games and, Skits, had between 20 to 29.9 percent of the ratings in the MI group. And the activities, Audio tapes and, Accident simulations created by computer graphics, received less than 19.9 percent of ratings in the MI group.

The eleven activities which met or exceeded the minimum acceptance level of 50 percent of respondents in the MI group in order of rank were:

1. Hands-on activities
2. Videotapes
3. Accident demonstrations using actual machinery and straw/paper dummies
4. Talks by accident victims describing their accident and its influence on their lifestyle
5. Classroom/group discussions
6. Field trips
7. Working models
8. Activities, pamphlets, booklets and stickers for students to take home for family involvement
9. Lectures by safety experts

10. Hazard scavenger hunts
11. Classroom work sheets, pamphlets and booklets

Formats Identified by the Respondents

The first round questionnaire generated seven suggested formats by which a farm safety program for youth could be delivered. After the second round, an additional, format was added when a strong rationale was presented by one of the respondents. Of the original seven formats, four formats, A series of weekly after school meetings, A series of weekly Saturday meetings, Should be part of the curriculum in rural schools, and Should be incorporated into existing 4-H and Vo-Ag programs, met or exceeded the minimum level of acceptance on the second round. With the addition of the eighth format, five exceeded the minimum level of acceptance on the third round. These were; A series of weekly evening meetings, A series of weekly Saturday meetings, Should be part of the curriculum in rural schools, Should be incorporated into existing 4-H and Vo-Ag programs, and Videotape/activities package to be checked out for home study (see Figure 8).

In this section of the questionnaire, consensus was much more difficult to reach. Little movement in ratings was seen between Round 2 and Round 3 with two exceptions. Format 1. Weekly evening meetings, did see noticeable movement toward consensus across the GDL, moving it above the acceptance level, note Table 5. The consensus was again centered

Figure 8. Percentage of participants, ratings in the More Important Group for eight formats

1. A series of weekly evening meetings
2. A series of weekly after school meetings
3. A series of weekly Saturday meetings
4. One day "camps" (six hours or more) on Saturday or during summer
5. Should be part of the curriculum in rural schools
6. Should be incorporated into existing 4-H and Vo-Ag programs
7. Overnight "lock-in" or "camp" held on weekends or during summer
8. Videotape/activities package to be checked out for home study

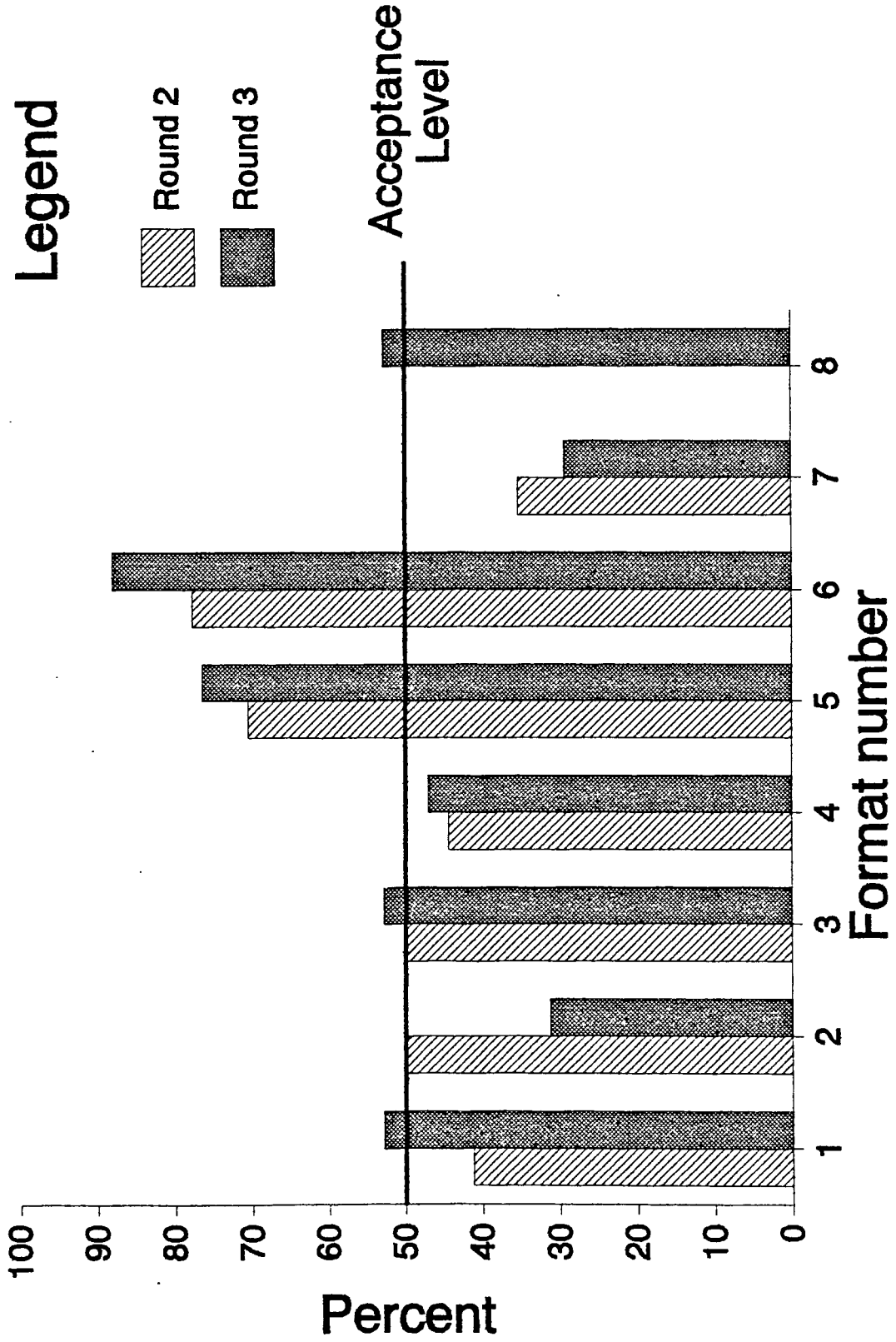
Legend
Round 2
Round 3
Acceptance Level
Format number
1
2
3
4
5
6
7
8
Percent
0
10
20
30
40
50
60
70
80
90
100

Table 5. Second and third round rank and ratings by selected safety experts for eight[a] formats

Formats	Round #	Rank	N
A series of weekly evening meetings	Round 2	6	17
	Round 3	5	17
A series of weekly after school meetings	Round 2	3	18
	Round 3	7	16
A series of weekly Saturday meetings	Round 2	4	18
	Round 3	4	17
One day "camps"	Round 2	5	18
	Round 3	6	17
Should be part of the curriculum in rural schools	Round 2	2	17
	Round 3	2	17
Should be incorporated into existing 4-H and Vo-Ag programs	Round 2	1	18
	Round 3	1	17
Overnight "lock-in" or "camp" held on weekends or during summer	Round 2	7	17
	Round 3	8	17
Videotape/activities package to be checked out for home study	Round 2	--	--
	Round 3	3	17

[a] Seven formats were used in round 2, an eighth was added in the third round when a participant suggested it along with a very good rationale.

Extremely Important		Very Important		Moderately Important		Slightly Important		Not Important	
N	%	N	%	N	%	N	%	N	%
0	0.0	7	41.2	6	35.3	3	17.6	1	5.9
0	0.0	9	52.9	7	41.2	1	5.9	0	0.0
4	22.2	5	27.8	7	38.9	1	5.6	1	5.6
1	6.3	4	25.0	9	56.3	2	12.5	0	0.0
2	11.1	7	38.9	7	38.9	1	5.6	1	5.6
1	5.9	8	47.1	5	29.4	3	17.6	0	0.0
5	27.8	3	16.7	6	33.3	3	16.7	1	5.6
4	23.5	4	23.5	5	29.4	3	17.6	1	5.9
8	47.1	4	23.5	4	23.5	1	5.9	0	0.0
9	52.9	4	23.5	4	23.5	0	0.0	0	0.0
8	44.4	6	33.3	3	16.7	1	5.6	0	0.0
9	52.9	6	35.3	2	11.8	0	0.0	0	0.0
1	5.9	5	29.4	3	17.6	5	29.4	3	17.6
1	5.9	4	23.5	3	17.6	5	29.4	4	23.5
--	--	--	--	--	--	--	--	--	--
4	23.5	5	29.4	5	29.4	3	17.6	0	0.0

somewhat on the GDL. The results representing the percentage of ratings in the MI group for the format, Weekly after school meetings, moved dramatically in the other direction. Originally at the acceptance level, the format dropped to 3/5ths of its original percentage as a significant number of the respondents moved their ratings toward consensus at the moderately important rating.

Movement away from consensus was seen in the data for Format 4. One day camps, with the respondents moving their ratings toward either end of the scale. Little movement was seen in the ratings for the other formats.

Of the eight formats in the third round, five exceeded the minimum acceptance level. The format, Should be incorporated into existing 4-H and Vocational Agriculture programs, exceeded the acceptance level with 88.2 percent of the respondents in the MI group. Most (52.9%) felt this format was Extremely Important. The format, Should be part of the rural school curriculum, received the next highest score with 52.9 percent rating it Extremely Important and 23.5 percent rating it Very Important for a total of 76.5 percent in the MI group.

The other three formats, A series of weekly evening meetings, A series of weekly Saturday meetings, and Videotape activities packaged to be checked out for home study, each received a rating of Extremely Important or Very Important from 52.9 percent of the respondents.

The three formats which did not meet minimum acceptance levels were; A series of weekly after school meetings (31.3% in the MI group), One day "camps" (47.1% in the MI group), and Over night "lock-in" or "camp" held on a weekend or during summer (29.4% in the MI group).

The five formats which met or exceeded the minimum acceptance level on Round 3 in order of rank were:

1. Should be incorporated in 4-H and Vocational Agriculture programs.
2. Should be part of the curriculum in rural schools.
3. Video tape/activities packaged to be checked out for home study.
4. A series of weekly Saturday meetings.
5. A series of weekly evening meetings.

Also included in this section on the second round questionnaire were categories for the respondents to indicate the favored time length for the first three formats. An extremely low number of respondents (as low as 13) was encountered in this section. However, this still met the minimum number per group to maintain reliability as suggested by Dalkey (1966).

Information in Table 6 shows the percentage of respondents choosing each time length. The most often selected time length was one to two hours for all of the suggested formats.

Table 6. Percentages of respondents choosing each time length for three suggested formats

Format	N	time length: less than 1 hour		1-2 hours		3-4 hours	
		N	%	N	%	N	%
A series of weekly evening meetings	13	4	30.8	9	69.2	--[a]	--
A series of weekly after school meetings	14	7	50.0	7	50.0	--	--
A series of weekly Saturday meetings	14	2	14.3	8	57.1	4	28.6

[a] This time length was not one of the options for evening and after school meetings.

One additional opinion expressed by a respondent on Round 2, was "I really feel that flexibility of time offerings is a key issue." This comment was included on the third round questionnaire, and an examination of the returned questionnaire revealed that two respondents indicated agreement. Several similar comments could be found on the questionnaires from previous rounds. This, along with the weak consensus, (or lack of consensus) and the low numbers that prevailed in this section, suggested to the researcher that determination of time length and format needs to be left to the discretion of the presenting organization.

In general, the format section of the study tended to have the weakest levels of consensus and lower N's, due to

blanks left in the data by missing responses. While the a priori criteria level of 50 percent of respondents in the MI group was used to accept or reject each format as a characteristic of a farm safety program for 9 to 14 year old youth, it should be recognized that there was much less agreement among the respondents in this area.

The data generated from the three questionnaires provided a basis for developing guidelines for the characteristics of a farm safety awareness program for youth. These characteristics are discussed in the following chapter.

CHAPTER V.

SUMMARY AND DISCUSSION

Statement of the Problem

Present farm safety programs for youth tend to be single topic, one shot approaches with limited accessibility and often questionable effectiveness. It appears that new safety education programs are needed to address the problem of safety education for children prior to 4-H or vocational agriculture experience and also to serve as a basis for further safety education.

The goal of this study was to determine the characteristics for a farm safety awareness program for youth. The objectives of the study were:

1. To determine if the goal of developing safety awareness is appropriate.
2. To determine the objectives for the program.
3. To determine the topics that should be covered.
4. To determine the learning activities that should be utilized in the program.
5. To determine what format is appropriate for delivery of the program.
6. To determine what resource materials are available for use in the program.

Methodology

The Delphi technique was used to attempt to reach consensus from a group of safety experts selected from among the members of the National Institute for Farm Safety. The population for the study was defined as the 49 members of the National Institute for Farm Safety residing in the corn-belt states. The Round 1 questionnaire was sent to all 49, and the sample was defined as those who agreed to participate by completing the questionnaire. Twenty-two individuals agreed to participate. The questionnaire for the first round consisted of one question with a five-point Likert-type scale, asking the respondents to rate the goal, To develop awareness in youth 9 - 14 years old of the hazards found on the farm. It also contained five open-ended questions asking for the respondents' opinions on objectives, topics, activities, formats and references for use in a farm safety program for youth.

The second round consisted of the summarized responses from the first round, with the addition of a five-point Likert-type scale. Nineteen participants returned the Round 2 questionnaire. The responses were summarized and used to construct the Round 3 questionnaire which used the questionnaire from the second round, with the percentages of respondents indicating each rating added, as well as comments from the previous round. Eighteen people returned the third questionnaire.

For each item on the questionnaire, frequencies and percentages were calculated for each of the rating categories. These data were then grouped into a More Important (MI) group, those that were rated Extremely Important and Very Important, and Less Important (LI) group, those that were rated Moderately Important, Slightly Important and Not Important, which were separated by the Group Division Line (GDL).

Consensus was then examined in the second and third rounds. A third round a priori acceptance level of 50 percent of respondents ratings being in the MI group, was used.

Results

Of the first round participants, 95.5 percent strongly or moderately agreed with the goal of the program, To develop safety awareness in farm children 9 to 14 years old. In addition, 14 objectives, 20 topics, 19 activities, 7 formats, and 25 references were identified from the responses to the open-ended questions.

Results of the second and third rounds were used to examine the movement of the participants' ratings in relation to consensus and evaluate each item against the a priori criteria.

Thirteen of fourteen objectives met or exceeded the acceptance level on the second round. All fourteen met or exceeded the criteria on the third round. The objectives

receiving the highest percentage of MI ratings were; To identify hazards found on the farm, To develop respect for safety hazards, To understand causes of accidents and near-misses, and To identify the typical farm hazards children are exposed to.

The objective receiving the lowest percentage of ratings in the MI group was, To work with the media to promote farm safety.

In this section of the study, strong indications of consensus were found. The high percentage of respondents' ratings in the MI group for most objectives, as well as definite shifts in the percentages for each of the ratings, indicated agreement among the group of the perceived importance of the objectives. While some movement in the data in Figure 5 were contrary to the general trend, examination of the data shown in Table 2, revealed this was due to movement toward consensus, with the consensus centering between the More Important and Less Important groups. The comments expressed by the participants, as well as the lack of missing cases in the data, added credence to the observation of consensus.

Of the twenty topics derived from the first round, sixteen exceeded the minimum acceptance level on the second round and seventeen met the criteria in the third round. The four topics receiving the highest percentage of respondent's ratings in the MI group were; Machinery safety, Tractor

safety, General farm yard and structures hazards, and Grain handling and storage safety. The topic with the lowest percentage of ratings in the MI group, which still met the minimum requirements for acceptance was, Human behavior in relation to safety. Three topics failed to meet the minimum levels of acceptance. They were; Gun safety, Tornado safety, and Safety laws and regulations.

The number of topics receiving a very high percentage of ratings in the MI group, as well as examination of the data from Table 3, which again showed movement toward one or two rating categories for most of the topics, indicated a strong consensus by the respondents. As in the case of the objectives, the lack of missing cases in the data, and the participants' comments on the questionnaires tended to support the belief that consensus was reached in most cases.

In the first round, nineteen activities were identified by the participants. Eleven exceeded the acceptance level in the second and third rounds. The four activities receiving the highest percentage of ratings in the MI group were; Hands-on activities, Videotapes, Accident demonstrations using actual machinery and straw/paper dummies, and Talks by actual accident victims describing their accident and its influence on their lifestyle. The activity with the lowest percentage of ratings in the MI group which still exceeded the acceptance level was; Classroom work sheets, pamphlets, and booklets.

Eight activities failed to receive an MI rating of 50 percent or more. Of these, the activity with the highest percentage of ratings in the MI group was Films, and the lowest was Audiotapes.

The results in this section of the study experienced less movement among the rating categories and hence tended to have weaker movement toward consensus. A low N, due to attrition and missing responses, also influenced the percentages in each of the rating categories. This observation, and the comments received on the questionnaires, tended to support the belief that consensus among the group on this section of the study was not as strong as the sections containing the objectives and topics.

There were seven formats listed on the second round questionnaire. The third round questionnaire listed eight formats because of a strong rationale for including an eighth format by one participant. Four formats, A series of weekly Saturday meetings, A series of weekly after school meetings, Should be incorporated in 4-H and Vocational Agriculture programs, and Should be part of the curriculum in rural schools met or exceeded the minimum level of acceptance on the second round.

Five formats exceeded the minimum level of acceptance on the third round. Video tape/activities packaged to be checked out for home study, A series of weekly Saturday meetings, A series of weekly evening meetings, Should be part

of the curriculum in rural schools, and Should be incorporated in 4-H and Vocational Agriculture programs, all had MI ratings of 50 percent or more. The preferred time length for the weekly meetings was one to two hours.

The Format section of the questionnaire showed the least movement in ratings between Rounds 2 and 3, and the lowest level of consensus. This observation was supported by the lower number of responses found on many of the questions in this section, primarily due to instances where participants chose not to rate many of the items, and the lack of movement among the participants' ratings between Round 2 and 3. This along with analysis of comments made on the questionnaires, tended to indicate that the decision related to format should be left to the organization presenting the program.

CHAPTER VI.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The purposes of this study were to determine if the goal of developing safety awareness in farm youth 9 to 14 years old was appropriate, and ascertain the characteristics of a farm safety awareness program. These characteristics of the program were the objectives, topics, learning activities, and format that should be used, as determined by the consensus of a selected group of safety experts.

Based on the results of this study, it was concluded that the goal of developing awareness in youth of the hazards found on the farm is appropriate. This is in agreement with one of the goals expressed in the Rural Ontario Safety Kit (Farm Safety Association Incorporated, 1980).

The results of this study did, however, tend to expand the goal into the areas of positive attitude development, behavior modification, problem solving, and emergency preparedness.

The objectives for a farm safety awareness program, as determined by this study, should be (in descending order of rank):

1. To develop the skills necessary to recognize safety hazards
2. To develop respect for safety hazards

3. To understand causes of accidents and near misses
4. To identify the typical farm hazards children are exposed to
5. To encourage the development of procedures and solutions for eliminating hazards
6. To dramatize typical farm accident situations
7. To create a sense of responsibility for the youth as a "safety guardian" on his/her farm
8. To dramatize and explain the environmental and emotional conditions which increase accident potential
9. To respect limits set by parents
10. To demonstrate human limitations and reaction time
11. To identify emergency procedures and basic first aid steps
12. To identify the six leading causes of accidental death
13. To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents
14. To work with the media to promote farm safety

These objectives closely parallel those outlined by Florio and Stafford (1969, p. 343). They also provided a basis on which to develop specific instructional objectives for use with a farm safety program for 9 - 14 year old youth.

The topic areas that should be covered, as determined by the participants in this study, included (in descending order of rank):

1. Tractor safety
2. Machinery safety
3. General farmyard and structures hazards
4. Grain handling and storage safety

5. Electrical safety
6. Labeling and operation of machine shut-offs
7. Causes of deaths/injuries in rural youth
8. Confined spaces safety (silos and manure pits)
9. Livestock safety
10. Lawn mower safety
11. Chemical safety
12. Appropriate tasks for the 9 - 14 year old age group
13. Proper clothing and personal protective equipment
14. Farm recreation safety
15. Emergency preparedness
16. Fire safety
17. Human behavior in relation to safety

The topics listed above cover the areas where a high incidence of accidents occur to children as identified by many studies (Field & Tormoehlen, 1982; Huizinga & Murphy, 1988; Hoskin & Miller, 1979; Riesenberg & Bear, 1980; Silletto, 1976; Williams, 1983; Jensen, 1980; Letts, 1989).

These topics also parallel the topic areas found in many safety programs and references (Silletto & Hull, 1988; Deere and Co., 1974; Farm Safety Association Incorporated, 1980; Florio & Stafford, 1969; and Kamp, 1990).

The activities determined to be most appropriate for teaching farm safety awareness to the 9 to 14 year old age group included (in descending order of rank):

1. Hands-on activities
2. Videotapes
3. Accident demonstrations using actual machinery and straw/paper dummies
4. Talks by accident victims describing their accident and its influence on their lifestyle
5. Classroom/group discussions
6. Field trips
7. Working models
8. Activities, pamphlets, booklets and stickers for students to take home for family involvement
9. Lectures by safety experts
10. Hazard scavenger hunts
11. Classroom work sheets, pamphlets and booklets

These activities are similar to those suggested by Bekkum and Hoerner (1980), Yost (1972), Worick (1975) and Florio and Stafford (1969). It is important to notice that these activities tended to involve the student and they are action and participation oriented. The fact that "hands-on activities" received the top ranking, and was the only activity to reach solid consensus with 100 percent of the respondents rating it as Extremely Important or Very Important in a section of the study for which consensus was difficult to ascertain, should not be overlooked.

The best formats by which a farm safety program for youth should be delivered, as determined by this study were (in descending order of rank):

1. Should be incorporated in 4-H and Vocational Agriculture programs.
2. Should be part of the curriculum in rural schools.
3. Video tape/activities packaged to be checked out for home study.
4. A series of weekly Saturday meetings.
5. The series of weekly evening meetings.

However, based on the data, the lack of consensus, low N and the comments made by the respondents, it was felt that flexibility was important and the decision to select the most appropriate format and/or time frame should be left to the group conducting the program.

This study used participants with a variety of backgrounds and affiliations in an attempt to gain input from as broad a group as possible. This was done in order that we might be able to develop some guidelines that would have widespread appeal and be helpful in forming strong coalitions with which to attack the problem of farm accidents in young people.

As Beard (1924, pp. 5-6) said nearly seventy-five years ago, "A continuous educational program and a live safety organization in which all civic agencies are repre-

sented constitute the only effective means of reducing the number of accidental deaths in any community".

It is clear that we cannot continue to allow our young people to be killed and maimed in gruesome and tragic farm related accidents. We must move to develop new educational programs, references, materials, and activities in an attempt to create effective tools by which to develop positive behaviors and attitudes for the prevention of farm accidents both to youth and adults involved in agriculture.

Recommendations

Based on the results of this study and the experience of the researcher, the following recommendations should be considered when planning safety education programs for youth:

1. Farm safety programs for youth should focus on educating youth to recognize and respect the safety hazards to which they may be exposed, as well as understanding the factors that influence accident involvement potential.
2. Farm safety programs for youth should concentrate on the safety hazards common to tractors, machinery, grain handling and the farmyard area.
3. The types of educational activities to be utilized in a farm safety program for youth should involve the students, be action oriented and provide as much "hands-on" experience as possible.

4. The decision concerning the format for delivery of farm safety education programs for youth should be made by the people involved, with a preference toward delivery through the 4-H and vocational agriculture programs, as well as the rural elementary school curriculum.
5. Present farm safety materials should be reviewed, evaluated and revised, and new materials developed and tested for use in farm safety education.
6. Additional programs, materials and activities should be developed for use in the present 4-H and Vocational Agriculture programs.
7. Materials which are suitable and effective for use with the pre-nine year old age group of farm youth should be developed.
8. Programs and materials should be developed that involve the entire family in farm safety education.
9. Federal, state and local governments, as well as private organizations and industry, should encourage the formation of coalitions between current organizations working in the area of farm safety, to maximize the benefits of present and future resources.
10. Health organizations, such as local doctors, clinics, hospitals and emergency organizations, should be encouraged to take an active role in farm safety education.

The following recommendations related to research are offered based on the researcher's experience and the results of this study.

1. Research should be initiated to determine the age appropriateness of typical farm tasks.
2. Research should be conducted to determine the feasibility of implementing farm safety programs in rural elementary schools on a wide-spread scale.
3. Studies should be conducted to determine the characteristics of farm safety programs for young people under 9 years old.
4. Research should be undertaken to determine which activities and methodologies are most effective for teaching farm safety.

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APPENDIX

Resource List 108

Round 1 Letter 110

Round 1 Questionnaire 111

Round 1 Follow-up Letter 117

Round 2 Letter 118

Round 2 Questionnaire 119

Round 2 Follow-up Letter 127

Round 3 Letter 128

Round 3 Questionnaire 129

Round 3 Follow-up Letter 138

Resources:

The following resources were identified by the respondents in this study:

Audio/Visual Materials

Farm Safety Training Program. Volume 1. (Agricultural Extension Service, University of Minnesota).

Electrical Safety on the Farm. (Agricultural Extension Service, University of Minnesota).

For the Rest of Your Life. (Society for the Prevention of Blindness).

John Deere Safety Programs (7 Videos). (Deere and Co.).

Miscues with Machines. (Iowa State University).

Suffocation Hazards of Flowing Grain. (Purdue University).

Agricultural Tractor Safety. (Purdue University).

All-Terrain Vehicle Safety. (Mississippi Farm Bureau).

Fire Power. (National Fire Protection Association).

Farm Safety for Kids. (Farm Safety for "Just Kids" and Dow Chemical).

Farm Safety, Facing the Challenge. (Iowa Attorney General's Office).

Texts and Written Materials

Agricultural Safety. (Deere and Co.)

Farm Accident, First on Scene. (Midwest Plan Service)

Farm Accident Rescue. (Midwest Plan Service)

Developing Shop Safety Skills. (American Association of Vocational Instructional Materials).

Papers from the American Society of Agricultural Engineers. (St. Joseph, MI).

"Breaking New Ground." (Quarterly Publication from Purdue University).

Safe Operation of Agricultural Equipment. (Text, instructor's manual, and student's manual). (Hobar Publications).

Safety bulletins. (National Safety Council).

Safety bulletins. (your local Cooperative Extension Service).

Computer Programs

Ag Machinery Safety and Related Review. (Hobar publications)

Home and Farmstead Safety and Related Review. (Hobar publications)

Safety Series. (American Association of Vocational Instructional Materials).

Miscellaneous materials

Color book. (Indiana Farm Safety Council).

Color book, and other materials. (Farm Safety for "Just Kids").

IOWA STA 111 VERSITY
of Science and Technology
AMES, IOWA 50011

Department of
Agricultural Engineering
Davidson Hall
Telephone 515-294-2871

March 27, 1990

^F1^ ^F2^ ^F3^, ^F4^
^F5^
^F6^
^F7^, ^F8^ ^F9^

Dear ^F1^ ^F3^:

As someone interested in farm safety, we're sure you share our concern over the number of children who are tragically killed or maimed each year in farm related accidents. We would like you to join us in attempting to alleviate this problem by participating in a Delphi type study to determine the content, methods and materials that should comprise a comprehensive farm safety awareness program for 9 to 14 year old youth. This program, with the goal of sensitizing children to the dangers found on a farm or farmstead, would be the first level in a multi-tier safety education system.

This study will consist of a series of three or four questionnaires sent to you over the next eight to ten weeks. Each questionnaire will be constructed from the responses to the previous round. If a general consensus has been reached after the third round, the study will end, final results will be tabulated, and the program designed. However, if consensus has not been reached, you will be asked to complete one additional round.

Since this survey will require more time and thought on your part than conventional questionnaires, it will require dedicated participants. You are free to choose not to participate by marking the appropriate space on the survey, or to withdraw from the study at any time, should you desire. Completing this questionnaire indicates your consent to participate in the study. Our hope is that you will join us in this critically important task.

To ensure confidentiality, a numerical coding system will be used, with the master list known only to the researcher. Only grouped data will be reported, and no individual data will be released. At the end of the study, the codes and master list will be destroyed.

Results of the study will be sent to each participant. If you have any questions feel free to contact us at (515) 294-1320. Thank you for your consideration and cooperation.

Respectfully,

Richard Steffen
Graduate Student
Ag. Education & Studies

Dr. Thomas Hoerner
Professor
Ag. Engineering/Ag. Education & Studies

FARM SAFETY AWARENESS PROGRAM FOR YOUTH

CONTENT SURVEY

Questionnaire #1

This survey is to solicit the opinions of safety experts on the content, methods and activities that should be included in a farm safety awareness program for 9 to 14 year old youth.

Please read all the questions carefully before responding. Be sure to give examples, comments and explanations where requested, to help clarify your point.

Please keep in mind that the program being designed is not a safety training program as much as a program to sensitize children who may live, work and play on a farm or farmstead.

☐ I do not wish to participate in this study.

1(a).

The goal for this program is:

> To develop an awareness in 9 to 14 year old children of some of the safety hazards found on the farm.

Indicate how strongly you agree or disagree with the goal of this program.

strongly agree	moderately agree	mildly agree	moderately disagree	strongly disagree
☐	☐	☐	☐	☐

Comments _____

1(b).

In the left column below are some objectives for the program. Add any additional objectives you feel would be appropriate. Use the right column to make comments about the objectives.

OBJECTIVES	COMMENTS
1. To develop hazard recognition skills.	
2. To demonstrate human limitations and reaction time.	
3. To dramatize farm accident situations.	
4. To identify emergency and first aid procedures.	

1(c).

Please list all the topic areas you feel should be included in this program in the left column. Use the right column for comments and descriptions. An example is provided.

TOPICS	COMMENTS AND DESCRIPTIONS
1. Machinery safety	Stress PTO and drive mechanisms

1(d).

In the left column below, list the activities you feel would most effectively achieve the objectives in 1(b). In the right column give a specific example and/or description. An example is provided.

ACTIVITY	EXAMPLE OR DESCRIPTION
1. Slide presentations	slides of tractor controls

1(e).

In the left column below, list types of resource materials you feel would be appropriate for this program. In the right column list specific titles or descriptions. An example is provided.

RESOURCE MATERIALS	TITLE OR DESCRIPTION
1. Textbook	FOS Agricultural Safety by Deere and Co.

1(f).

In the left column below, list the various formats you feel would be most suitable for delivery of this program. In the right column write any comments or explanations. An example is provided.

FORMAT	COMMENTS AND EXPLANATIONS
1. 3 - 2 hour meetings	have a 2 hour evening meeting (6:30 to 8:30 p.m.) every Wednesday night for 3 weeks.

Thank you for your thoughtful responses to this questionnaire. Please return the completed form in the enclosed stamped, addressed envelope by April 6 1990.

IOWA STA[118]VERSITY
of Science and Technology
AMES, IOWA 50011

Department of
Agricultural Engineering
Davidson Hall
Telephone 515-294-2871

April 10, 1990

^F1^ ^F2^ ^F3^, ^F4^
^F5^
^F6^
^F7^, ^F8^ ^F9^

Dear ^F1^ ^F3^

About two weeks ago you should have received a questionnaire on the content of a farm safety awareness program for youth. As yet we have not received your response. We know how easily it is to overlook something like this in your busy schedule. At this time we would like to encourage you to return the questionnaire. If you do not wish to participate return the form with the proper box marked. Thank you.

Respectfully,

Richard Steffen
Adjunct Instructor

RS/dv

IOWA ST 119 NIVERSITY
of Science and Technology
AMES, IOWA 50011

Department of
Agricultural Engineering
Davidson Hall
Telephone 515-294-2871

April 30, 1990

^F1^ ^F2^ ^F3^, ^F4^
^F5^
^F6^
^F7^, ^F8^ ^F9^

Dear ^F1^ ^F3^:

It's us again. First, we express appreciation for the thoughtful and creative responses you gave on the first questionnaire. The group created a wealth of ideas and we have had quite a time trying to summarize all the information into a manageable form, but we feel we are successful. Before we begin the second questionnaire we would like you to relax and have a cup of tea on us as we review the procedures for the study and explain the next step.

We summarized and categorized all the responses to the first questionnaire and used this as a basis for creating the second questionnaire which you should find included with this letter. For each area we have synthesized a brief statement or category heading we feel is an expression of the groups ideas. Included under many of the headings are very brief comments gleamed from the first questionnaire. With each item you will also find a scale on which to rate each item as well as a place to write any comments or arguments for or against each item. In the section on resources, we had so many specific titles listed that we listed only categories on this questionnaire and will place the specific titles listed on a reference list for use in the curriculum.

The purpose of this questionnaire is to begin to form a consensus on the items generated from the first survey, the group feels are essential to the program. We will take your responses, analyze them, and use this as a basis for the third (and hopefully last) questionnaire.

Again we express our sincere appreciation for the wonderful cooperation you have given us in this important task. We hope you will continue to aid us as we begin to form a consensus on the essential elements of a farm safety program for youth. If, however, you feel you cannot continue participation, mark the appropriate box on the survey and return it in the enclosed envelop. We hope you will continue, the hardest part is completed. If you have any questions, feel free to contact us at (515) 294-1320. Thank you for your continued cooperation.

Respectfully,

Richard Steffen
Graduate Student
Ag. Education & Studies

Thomas Hoerner
Professor
Ag. Engineering/Ag. Education & Studies

FARM SAFETY AWARENESS PROGRAM FOR YOUTH
CONTENT SURVEY

Questionnaire #2

This is the second questionnaire on the content, methods and activities that should be included in a farm safety awareness program for 9 to 14 year old youth. It consists of the summarized responses to the first questionnaire with a rating scale.

Please read each question carefully before responding. Be sure to give any comments you feel are important or would clarify your point.

You will notice that section "e", resource materials, has been omitted. This was done because: The activities and objectives indicate which of the materials are most appropriate. All the resources are valuable either for student use, as a program activity or as a reference for the presenters. And, such a tremendous amount of suggestions was generated it was impossible to summarize into a brief description. These suggestions will be compiled and included in the program as a list of suggested references.

We are also asking for some additional demographic data on the participants of the study to aid us in analyzing the responses.

DEMOGRAPHICS

1. Which of the following best describes your position?

   ____ Educator
   ____ Engineer
   ____ Researcher
   ____ Safety specialist
   ____ Loss control
   ____ Other_____

2. Which of the following best describes your organization?

   ____ Industry
   ____ Extension
   ____ University
   ____ Insurance
   ____ Other_____

A vast majority of you indicated a strong to moderate agreement with the goal of the program as stated on the first questionnaire. It is restated here, slightly modified as was suggested, to guide you as you complete this questionnaire.

GOAL: To develop an awareness in 9 to 14 year old children of the safety hazards found on the farm.

2(b) OBJECTIVES

The objectives listed below were generated from the responses to the first questionnaire. **Please indicate how important you feel each is the program by marking the appropriate box.** Please include any additional comments you have.

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
1.	To develop the skills necessary to recognize safety hazards.	☐	☐	☐	☐	☐
2.	To demonstrate human limitations and reaction time.	☐	☐	☐	☐	☐
3.	To dramatize typical farm accident situations.	☐	☐	☐	☐	☐
4.	To identify emergency procedures and basic first aid steps.	☐	☐	☐	☐	☐
5.	To understand causes of accidents and near misses.	☐	☐	☐	☐	☐
6.	To develop respect for safety hazards.	☐	☐	☐	☐	☐
7.	To work with the media to promote farm safety.	☐	☐	☐	☐	☐
8.	To encourage the development of procedures and solutions for eliminating hazards.	☐	☐	☐	☐	☐

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
9.	To identify the six leading causes of accidental death.	☐	☐	☐	☐	☐
10.	To respect limits set by parents.	☐	☐	☐	☐	☐
11.	To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents.	☐	☐	☐	☐	☐
12.	To dramatize and explain environmental and emotional conditions which increase accident potential.	☐	☐	☐	☐	☐
13.	To create a sense of responsibility for the youth as a "safety guardian" on his/her farm.	☐	☐	☐	☐	☐
14.	to identify the typical farm hazards children are exposed to.	☐	☐	☐	☐	☐

2(c) TOPICS

The topics listed below were generated from the responses to the first Questionnaire. **Please indicate how important you feel it is to include each topic in the program.** Please include any additional comments you may have.

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
1.	Machinery safety	☐	☐	☐	☐	☐
2.	Tractor Safety	☐	☐	☐	☐	☐
3.	General Farmyard and structures hazards	☐	☐	☐	☐	☐
4.	Livestock Safety	☐	☐	☐	☐	☐
5.	Grain handling and storage safety	☐	☐	☐	☐	☐
6.	Chemical Safety	☐	☐	☐	☐	☐
7.	Farm recreation safety	☐	☐	☐	☐	☐
8.	Emergency Preparedness	☐	☐	☐	☐	☐
9.	Proper clothing and personal protective equipment.	☐	☐	☐	☐	☐
10.	Confined spaces safety (silos and manure pits)	☐	☐	☐	☐	☐

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
11. Electrical safety	☐	☐	☐	☐	☐
12. Gun safety	☐	☐	☐	☐	☐
13. Fire safety	☐	☐	☐	☐	☐
14. Lawn mower safety	☐	☐	☐	☐	☐
15. Tornado safety	☐	☐	☐	☐	☐
16. Human behavior in relation to safety	☐	☐	☐	☐	☐
17. Safety laws and regulations	☐	☐	☐	☐	☐
18. Causes of deaths\injuries in rural youth	☐	☐	☐	☐	☐
19. Labeling and operation of machine shut-offs	☐	☐	☐	☐	☐
20. Appropriate tasks for the 9 - 14 year old age group	☐	☐	☐	☐	☐

2(d) ACTIVITIES

The activities listed below were generated from the responses to the first questionnaire. **Please indicate how important you feel each activity is to this program.** Please list any additional comments you may have.

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
1.	Slide/tape presentations	☐	☐	☐	☐	☐
2.	Hands-on activities	☐	☐	☐	☐	☐
3.	Films	☐	☐	☐	☐	☐
4.	Field trips	☐	☐	☐	☐	☐
5.	Videotapes	☐	☐	☐	☐	☐
6.	Hazard scavenger hunts	☐	☐	☐	☐	☐
7.	Working models	☐	☐	☐	☐	☐
8.	Static (non-working) models	☐	☐	☐	☐	☐
9.	Classroom/group discussions	☐	☐	☐	☐	☐
10.	Audio tapes	☐	☐	☐	☐	☐

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
11.	Classroom worksheets, pamphlets and booklets	☐	☐	☐	☐	☐
12.	Activities, pamphlets, booklets and stickers for students to take home for family involvement.	☐	☐	☐	☐	☐
13.	Accident demonstrations using actual machinery and straw/paper dummies	☐	☐	☐	☐	☐
14.	Computer/video games	☐	☐	☐	☐	☐
15.	Accident simulations created by computer graphics	☐	☐	☐	☐	☐
16.	Poster/speech/essay contests	☐	☐	☐	☐	☐
17.	Skits	☐	☐	☐	☐	☐
18.	Talks by actual accident victims describing their accident and its influence on their lifestyle	☐	☐	☐	☐	☐
19.	Lectures by safety experts	☐	☐	☐	☐	☐

2(f) FORMAT

The formats generated from the responses to the first questionnaire are listed below in random order. **Please indicate how important you feel it is that each be the PRIMARY delivery method for this program.** In addition, if you feel numbers 1 through 3, are most appropriate, indicate which of the time frames listed is best. Please make any additional comments you may have.

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
1.	A series of weekly evening meetings ____ 1 hour or less ____ 1 to 2 hour	☐	☐	☐	☐	☐
2.	A series of weekly after school meetings ____ 1 hour or less ____ 1 to 2 hour	☐	☐	☐	☐	☐
3.	A series of weekly Saturday meetings ____ 1 hour or less ____ 1 to 2 hours ____ 3 to 4 hours	☐	☐	☐	☐	☐
4.	One day "camps" (6 hours or more) on Saturday or during summer	☐	☐	☐	☐	☐
5.	Should be part of the curriculum in rural schools	☐	☐	☐	☐	☐
6.	Should be incorporated into existing 4-H and Vo-Ag programs. (in half hour sessions)	☐	☐	☐	☐	☐
7.	Overnight "lock-in" or "camp" held on weekends or during summer	☐	☐	☐	☐	☐

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50011

Department of
Agricultural Engineering
Davidson Hall
Telephone 515-294-2871

May 21, 1990

^F1 ^F2^ ^F3^, ^F4^
^F5^
^F6^
^F7^, ^F8^ ^F9^

Dear ^F1^ ^F3^

About two weeks ago you should have received the second questionnaire on the content of a farm safety awareness program for youth. As yet we have not received your response. We know how easily it is to overlook something like this in your busy schedule. At this time we would like to encourage you to return the questionnaire. If you do not wish to participate return the form with the proper box marked. Thank you.

Respectfully,

Richard Steffen
Adjunct Instructor

RS/dv

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50011

Department of
Agricultural Engineering
Davidson Hall
Telephone 515-294-2871

May 27, 1990

^F1^ ^F2^ ^F3^, ^F4^
^F5^
^F6^
^F7^, ^F8^ ^F9^

Dear ^F1^ ^F3^:

We're back once more. Again, let us express our appreciation for your wonderful participation on the first two questionnaires. We are now ready to complete the third, and hopefully last questionnaire. Enclosed with this letter you should find the third questionnaire, as well as some gum to chew on while you chew on the results of the second questionnaire.

We tallied all the responses to the second questionnaire, and calculated the percentage of responses in each category on the scale. These percentages are listed below the scale. In addition, the category you had marked on the scale is circled so you can see where your response is in relation to the responses of the other participants. Also included are comments from the previous rounds so that you may better understand the reasoning of the other respondents in rating each item as they did.

We have altered a few items in an attempt to clarify what we feel were problematic categories. Hopefully this will clear up some of the confusion. We would like you to review each item, considering the information we have provided, and rate the items again.

The purpose of this questionnaire is to reach consensus on which of the items the group feels are **essential** to the program. Unless a controversy arises over one or more of the items, this will be the last questionnaire, and we will notify you of the results as soon as the final analysis is complete.

Once again we express our sincere appreciation for the wonderful cooperation you have given us in this important task. We hope you will continue to aid us as we form a consensus on the essential elements of a farm safety program for youth. If, however, you feel you cannot continue participation, mark the appropriate box on the survey and return it in the enclosed envelope. We hope you will continue, we've rounded the last turn and are heading down the home stretch! If you have any questions, feel free to contact us at (515) 294-1320. Thank you for your continued cooperation.

Respectfully,

Richard Steffen
Graduate Student
Ag. Education & Studies

Thomas Hoerner
Professor
Ag. Engineering/Ag. Education & Studies

FARM SAFETY AWARENESS PROGRAM FOR YOUTH
CONTENT SURVEY

Questionnaire #3

This is the third questionnaire on the content, methods and activities that should be included in a farm safety awareness program for 9 to 14 year old youth. It consists of the summarized responses and rating scale from the second survey along with comments from the respondents. Percentages for each response are provided under the corresponding rating, and your previous response is circled.

Please consider the information with each question and rate each item. If you have particularly strong feelings about an item be sure to explain your response.

☐ I do not want to participate in this study.

3(b) OBJECTIVES

The objectives and their respective ratings generated from the previous questionnaires are listed below. Included in parenthesis are comments taken from the previous questionnaires. **Please indicate how important you feel each is to the program by marking the appropriate box.**

1. To develop the skills necessary to recognize safety hazards. (how do you do this?)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
72	28	0	0	0

2. To demonstrate human limitations and reaction time.

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
17	50	28	6	0

3. To dramatize typical farm accident situations.

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
22	56	11	11	0

4. To identify emergency procedures and basic first aid steps.
(should be limitations on who puts emergency procedures into action, a 9 year old should not be taught to use a fire extinguisher, but to exit the building)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
22	39	22	11	6

5. To understand causes of accidents and near misses.

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
50	39	11	0	0

6. To develop respect for safety hazards.

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
50	50	0	0	0

7. To work with the media to promote farm safety. (PSA's done by the kids have worked well with this age group)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
5	33	44	5	11

8. To encourage the development of procedures and solutions for eliminating hazards. (much of these techniques must be developed by the equip. mfgs.)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
28	50	11	11	0

9. To identify the six leading causes of accidental death. (not for them to develop, but they should be aware of the six)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
6	41	41	6	6

10. To respect limits set by parents. (some parents can't even do this)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
22	50	22	5	0

11. To develop sensitivity to the disabilities and changes in lifestyle that may result from typical farm accidents.

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
11	39	33	11	5

12. To dramatize and explain environmental and emotional conditions which increase accident potential.

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
17	56	22	5	0

13. To create a sense of responsibility for the youth as a "safety guardian" on his/her farm. (this is important)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
17	61	17	5	0

14. to identify the typical farm hazards children are exposed to. (this sounds like number 1)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
50	28	17	5	0

3(c) TOPICS

The topics and their respective ratings generated from the previous questionnaires are listed below. Included in parenthesis are comments taken from the previous questionnaires. **Please indicate how important you feel each is to the program by marking the appropriate box.**

1. Machinery safety

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
83	17	0	0	0

2. Tractor safety

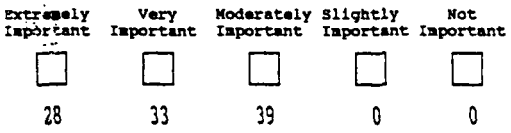
Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
95	5	0	0	0

3. General farmyard and structures hazards (topics 3 - 5 should be grouped together)

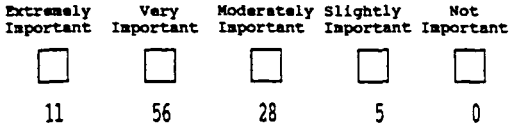
Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
28	61	11	0	0

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
4.	Livestock safety (depends on the type of farm)	☐ 22	☐ 50	☐ 28	☐ 0	☐ 0
5.	Grain handling and storage safety	☐ 23	☐ 50	☐ 17	☐ 0	☐ 0
6.	Chemical safety	☐ 33	☐ 39	☐ 22	☐ 5	☐ 0
7.	Farm recreation safety (ATV!)	☐ 11	☐ 44	☐ 28	☐ 11	☐ 5
8.	Emergency preparedness	☐ 28	☐ 33	☐ 28	☐ 11	☐ 0
9.	Proper clothing and personal protective equipment.	☐ 17	☐ 44	☐ 28	☐ 11	☐ 0
10.	Confined spaces safety [silos and manure pits] (depends on the type of farm)	☐ 44	☐ 28	☐ 22	☐ 5	☐ 0
11.	Electrical safety (know how to shut off main power and not to touch victim)	☐ 17	☐ 56	☐ 22	☐ 5	☐ 0
12.	Gun safety (depends) (mention need and refer to hunter safety course, required by DNR)	☐ 11	☐ 33	☐ 39	☐ 11	☐ 5

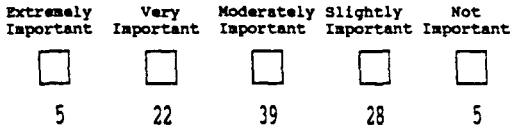
13. Fire safety (they get a lot in school)



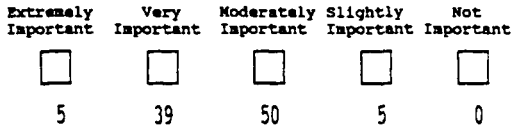
14. Lawn mower safety



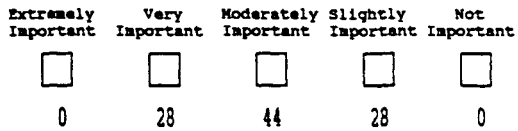
15. Tornado safety (learn a lot in school)



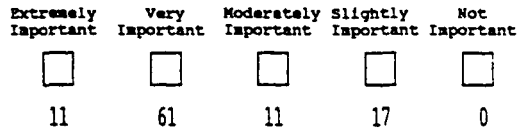
16. Human behavior in relation to safety



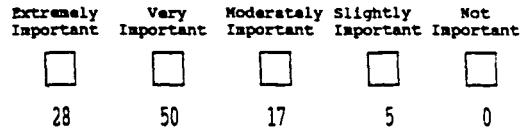
17. Safety laws and regulations (publicize in paper, tv and radio)



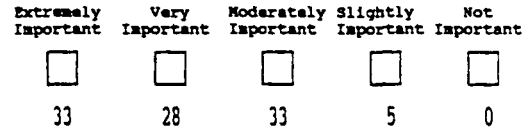
18. Causes of deaths\injuries in rural youth



19. Labeling and operation of machine shut-offs



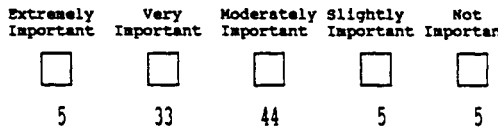
20. Appropriate tasks for the 9 - 14 year old age group



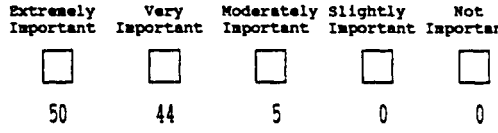
3(d) ACTIVITIES

The activities and their respective ratings generated from the previous questionnaires are listed below. Included in parenthesis are comments taken from the previous questionnaires. **Please indicate how important you feel each is to the program by marking the appropriate box.**

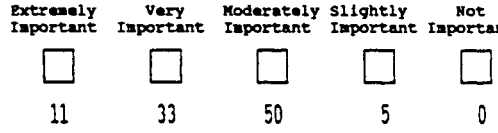
1. Slide/tape presentations (not many available) (I prefer videos for kids. unless the kids have taken them themselves as a project)



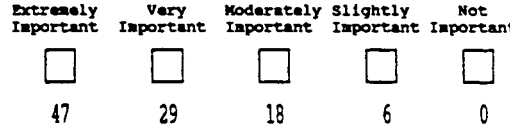
2. Hands-on activities



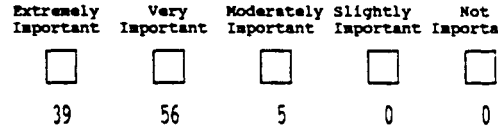
3. Films (not many available)



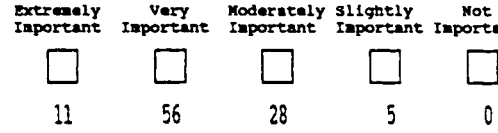
4. Field trips



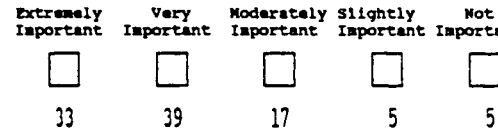
5. Videotapes



6. Hazard scavenger hunts



7. Working models



		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
8.	Static (non-working) models	☐ 11	☐ 22	☐ 33	☐ 22	☐ 11
9.	Classroom/group discussions	☐ 24	☐ 53	☐ 24	☐ 0	☐ 0
10.	Audio tapes	☐ 0	☐ 11	☐ 44	☐ 28	☐ 17
11.	Classroom worksheets, pamphlets and booklets	☐ 11	☐ 50	☐ 33	☐ 5	☐ 0
12.	Activities, pamphlets, booklets and stickers for students to take home for family involvement.	☐ 33	☐ 39	☐ 22	☐ 5	☐ 0
13.	Accident demonstrations using actual machinery and straw/paper dummies	☐ 28	☐ 61	☐ 5	☐ 5	☐ 0
14.	Computer/video games (don't know) (there are some made)	☐ 6	☐ 24	☐ 41	☐ 12	☐ 18
15.	Accident simulations created by computer graphics	☐ 0	☐ 18	☐ 47	☐ 29	☐ 6

16. Poster/speech/essay contests (separate idea from this)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
0	33	56	0	11

17. Skits

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
0	24	33	24	0

18. Talks by actual accident victims describing their accident and its influence on their lifestyle (via videotape)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
42	32	26	0	0

19. Lectures by safety experts (more important that "expert" can relate to kids)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
11	58	21	11	0

3(f) FORMAT

The formats and their respective ratings generated from the previous questionnaires are listed below. Included in parenthesis are comments taken from the previous questionnaires. Also, one additional format was strongly proposed. It is included for your consideration. The one hour time length was most often selected as being the best for numbers 1 - 3, therefore this section has been omitted on this round. One overall comment that was made is included immediately below. **Please indicate how important you feel each is to the program by marking the appropriate box.**

General comment: I really feel that flexibility of time offerings is a key issue.

1. A series of weekly evening meetings (with parents)

Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
☐	☐	☐	☐	☐
0	44	31	19	6

		Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important
2.	A series of weekly after school meetings (some of each (#2,3 and 4)) (what about transportation? buses have left)	☐ 24	☐ 24	☐ 41	☐ 6	☐ 6
3.	A series of weekly Saturday meetings	☐ 6	☐ 31	☐ 31	☐ 6	☐ 6
4.	One day "camps" (6 hours or more) on Saturday or during summer	☐ 29	☐ 18	☐ 35	☐ 12	☐ 6
5.	Should be part of the curriculum in rural schools (depends on school location) (who is going to be the expert, the teacher?)	☐ 50	☐ 19	☐ 25	☐ 6	☐ 0
6.	Should be incorporated into existing 4-H and Vo-Ag programs. (but not all farm children are in 4-H and FFA. Many programs in Indiana include safety)	☐ 47	☐ 29	☐ 18	☐ 6	☐ 0
7.	Overnight "lock-in" or "camp" held on weekends or during summer (this has worked well for some groups)	☐ 6	☐ 31	☐ 19	☐ 25	☐ 19
8.	Videotape/activities package to be checked out for home study.	☐	☐	☐	☐	☐

Thank you for your time. Please return the questionnaire promptly so that we may analyze the responses on June 18.

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50011

Department of
Agricultural Engineering
Davidson Hall
Telephone 515-294-2871

June 13, 1990

^F1^ ^F2^ ^F3^, ^F4^
^F5^
^F6^
^F7^, ^F8^ ^F9^

Dear ^F1^ ^F3^

About two weeks ago you should have received the third questionnaire on the content of a farm safety awareness program for youth. As yet we have not received your response. We know how easily it is to overlook something like this in your busy schedule. At this time we would like to encourage you to return the questionnaire. If you do not wish to participate return the form with the proper box marked. Thank you.

Respectfully,

Richard Steffen
Adjunct Instructor

RS/dv