You were talking on a world scale, an international scale, however, and that is big. We do not have much of a problem with equine encephalitis. When we do have it, we encourage the people to stay in.

In the Midwest our biggest problem with the farmer will be the infections they may get from being scraped when they work with confinement housing. Some of these can really be problems.

Tetanus is one of the things I talk more about than I do about the vectors; we do have some people that can be affected by anaphylactic shock, and this is the one where the bee stings will get the individuals. Again, I was glad that you were talking about the worldwide problem, because I know that Panama has a different problem than we have; we do have to look on a bigger scale.

Dr. Konz was talking about some of the problems of people. I think of milkers' knee. People say, "What is milkers' knee?"

Dairymen in New York know what milkers' knee is. We talk about tractor drivers' disease, and that is the one that is back-related.

Even stepping up on some of those 27-inch-high steps can be a real problem. I got to thinking about some of these things that are hidden from us.

We have a young lady here from the College of Medicine, Dr. Susanna Von Essen, who has been doing a lot of work on respiratory problems. We are glad to have her. I started looking at this community of respiratory therapists.

One of the things that blew my mind was when I found out that the Phelps County Hospital at Holdredge, Nebraska, last year had 370 cases of respiratory problems. That is a lot of people.

Yet our respiratory therapists are not organized. I was going to say they are loosely organized. They are not organized at all. We have a lot of people who we can gather all kinds of information from, but they are isolated because nobody has ever gotten them together. I am hoping that Susanna can do this. We have a lot of information out there that is just waiting to be gathered.

LESSONS FROM BILL STUCKEY

Dr. Erisman and I had a mentor, Bill Stuckey from Ohio State University. Ray Forsythe who is in attendance, did also. Bill Stuckey was an Extension Safety Specialist at Ohio State.

I will never forget a few things that Bill taught me. One of the things he taught me was "You never know until you ask." That is why when I go after statistics, a lot of people say I will get turned down. Well, you do not know until you ask. So I go ask them. I have never been turned down yet.

We have a new generation of people coming along. When you listened to Dr. Konz this morning, you almost thought he was anti-education. He is not anti-education.

Bill Stuckey had a little saying. He said there were those who "Knew not Joseph." What did this mean? Joseph was the king of a nice little kingdom for 48 years, and everybody loved Joseph. Joseph went out of power and a new king came in. Within

a year, there were those who knew not Joseph.

We have some little boys and girls being born today who know not safety. Somebody has to teach them. That is where we in extension come in. They have to "know Joseph"; they have to know safety.

TRAINING AND EDUCATION

A couple of comments came up here about training people. It has been my idea that you train people with the right idea.

I have raised golden retriever dogs since 1958. I run them in trials. People say, "Okay, you are a dog trainer. How do you keep dogs from chasing cars?"

That is simple. I keep them kenneled up. I take them out and train them. I teach them what I want them to know. That is it. I do not worry about their chasing cars because they never run free. Those dogs are not imposed on because they love it when we get out. That is our time.

You heard the comment the other day by Dr. Johnsrud about 23,000 youth trained in Nebraska in tractor safety. There are going to be about 24,500 trained by the end of this year.

I raised two boys. I believe that young people have to work. They have the same needs that I have. They have a need for money so that they can buy things. This is why we have trained these young people.

Some interesting things. At North Platte, there are a lot of ranchers who will take the kids into the sand hills and keep them there for 2 weeks while they are putting up hay. They will not take a youth up there if they have not had the safety training.

One rancher told me 20 years ago that "One of your students was with me. The boy told me I was doing something wrong." He said, "That boy was right." He wanted trained students.

So we keep on training them. We lost two of our trainees in accidents, both in 1971. They were both extra riders; both 14. This was within a 3-week period. They were extra riders on tractors and fell off. That is it. I guess they did not listen too well.

Dr. Konz questioned in education that maybe we did not get the information across to them, maybe we did not educate well enough. Gary alluded to this yesterday.

This has been an excellent opportunity for me to comment on these five papers.□

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AN AGRICULTURAL ENGINEERING PERSPECTIVE

By L. Dale Baker
Product Safety Engineer, J.I. Case Company

Dr. David S. Pratt: We next have L. Dale Baker. Dale is trained in agricultural engineering from the University of Nebraska. He spent two years at Michigan State University in the Agricultural Engineering Department. Closer to my home turf, he was in Ithaca at Cornell University as the Agricultural Extension Safety Engineer. He spent 10 years in product safety engineering with International Harvester and JI Case. Currently, he is the Manager of Safety and Legislation, Agricultural Equipment Group, with JI Case. Mr. Baker:

It is a pleasure to be here. I would like to tell you a little about my experience on the farm. Then you can evaluate the biases and perspective of my comments.

I am from Brandon, Manitoba, Canada. With few exceptions, farming near Brandon is no different from farming in North Dakota. Farm life and farm issues are much the same.

I grew up on a family farm that was passed to my father and my uncle from the grandparents. It was a traditional succession in farms in those days. They operated that farm as a partnership.

There were two houses on that farm, a couple of hundred yards apart. I had two older brothers and in the other family there were four children, three boys and a girl. I was the youngest of seven children.

Somewhat by the accident of birth, being the youngest, I was the one who had to leave home. The choice was made on an economic basis, rather than any concern for personal safety.

Today, my brother operates the farm that he has expanded to about 2,000 acres. The farm is on the upper slopes that surrounded a glacial lake bed, many thousands of years ago.

The land at the bottom of the lake bed will provide adequate income for the farm family. On the surrounding land, it is difficult to obtain adequate crop yields to financially survive. Therefore, my brother and his wife also have full-time jobs off-the-farm.

My brother works full-time as a welding instructor at the local community college. His wife is a full professor at the local university. With that income, they are able to sustain the lifestyle that they chose, to live on the farm.

My brother has some beef cattle and grows grain primarily to support the cattle. They also raise malting barley, as there is a premium for malting barley.

My sister-in-law likes to raise horses, train those horses for riding, and sell them. She has a total herd of about 45 horses.

One of those cousins who grew up with me has been in a relatively new business for about 15 years. He is collecting pregnant mares' urine. He has a herd of about sixty horses that he puts in the barn every fall.

They are strapped to a harness that collects the urine from those pregnant mares. That urine is refined for estrogen. This is not traditional agriculture.

That snapshot leads to several observations that illustrate the bias of my comments about safety on the farm:

- Farming is becoming a very diversified business.
- Many farmers are in an economic squeeze but continue to live and work on the farm as a choice in life-style.
- This is a family-farm environment where there are no migrant workers.
- Many farmers are relatively well-educated.
- It is generally the family who is the purchaser and operator of agricultural equipment.

HUMAN FACTORS

In commenting on the presentation by Dr. Konz, I agree with the concepts that were presented this morning. We, as an industry, wish to promote and are promoting human factors or ergonomics in our pro
ducts.

I am a member of the Human Factors Society. There are quite a number of practitioners or consultants at work in our industry. I agree with the concept, as a design philosophy, that the machine should adjust to the man.

We should be designing the machine to fit the man. As a design philosophy, we are working to do that.

When I get concerned is if someone makes the assumption that this design philosophy should be the legal requirement. As an example, it is impossible to build a machine that may resemble a tractor that will not roll over. Such a machine will not function as a tractor. I am not yet aware of how we can build a functioning tractor that will not overturn.

I repeat, however, that we are in agreement with those ideas and concerns in ergonomics as a design philosophy. You will see those kinds of concepts on new products.

I am not yet aware of how we can build a functioning tractor that will not overturn.

OLD AND NEW TECHNOLOGY

Let us take a moment to compare tractors in use today with automobiles in use today. Consider a 1971 automobile and a 1991 automobile. They are quite different.

Items on new cars include the center-mounted stop lamp, rear-impact bumpers, improved door latches, anti-lock brakes, crush resistance in the roof, side protection in the door panel, and improved tires. These are all innovations that are significant to the development of the 1991 automobile.

A 1991 tractor is also quite a different creature than the tractor that was built 20 years ago. Many of the same innovations on cars are used on tractors. The ingress/egress, control, steering, and interior styling of many new tractors are comparable to 1991 automobiles.

What do we see in terms of 20-year-old automobiles on the highway? How many do you see? Five percent? I think it is less than that.

I think that when you do see them that they are on display or going from one auto show to another. They are antiques. How many of the tractors that are in use today are more than 20 years old?

About a third of the tractors out there, in use today. That is, probably a million tractors, for a round number, are more than 20 years old.

Another interesting phenomenon is that a tractor design can survive for about 15 years; it may go a little longer. You will find considerable variation in the design of new tractors on the dealer's lot due to this delay in the design cycle.

Some of the features that Gary (Erisman) mentioned are already available on some tractors. Hydraulic controls, couplers, and hoses are labeled with numbers and flow direction on most newly designed tractors.

Changes in technology allow us to do things now that were not possible 20 years ago or 10 years ago. Many of you will remember the problems that President Carter had in trying to send some helicopters into Iran in 1979. About ten helicopters were sent. Many of them had problems and the mission was abandoned.

Compare that with what just happened in Desert Storm. There were tremendous changes in the reliability of the equipment.

In those days (pre-1979), transistors were experiencing 100 percent burn-in. That means that when you bought an electronic controller, "the black box," you would check 100 percent of those transistors. Now, the transistors are not checked at all because there is fantastic reliability of the transistors coming from the supplier.

Because the electronic "black box" now available is very reliable, new electronic-based systems can now be added to farm equipment. One example is an operator's presence system now used on combines. If the operator is out of the combine seat for more than 5 seconds, the combine header will shut off.

Other new applications of electronic technology will depend on the development of reliable sensor technology. The sensor must be as reliable as the electronic control box. This reliability should develop much like the reliability of transistors has evolved.

Another important development is the customer acceptance of this new technology. There seems to be a general acceptance of new safety innovations that may stem, in part, from Lee Iacocca advertising air bags.

ROLL-OVER PROTECTION

We have had a great deal of discussion, in this session, about Roll-over Protection Structures (ROPS). We have all seen the slide, many times, of the success of ROPS in Sweden.

In 1985, we had a commitment by the North American tractor manufacturers to make ROPS standard on all tractors. With a few exceptions of tractors that are being imported into this country and those that are for orchard applications, all tractors since that time are equipped with ROPS.

By 1970, ROPS in this country became available on virtually all major manufacturers' product lines. There was no demand for them. Therefore, we have a significant number of tractors in operation in the U.S. that were built in that interval between 1970 and 1985 that are not equipped with ROPS.

I would suggest, in gross terms, that there are about a million tractors that are equipped with ROPS or that have ROP structures built into the cab. About a million tractors that are out there could have a ROPS installed on them but do not.

Another million tractors that are in use were built prior to this introduction of ROPS and here installation of ROPS becomes a real technological issue. Now we should look at those two issues separately.

Pre-1970 Tractors

In putting ROPS onto tractors that were built prior to 1970, there are some significant technical issues. Will the tractor structure survive an impact with this ROPS attached? The structure was not built for that kind of use.

New frames could be designed, possibly, to accommodate the design by sharing the load forward to the transmission housing.

There is now a need to develop that new structure. There were many applications for those old tractors where implements were attached to the same location that we would attach this ROP structure. If you destroy that, you have destroyed the utility of that tractor.

There is also the issue of the economics of putting those ROPS on old tractors. If there is to be a program of that nature, it is going to have to start with the development of some pubic policy change that will create that demand. Is anyone going to invest the time and effort to develop new designs unless there is, in fact, a demand?

1970-1985 Tractors

The issue for tractors built in the interval between 1970 and 1985 where a ROPS can be installed becomes an issue of how to create an environment where the public demands those ROPS. They are available.

A demand undoubtedly could bring down the cost that was mentioned earlier. Until there is a demand, there will not be any initiative that will cause that to happen. It is the chicken and the egg situation.

If you could decrease the cost, maybe you could increase the demand. You cannot decrease the cost, however, until there is a demand. We are now again looking at what is a public policy issue of how you create that demand.

Is anyone going to invest the time and effort to develop new designs unless there is, in fact, a demand?

I would say to you that my brother is aware of the issues of ROPS and tractor overturns. But fatal tractor overturns are a rare event (a farmer is far more likely to be killed in a car accident than a tractor overturn).

Virtually all farmers are aware of the issue of fatal tractor overturns in the same sense that farmers (and the general public) are aware of the issue of cigarette smoking

causing cancer. What does it take to cause people to stop smoking cigarettes?

We could also talk about our desire, as a general public, to drive cars, which have an air bag and have anti-lock brakes. Clearly, as a general population, we are safer if all of the cars in use by 1995 have air bags and anti-lock brakes. What does it take to make you and me invest in new cars or stop smoking? Solving these same kinds of issues, I think, solves the issues for the farm population.

CONCLUSION

I would make one quick comment on statistics. In virtually all the groups at this conference, we have been talking about this issue of statistics. We are all talking about such diverse numbers that some of us are loathe to mention any numbers at all.

Injury statistics should be a number one priority. I hope that this message is coming through from all of the other groups.

What are the recommendations that I would make based on what we have heard in this conference, especially in this room? I think we are looking at some significant *public policy issues* in which the *farm population* needs to be involved in creating the answers.□

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HEALTH EDUCATION

By Rodney Gilmore, B.S., B.A.
Injury Control Program Manager
North Dakota State Department of Public Health

Dr. Walter J. Armbruster: Let me turn to our first presenter, Rodney Gilmore, who is with the Injury Control—or, I should say—is the Injury Control Program Manager for the North Dakota State Department of Public Health. His topic is *Health Education* as an intervention related to safe behavior among adults and children. Mr. Gilmore:

I have been with the State Health Department approximately one year. Prior to that, I worked with the North Dakota State Worker's Compensation Insurance Fund in the area of occupational health, particularly looking at injuries and rehabilitation.

I come from a farm family in North Dakota. I am a native of North Dakota, and my family still farms. I guess if it were lucrative enough, I would be back farming instead of being here today.

I have had a strong interest in farm safety and agricultural safety. We have heard some of the testimonies of some of the individuals that have had direct involvement in farm injuries. That is some of my background.

I lost my grandfather to a farm-family injury and also my best friend's dad, when I was in high school. Those two things have stayed with me for a long time. I welcome the opportunity to be able to work in this area and to hopefully have some impact on it.

Even though it is a serious field, we still have to look at life and enjoy life and, I guess, look for some humor in it.

I would like to start out the presentation with a joke I heard last week at the CDC Injury Conference in Denver. The story was told by an attorney.

An attorney had a farmer on the witness stand who had sustained an injury in a pick-up roll-over. He was suing the individual that ran him off the road. The defendant's attorney had him on the witness stand and said to this farmer "Mr. Farmer, I want you to answer this question yes or no. Is it true that when the highway patrolman got to you when you were laying in the ditch and you had just gotten up, that he asked you how you felt and you said, 'Just fine'?" The farmer said, "Yes, but. . ." The attorney said, "Wait a minute, I said yes or no." He sat down.

The farmer's attorney said to the judge, "There are some extenuating circumstances, and I would like for the plaintiff here to be able to tell his side of the story." The judge said, "Okay." The farmer said, "Well, the reason I said I was okay." He said, " The accident happened when I was coming around a curve. I had just come back from a sale. I bought a brand new bull, I should say, a new bull; I bought this prize bull and paid quite a bit of money for him. I had him in the back of my pick-up and came around this curve.

Here were these two vehicles coming at me. One of them had passed on a double

yellow line. He ran me off the road, and I went down the ditch and rolled the pick-up over and the bull went flying one way and the pick-up went the other way. I ended up getting thrown out of the pick-up."

"Right after the accident happened this patrolman walked up, looked at me, and he walked over and looked at my bull. Then he walked back to me and said, 'Your bull looks in pretty rough shape,' and I said, 'Yes, he is.' With that the patrolman walked over, drew his pistol out and shot the bull between the eyes. Then he walked back over to me, with the pistol in his hand, and he looked down at me and he said, 'Now, how do you feel?'"

To start it out, I would like to give you a preview of North Dakota and what it is like up there. The Department of Tourism is not paying for the trip, even though it may seem like it. I would like to give you some information we have gathered on statistics that we have been monitoring in the state before we get into our programs.

There is a train in North Dakota, and I guess the farming practices are just as varied as the train is. In eastern North Dakota our land is flat. In fact, water hardly drains off, and a lot of farmers have equipment to level the land because in the Red River Valley the rain will just sit on it. The ground is very fertile. We have sugar beets and potatoes, two of our biggest crops in eastern North Dakota. Even though the land is so flat, we still have a tendency to have tractor roll-overs in the eastern part of the state.

We have got a lot of row crops. As a consequence, we do have migrant workers come up in the summertime to work our sugar beets and potatoes. Approximately 17,000 to 18,000 migrant workers come into the state every year.

As you get to the central part of the state, it is typical high plains, much more rolling. You have interspersed agriculture with cattle and ranching. I guess a pretty good-sized farm in central North Dakota is one of our typical farms.

We have approximately 34,000 farms in North Dakota. We have 115,000 farmers directly involved in farming. When you add in the families, we are looking at 275,000 farm family members who are involved in agriculture in some shape or form.

The central part of the state has both agriculture and pasture. As you move further west in the state, you get into the Missouri River drainage. The land starts becoming much more rolling and much hillier. We do have large equipment in the state. Our average size farm is approximately 1,100 acres. So it is pretty good sized. We do have a lot of ranching in the central and western parts of the state.

As you move farther west, the land does get quite a bit rougher. When people talk about North Dakota, they generally think of it as fairly flat agricultural land. The western part of our state, however, is pretty scenic. Again, this is not pitched by the Tourism Department, but out in western North Dakota it is pretty. We have a lot of rough terrain out there and a lot of wildlife: bighorn sheep, deer, antelope, etc.

Activities out there are hazardous. A lot of ranchers have gotten away from utilizing pick-ups to go out and check their cattle and run through their pastures because they were finding out it did not take too

long to beat up and wear out a $24,000 pick-up.

They have gone back to utilizing $1,000 horses for checking fence and working cattle. Most of the western part of the state is considered semi-arid.

We do have some areas out there that have been very dry the last three years. Before I came down here, we did start to get some moisture, which was welcome.

We have this tendency in South Dakota and in Montana to put old thrash machines up on a hill. I have not the faintest idea why it is done. We have talked to a lot of people, and it just got to be a fad. Farmers will take an old thrash machine and stick it up on a hill where people can see it when they drive by on the roads.

There has been a program to eradicate these. That was being conducted by people who have had one too many beers at the local tavern. They go out there at night and push them down the hill!

The farm injuries in North Dakota are a serious matter. We have begun taking them much more seriously. We have fair media coverage in North Dakota as to what has been happening in the area of farm safety. Some of the media coverage and their support has led to much more interest in safety. This has led to the development of some of our programs.

We started out back in 1985 with a CDC grant looking at doing injury surveillance in the state. At that time, we asked medical facilities to report any injury that was fatal or disabling, or kept the injured person from effectively participating in their normal daily activities for one day beyond the date of the injury. We began that in April of 1985.

We developed an injury report card that went to the medical facilities, and we asked them to complete it. We tried to make it as short as possible.

There are two sides to this, to solicit their cooperation and to try not to make it too complicated. We did that from 1985 through December of 1990.

Beginning in January 1981, we started with a different case definition. With concurrence of the CDC, we are looking at only the injury events that are fatal, disabling, or result in the injured person being hospitalized for 24 hours or more. We are trying to look at more of the severe injuries.

We redid our injury report card and handed that out to all of the medical facilities in the state. Reporting in North Dakota is purely voluntary. We did not mandate reporting. The North Dakota Head Injury Foundation did get a bill passed two years ago mandating that head injuries be reported to the State Health Department. We do collect data on that.

We look at the injuries, and we classify them by ICD-9 Codes and E-codes. Two of our major hospitals in the state, metropolitan hospitals, are going to start reporting injuries by E, their trauma centers. They will do a computer run for us and send it to us every month. They will break it down by head injuries, agricultural injuries, and just injuries in general.

We talked at the CDC Injury Conference and decided that mandating E-coding or getting E coding in all medical facilities will be a primary key to developing a good

surveillance system. This will enable us to find out what is going on out there, particularly in the agricultural area.

When we first started out, in 1985 and 1986, our injury reporting was way up. By 1989 it had dropped drastically. The reason for that was really the fault of the program personnel.

> We learned that in order to keep a good surveillance system going, you must keep direct and frequent contact with the medical facilities and with the providers who are giving you the information.

We had some budget constraints and the position was open for about one year. One of the things we learned is that there is a constant turnover in personnel in the medical facilities, particularly in medical records. The emphasis on reporting would get pushed to the side as people came into the jobs and were trained.

Unless there was contact from the Health Department or from our program, reporting got pushed way down. Consequently, the numbers dropped off. We learned that in order to keep a good surveillance system going, you must keep direct and frequent contact with the medical facilities and with the providers who are giving you the information.

Agricultural injuries dropped off, as far as what was reported, comparable to overall injuries on a reporting system. Again, that was as a result of our program not keeping contact with the providers. We are looking at breakdown of injuries, and it mimics the national statistics. Tractors and machines accounted for the lion's share of our injuries that were reported through the surveillance system.

When we looked at the age groups, again, we ran pretty much in line with Federal and national statistics. The age group of 20 to 29 has the highest incident-rate of injuries. When we looked at male/female, we saw the breakdown of about 95 percent injured being males.

When we started looking at injuries and fatalities, we had a drop-off of our injuries reported due to the program. We get the fatalities from the death certificates that are available in the Vital Statistics Division of health departments. Our fatalities have dropped somewhat from 1985 through 1987, down to 13 in 1989 and 11 in 1990.

On the fatalities, again, we saw tractors and machinery as being the major cause of farm-related fatalities.

When we looked at the age group on our fatalities from 1985 to 1990, there were two age groups that we were of particular concern: the 0-to-19 age group and at 50 and over. Our older farmers were having a disproportionate share of the farm-related fatalities.

Right now we are going back to do case reviews on the fatalities. We will determine what interventions we need to do for that particular age group to develop a program that is going to target older farmers, looking at causation on farm-related fatalities.

We did have the greatest share of the fatalities during the time period from our spring planting in April to the end of our harvest season in September and October. We did, however, have fatalities through all the months of the year, even when it

was cold, and people were indoors as much as they could be in the wintertime.

We found males as having 90 percent and females just about 10 percent of the fatalities, which was a little higher ratio for the females than it was on the injuries.

Also, we find more farm-related, or agriculture-related, suicides as compared to suicides in general in the state. They have stayed somewhat constant over the course of the last 10 years.

This past year, for farm injuries that were reported during 1990, we saw all types of machinery as the primary cause of agricultural-related injuries that were seen in the state. This past year we saw a shift into the age group of 30 to 39 having a higher share of the agriculture-related injuries compared to overall statistics of age group 20 to 29. Utilizing that information, we applied for and received grant information from the Centers for Disease Control for injury-intervention programs in North Dakota targeting agricultural groups.

One of the first programs we developed was with the North Dakota Emergency Medical Technicians (EMT) and Emergency Transmatic Cars (ETC) Association. We have approximately 125 ambulance and rescue squads scattered across the state. Most are in rural areas; they are volunteer squads.

Each year we had 20 ambulance squads putting on a farm safety program. It is on the cover of the handbook that goes with the Farm Injury Prevention Program. It is a three- to four-hour program. The response from the agricultural community has been tremendous.

It targets farm family members. In the rural areas the EMT squad will take 1 or 2 nights, publicize a local program, and offer some type of barbecue dinner or a social get-together to bring the farm family members together. Surprisingly, we have had several communities with only 100 to 150 people have upwards of 265 people come and sign up for this program. They are willing to sit down for 3 to 4 hours to go through an educational program.

There is a video presentation that goes with this handbook. It is set up in an instructional manner where they will view the video for 15 to 20 minutes.

They break down into groups and work for 15 or 20 minutes in a group with different stations. The EMT squad wanted to be able to do some basic first aid and some resuscitation, in addition to the safety program.

They also look at doing First Response on how to contact the EMS service. One of the things the dispatchers were finding in North Dakota, through EMS, is that we do have a lot of Norwegians and Swedes in North Dakota.

Someone would call up and say, "Hurry up. Get out here. There's been an accident at the Olson farm." The dispatcher would look at his listing for that area and there are 15 Olson farms. Then he wonders, Which one is it?

They get back on the phone and start calling around, hoping someone was still in the house that they could contact. One of the things that this program teaches (not only to the adults but to the children in the family) is if an adult is injured, the correct manner of calling EMS is how you give the location, and if you know a basic descrip-

tion of the injury, what type of injury it was. Then EMS can prepare themselves on the way to the farm site.

The EMS would get to farm sites and could not find where the person was. The caller did not say if it were out in the field or what type of field; if it was a barn, or if it was in a silo. The EMS would have to drive around the farm looking for the injured person because all the farm family members were out there.

That was another component on which we put a strong emphasis, the correct manner in contacting EMS. The time frame from the time of the injury until the individual receives medical care is critical. If we can cut that down by a number of minutes, it is going to help as far as recovery and save some lives.

Twenty communities are putting on the EMT programs, safety programs, this spring and summer. They are scattered across the state.

Normally, EMS is broken up into five regions. We try to take four or five communities in each region so that we get a good cross section across the state.

At the central bottom part of the state are, Emmons, Logan, McIntosh counties. Those three counties were settled by (it is part of my background) Russian-Germans or German-Russians. That area has a pretty hard-headed group of people. For years that area of the state has been known as the "Iron Triangle."

This is because anything governmental that comes to that area is going to get rejected, whether it is economic development or whether it is EMS. They did get some EMS programs going down there. We have yet to get a community in those three counties that is willing to participate in our farm safety program; we have a waiting list for the rest of the state to get on the program for next year.

The North Dakota Farm Bureau is also doing one of our farm safety programs. The Farm Bureau in North Dakota and, I believe, in the upper Midwest, has a program called First Care. They use nurses and EMT people out in their areas. They are scattered in all 52 counties in North Dakota to do a First Care presentation and first aid training across the state.

We were able to go into their network and train their First Care trainers in farm safety to incorporate, in addition to their First Care Program, a farm safety program. They were not only doing first aid, First Care, and First Response training, they were also doing farm safety training for their Farm Bureau members. A workbook was developed from that.

The program was called ABC on the Farm, Always Be Careful. The program was targeted at farm children for Safety for Farm Children. The target audience is the farm family adults, and the workbook is generally given to the kids. There are puzzles on farm safety and a number of different activities for them to do in this booklet.

One of our other programs was co-sponsored by REC, a Rural Electric Cooperative. We went into 13 schools. Originally, we targeted six, but we had thirteen schools request our Farm Safety Program for Children.

This program is put on for two different groups—ages K through 3, and grades 4 through 6. It is a 1-hour presentation. It

is done in the classroom, but put on by somebody that comes from outside the school, not their normal grade-school instructor. We have completed all 13 programs in those schools.

The response has been tremendous from the school administrators, the teachers, and the parents that were surveyed. We did a pre-program survey, and we are going back in to do a post-program survey.

Specifically, we are looking at attitudes of the parents. What are they allowing their children to engage in? At what ages do they think the children should engage in certain farming activities?

We are also utilizing an occupational nurse program that was being administered through a NIOSH grant. The primary purpose of the occupational nurse program is to put five nurses in rural areas across the state.

They will assist in farm surveillance, particularly looking at farm illnesses: respiratory illnesses, dermatological conditions, and toxic exposure to pesticides. These individuals are also assisting in education efforts across the state. They are represented at Farm Safety Awareness booths at local farm programs that are put on in the wintertime, county fairs, community activities, folk festivals—that type of thing.

One of the areas we are investigating is the operator safety checklist, how to reinforce that.

We looked at hazards of flowing grain in all of our programs. We use a gravity box for demonstration with the program presentation. Particularly for the children, we show how easily and how quickly one can become submerged in flowing grain. And we try to point out particular hazards that we have seen in our injury reports.

We also review all the EMT Association and EMS trip tickets. We pull out the agriculture-related trip tickets to assist in our surveillance and look at causation. We look at auger injuries and tractor rollovers. Tractor rollovers are still a major source of fatalities in the state.

Power take-off (PTO) shafts are dangers. Buildings are dangerous. Children run across openings, go into a shop where the tractor is running. The parent is backing out unaware that the child has come into the building.

We also are going to our major agriculture shows across the state and setting up and staffing a farm safety booth. The winter show, our biggest agricultural show in North Dakota, runs about 11 days. Attendance is approximately 130,000 people. When you only have about 640,000 in the state, that is a lot of people to attend a show.

Also, we have cooperated with Centers for Rural Health and the Dakota Conference on Rural Health. We are on their program schedule and have set up a farm safety awareness booth. I guess on that last one, what we have done is seek help from businesses.

Most of the booths cost a fair amount of money to set up. Normally the commercial accounts are at these shows. We approached farm manufacturers in the state and implement dealers to ask for their assistance in getting information out on farm safety. We have got the backing of the North Dakota Implement Dealers Association.

We have had financial assistance in co-sponsoring some of our farm safety booths. If we have a sign up with the name of a particular implement dealer, it seems that it helps to persuade the farmers to stop, pick up the information, and talk to us. It is just a booth display that we have set up.

As the son of a conservative farmer, one of the things I know is that government help is not generally well-accepted in the rural community and in the agricultural sector. We have heard people talk about regulation and enforcement, the clause that prohibits OSHA from investigating or doing any work on farms that employ less than 11 people, which is about 96 percent or 98 percent of the farms.

Even though there is a lot of involvement in government as far as the farm programs, there is a very strong resistance out in the agricultural community to government involvement. This is particularly true when you come in and say, "Well, I'm from the government and I'm here to help you." Right away it turns them off.

We have enjoyed reasonable success. The focus of our programs is going to continue along this line in the future. We will be able to solicit the cooperation of farm groups, the Farm Bureau, North Dakota Farmers' Union, the local EMT squads, by utilizing the local people to do program presentation. It adds credibility to the program, adds validity to the program, and it allows us access.

If I went in saying that I was from the State Health Department and put on a presentation similar to what the EMT squads are doing, we would be lucky if we got 30 or 40 people there. As I have said, in some of our communities we have had 200 or 250 people show up. That is more than they get at a local basketball game, a big drawing card in the local communities!

I think it is very important, when you are developing educational programs, to be able to utilize local resources and local people to add that credibility. It allows you to get your foot in the door.

I still go out and do presentations and am involved with a lot of the programs, but the programs are mainly sponsored and put on by local individuals. It has helped tremendously for our program to be accepted. We feel that by continuing to utilize our local resources and our local farmers, getting them involved, we will be able to reduce the amount of agricultural injuries and fatalities in North Dakota.

Eventually, all of our people can continue to enjoy our beautiful sunrises and our beautiful sunsets in the state. That is our primary goal.□

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April 30 – May 3, 1991, Des Moines, Iowa

VOCATIONAL AGRICULTURE

By Robert Graham, M.S.
Assistant Executive Director
National Vocational Agriculture Teachers' Association

Dr. Walter J. Armbruster: The next speaker will be Robert Graham, who is the Assistant Executive Director for the National Vocational Agriculture Teachers' Association. He will address the intervention for safe behaviors among adults and children from the perspective of *Vocational Agriculture*. Mr. Graham:

First of all, let me say it is a pleasure to be here in Iowa. I have never been before. It is quite an experience. It is also a real pleasure to be at the conference on FarmSafe 2000.

I am from Louisiana. Has anybody detected an accent? No? I suppose it did not show up.

I represent the National Vocational Agriculture Teachers' Association. We are the folks that are out there in the schools on a daily basis in this country giving professional instruction in and about agriculture. We are the only specifically United States Department of Education group that is given the task of teaching agriculture in the classroom. We had our beginning in 1917 with the Smith-Hughes Act. Right now we have about 7,000 departments in the secondary programs.

I will tell you a little bit more about our staff as we go along.

First I wanted to point out something that is very important about what we are here to discuss in promotion of farm safety. This is an emphatic effort for us to try to improve the quality of our life.

In order to do that, we study our environment. We study it so that we can discern those things that will help us with techniques to change our behaviors to have a safer lifestyle.

This safer lifestyle has been something we have tried to accomplish in the industrial world for quite some time. We have been working toward the same end for many decades in the rural and farm community. It is not simply enough that we establish what behavior or mechanization improves the safety of our daily environment.

The discoveries of our efforts in research must be delivered and promoted. That is what teachers are about: the delivery and promotion of research development. Only when safe techniques are utilized as a common practice is it possible to improve the quality of life as well as its duration. We all want a greater duration. I know I do.

We are in the secondary programs, but that is not the only place that you will find us. This teacher, myself, is working with secondary students.

We also have teachers who are out there working with young farmers, adults, and college students. Tomorrow on the program you are going to have a gentleman by the name of Wayne Sprick speak to you. He is the Executive Director of the National Young Farmers' Association.

The young farmer and his instructor are found in junior colleges or community colleges. We also have them in vocational/technical programs throughout the country.

Part of what I am going to discuss today is our premier award. Our premier group is represented here at this conference by our National President of the FFA, Mr. Mark Timm. We are all very proud of Mark. He represents about 400,000 young people out there like himself.

One of the things that you need to know about secondary education is what we are about—education in all subjects associated with agricultural science and business. We start with a basic study in animal science and plant science in the secondary program. Then we try to take 27 areas, insert proficiency, and enlarge the specific data base. Every proficiency area has a specific section that deals with safety practices.

We are all familiar with beef production, especially here in Iowa. We dedicate safety study to practice of safe handling dealing with mechanical and health problems that may arise from working with livestock. Teachers are doing this at all of the levels I previously mentioned.

We utilize this model in order to broaden the classroom/ laboratory instruction with a supervised agricultural experience and then we incorporate the FFA organization into it.

We try to encourage the involvement of the community into the classroom. We encourage young people through the FFA, in classroom action, and laboratory instruction at the site, and we branch out into supervised agricultural experience. We try to get those experiences in all the areas that I have just mentioned—the 27 proficiency programs.

THE NATIONAL CHAPTER SAFETY AWARD

Our premier promotion project right now is the National Chapter Safety Award. This project is sponsored by the Equipment Manufacturers' Institute (EMI). We try to get these 400,000 secondary people to get involved.

We are trying to branch out into other areas in the National Young Farmers' Association, as well as both secondary schools and community colleges with this type of promotion activity. It is not enough simply to teach safety. It is vitally important that you promote those people who are out there doing these voluntary activities so it will be an ongoing and growing process.

We in agricultural education discovered this a long time ago. About 25 years ago, we got hooked up with the EMI and the National FFA Foundation. We found money to put on a national competition.

> The four basic steps are identifying the need, defining objectives and plans, taking action, and evaluating the results.

We also promote the safety award for eight objectives: one, to study current safety activities in the community. The application is set up so we do that. You have to know what kind of safety practices you need. I think our first speaker was pointing that out to us, evaluating what you need in the community and then trying to design plans to deliver that type of

instruction. Then it will be adopted and utilized. Create an understanding of safety in the community.

There is a great lack of understanding by people who are afraid of being regulated and having their procedures on the farm changed by some governmental intervention. One thing for sure, all of us farmers are a little bit on the hard-headed side.

> We encourage students to sit down and do a community review by interviewing resource people with organizations, such as the community health organizations, the district representatives of OSHA and NIOSH, the Farm Bureaus, and National Grange Affiliates.

By encouraging members of the FFA to realize the importance of agriculture safety in their community, we are all trying to instill a change in behavior in the young people; that is a major objective. If you change the young people's attitudes towards safety practices, you are going to change how the occurrence of accidents or the misuse of chemicals occurs in the future. They will be more conscious about the activity around them.

Identifying collaborative groups and joining forces is another important feature of what we are here about. That is coalition building. To try to create and to carry out successful safety chapter programs, specifically for our award, we are in the habit of involving the community.

A PLAN FOR ACTION

In the application itself, we try to get the teacher and the student to sit down and develop the correct approach to analyzing any situation. The four basic steps are identifying the need, defining objectives and plans, taking action, and evaluating the results.

The last one is very important, evaluating results. I have heard some discussion by all the speakers concerning what we are talking about in this *FarmSafe 2000* coalition. When we get through here, how are we going to come back and evaluate what we have accomplished one year from now, two years from now?

Identify Needs

It is important that you know and identify the needs. We encourage students to sit down and do a community review by interviewing resource people with organizations, such as the community health organizations, the district representatives of OSHA and NIOSH, the Farm Bureaus, and National Grange Affiliates. All these people have other resources you can utilize for identifying the needs of that community.

Define the Objectives

An example would be in Indiana one year, they defined their objective at a particular school as lowering the incidence of traffic accidents involving 16-to 25-year-olds by 10 percent.

They had a specific goal. It was measurable. They could come back and take statistics that were available through the health unit and verify whether or not the effort had lowered the statistics. These are all things that we look for when we begin to evaluate the applications for National Safety Award.

Take action

Once you have a plan in place, you have to get it in action. Utilize the people who helped develop this information by putting them into the plan. Then you set out to accomplish the task of lowering the number of car accidents for persons between 16 and 25 years of age. Do this through posters, pamphlets, audiovisual aids.

All of these things are suggestions that we try to put into the packet we send to promote the utilization on this project. Also, we tell young people to examine the laws and regulations. We find that there are a lot of people in the community who are unaware of the laws and regulations at their fingertips to help improve their local community. We encourage them to first go to the legal sources. Find the laws and regulations. See what is on the books that will help you enforce or help you promote what you are trying to accomplish.

I would like to encourage everybody to attend the poster session tomorrow. There are at least six posters there that have been done by Gold Emblem Outstanding Chapters. I think you will get an overview of what we are trying to do in some 7,700 chapters. That is our goal.

Evaluation

The evaluated results are a critical part, to see whether or not it has been a successful project. Is there something more to continue?

We suggest things such as pre-tests and post-tests. These are things that can be actually statistically proved. Survey the people. Get an opinion survey of what they perceive the problems were. How do they perceive, at the completion of the project, what was accomplished? Was there an actual attitudinal change?

Self-reflection: you have to sit down with a group of resource people that you have put together from the community, business, professions, education, and government. Have them evaluate. How did you see what was accomplished? Understand that this is an annual, ongoing process to try to comply with.

The evaluation is vitally important. We have seen a tremendous increase in the number of chapters since we have started this project. It is not enough, however. We started with around 500 chapters participating in our programs back in 1972.

We did not collect statistics the first year we started. We are up to over 1,600 chapters in the year 1991. That is 1,600 chapters participating out of a possible 7,700 at the secondary level.

We currently do not have an active national contest for safety at the post-secondary level. We are beginning to get into the middle-school level. The potential for growth and delivery of this information through our particular promotional process is immense.

One of the reasons it has not grown more is because we personally have found flaws in how we deliver the safety information. Teachers (and ours are not unlike any others) have a tremendous number of activities that they have to tend to on a daily basis. A lot of these activities are around that local school site. We found that if we will develop the materials, and hand-deliver those materials rather than mail them in a package, we get better results.

PILOT TESTS

The next question is how we do that. We have come up with a system that we are going to pilot test around three new projects. We have broadened our area of attack. We have gone to agricultural science, food safety, and also ground water quality. We have two new projects. One was mentioned by Mark, the one about the food safety development project. It is a new curriculum project. It is curriculum for infusion.

As educators and teachers, what that word means is that, instead of trying to give us another task to do on top of everything else, we are trying to supplant something already being done, or to supplement information with more current data.

I am going to use ground water quality as an example. How do we deliver our material so that it is utilized and does not end up as another fantastic piece of material sitting on a shelf somewhere on which $300,000 or $400,000 worth of grant money was spent?

We have designed as a management information system. We are going to pilot our ground water quality project through that management information system. We are going to train 40 trainers (master's degree or above people), classroom teachers, college professors who are willing to participate.

They will deliver this particular subject matter on food safety and ground water quality by conducting 10 workshops directly to teachers. It will not be open only to agriculture teachers. It is going to be a broad system that is open to all teachers of science, health, safety; even physical education instructors may find a use for it in their curriculum.

The object is that people go to a site located so that no one instructor would have to come more than 35 to 40 miles from school. It is an after-school project. That way it does not interfere with the normal day.

By delivering the actual material into their hands, with a video to back it up and a workshop to go with it, it is more likely it will be utilized. This, in the past, has been proven by local universities. It works better when hand-delivered.

The problem comes in our particular area of education. Agricultural education is not one of the required courses. Since the *Nation at Risk* reports came out in 1983, we have had a tremendous amount of pressure on us, as local educators, to prove that there is a need for us to be in the public school system.

CONCLUSION

Once again, I am excited about this particular conference and the opportunity to speak and present our particular method of delivery on farm safety information and rural community and health education information. We need you to know that that light of discrimination is being shined upon us rather strongly and has been for some time. In order to expand the process, we need to form a tighter and broader coalition to deliver additional information on rural health and economic development.

I look forward to working with the rest of the groups that are here. I have enjoyed what has been said by Dr. Novello and look forward to proceeding with this coali-

tion. We can change the risk that is out there among farm and rural communities.□

QUESTIONS

(inaudible): Do you have an example of a pre- or post-test they can use?

Robert Graham: Okay. I will use one from my personal experience. I spent 11-1/2 years in the classroom. A pre-test that we used in our community had to do with how many actual safety programs the people in our community had been to and observed in the course of the last 24 months.

We circulated this around the community door-to-door on a Saturday. We put out about 500 of them. We had drop-offs for them.

We got 300 of them back. It was the local post-office. The postmaster cooperated with us in the rural community.

We actually checked on how many had been to safety programs dealing with drunken driving and safe operation of vehicles and farm vehicles on the highway. We got back a little over 300 of them. We evaluated the results and there was a small number. I do not remember the exact number, but about 15 percent of those had actually been. I know it was under 20 percent. Over the course of the next six months, we planned four types of seminars. We involved the Farm Bureau Federation, the national and the local health community, and some Rural Electrification groups that had some promotional films. We did three night programs and one school program.

Then we went back and surveyed the attendees as to how many of them had received our survey. About 35 percent of those people had actually gotten our forms and turned them in.

It is not an accurate survey of what we did there. We found that out as we went through. We saw an increase in the number of people who had actually gotten our forms, turned them in, and been to those programs at that time. There were more of those. It was about 25 percent. We figured about 20 to 25 percent of the population had increased their attendance at a program on education about operation of vehicles on the highway.

That is not a good example of a pre- and post-test. There are other ways to do it by analyzing the statistics in your immediate geographic area. What are the accidents? Model your program on one that was done by a chapter in southern Louisiana dealing with power take-off (PTO) injuries. There was a high rate of these injuries in a particular county in that state. They evaluated them by doing a countywide program over the period of one year. They had at least one program every other month dealing with the accidents. They measured the accidents through this year; and there was a reduction of about 10 percent. Those are rough examples. There are some others. The gentlemen who created these posters have better examples. They are the national ones, I am just a local one.

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THE MASS MEDIA AND AGRICULTURE

By Cheryl Tevis, M.A.
Senior Farm Issue Editor
Successful Farming Magazine

I am glad to be here this afternoon and to have the opportunity to share some thoughts with you about farm safety and health. I am the Farm Issues Editor at *Successful Farming Magazine. Successful Farming* is a national farm magazine with 500,000 subscribers. It is based here in Des Moines.

We are published by Meredith Corporation, which also publishes *Better Homes and Gardens, Midwest Living, Ladies' Home Journal, Metropolitan Home* and several other magazines. I have written for Successful Farming for 12 years.

I did grow up on a farm in northwest Iowa, near Sioux City. Like many farm teenagers, I left the farm when I graduated from high school. I did not know what my college major would be. I was pretty certain, however, that my life's work would not be related to farming at all.

Somehow, as part of the requirements for completing my master's degree in Journalism at the University of Missouri at Columbia, I wrote a series of articles about agriculture. That led to a decision to specialize in agricultural writing.

I worked at a farm magazine in Milwaukee for three-and-a-half years before coming to *Successful Farming.* Then, almost 7 years ago, I completed my 360-degree revolution by marrying an Iowa grain and hog farmer. Although my life has taken a somewhat circuitous route, I am a farmer's daughter writing for a farm magazine and married to a farmer. That is my background.

I have been asked today to talk about the media's role in helping to promote farm safety and health. Obviously, I can not speak for the entire media. My personal experience is with farm magazines and, most specifically, with *Successful Farming.* I will concentrate on that.

For years the general public has perceived that the farm is a great place to live and raise a family. In many ways that is true. For those of us who have lived on farms or in farm communities, farm health and safety always have been concerns. I am proud that *Successful Farming* has taken the lead in covering many of these topics and that my involvement with farm health and safety issues is not an overnight development.

For instance, in the late 1970's, I remember writing about farmer's lung disease and the work being done at what is now the National Farm Medicine Center, to help afflicted farmers. *Successful Farming* also had an early focus on the effects of stress on farmers. I wrote a story on this subject back in October of 1980. My stories about disabled farmers began in 1981. I wrote about microsurgery following a farmer accident in 1983.

At about the same time, we had an editor who was a fitness advocate. With his encouragement, I wrote an article called

"Being a Farmer Does not Make you Fit and Trim." In those days it was something that you did not think about. Naturally, farmers are supposed to be in good health and good physical condition. We felt that there were some areas there to work on as well.

In December of 1981, I edited an article by Kelley Donham, at the University of Iowa's Institute of Agricultural Medicine and Occupational Health. It was entitled, "Farming Can be Hazardous to Your Health." A year or so later, I worked with Kelley again to write a sidebar about farmer's lung, pesticide poisoning, respiratory illness, well-water contamination, and toxic fumes poisoning.

In March of 1984, *Successful Farming* became the first farm magazine to feature a regular rural health page. Today I think this feature still does distinguish our magazine from others. We have covered topics from skin cancer, to fitness, to hog farmer's lung, to histoplasmosis. More recently, we have featured occasional articles about non-farm related illnesses and conditions such as lupus, infertility, and Lyme disease. It is our belief that farmers do not receive many magazines that deal specifically with health issues. Yet they are interested in reading about it.

The safety of farm children has become a personal and professional issue of mine. In 1983, I wrote a story about the death of a 17-month-old girl in a farm accident. Soon afterwards I married a farmer and, in 1986, our daughter was born. I found myself coming back, both for professional and personal reasons, to the topics of children and farm safety and farm-related health hazards.

Farm children have been injured and killed for years. I was too young to remember a tragic tractor roll-over accident that claimed the life of our neighbor's son. Years later I remember finding the yellowed and brittle newspaper articles about it that my mother had saved. On looking back, I think that that accident may have had a lot to do with the fact that my brothers were not expected to function as hired hands at a young age.

Despite the fact that children have been the victims of farm accidents for years, the issue of children and farm accidents was not a hot topic. In fact, my 1983 article about Bill and Ann Friend's daughter was unusual for farm magazines. I have to give Bill Field, at Purdue University Extension, a safety specialist, most of the credit for bringing this tragic situation concerning children to my attention. I think he took the leadership in tracking injuries and deaths of farm children.

Since that first article, I have found that focusing on children is a way to get at the complacency factor among adults concerning farm safety. Initially, my editor was not excited about writing safety articles. After all, he pointed out, people feel that they already are safety conscious. They have their own mind set about it and it is difficult to engage them on that topic.

By taking steps to reduce or eliminate safety hazards on the farm for the sake of their children, in many cases adults also are protecting their own lives. It helps to penetrate that adult mind set and get them to at least think about safety.

Therefore, three years ago I prepared a one-page story featuring an Earlham, Iowa, farm woman, Marilyn Adams. I was moved by the death of her young son,

Keith, in a gravity flow grain wagon and by her efforts to do something to try to spare other farm families the grief that this accident had caused her. Just before the article was to go to press, I found out that we had a commercial sponsor, DowElanco, who was willing to provide enough advertising to allow expansion of that topic from one to twelve pages. I was elated.

The article, "We Kill Too Many Farm Kids," contained original research. Here is a copy of it. I have copies of this article as well as other ones that we have done up here in the front for you to take with you today. This article had original research that was based on our 1,200-member farm panel, concerning farm safety attitudes and practices.

For instance, we found that 65 percent of farm boys were driving tractors without supervision by age 12 years. According to our survey, more than 70 percent of farm parents believe that the risk of a child riding as a passenger on a tractor is low, very low. More than 85 percent allow their children under age 9 to ride.

The response to this article has been gratifying. With the assistance of Marilyn Adams and her organization, Farm Safety for *Just Kids*, we estimate that more than 20,000 copies of the insert have been distributed.

The article has been reprinted twice since its publication. It has enjoyed widespread distribution to 4-H clubs, farm families, FFA, and extension safety specialists.

A video based on our 12-page editorial was produced, again with the sponsorship of DowElanco and the distribution by Farm Safety for *Just Kids*. More than 2,000 copies of the video have been distributed in the past two years.

In addition, FFA chapters, churches, hospitals, 4-Her's, and farm men and women have written or called to tell us about their efforts to take the information in the story and the video one step further.

Two years later we are still receiving requests for this article. As a result, in mid-March of 1991, we published a five-page follow-up featuring many of these ideas, events, educational efforts, and projects. We want to provide information and guidelines to others so that they can plan and conduct events as well.

This is the five-page insert that we did with ideas and projects and things that can be done on a community basis to improve farm safety, specifically for children. Last year, "We Kill Too Many Farm Kids" was selected as a finalist in the category, personal service, of the National Magazine Awards.

In 1990, sponsorship again provided *Successful Farming* the opportunity to publish a 12-page story called, "Staying Alive: The Struggle to Save Farm Accident Victims." It focused on near-fatal farm accidents told from the perspective of the farmers who had survived them, and provided vital information about what steps individuals can take to improve the quality of rural emergency rescue in their communities. The article also featured examples of what communities are undertaking to improve their emergency rescue skills.

As you have heard today, about 75 percent of the rural emergency medical services in the U.S. are comprised of volunteers. Many victims of farm accidents are not discovered for hours or have to travel

miles to the nearest hospital without first aid. Since 1981, 190 rural hospitals have closed their doors. It is estimated that 22 percent of hospitals in rural America are at serious risk of closing. The medical attention that farm families receive at that accident scene is more vital today than ever before.

Last fall we offered the Institute for Agricultural Medicine and Occupational Health access to our farm panel for further research into farm accidents. We found that proper shielding is not placed on power take-offs (PTO's) on 64 percent of the farms. Only 64 percent of farm children use seat belts in farm pick-up trucks. When parents were asked to select the factors used to determine when their children were old enough to drive a tractor, 48 percent replied that they or other children in their family drove at that age.

Economic factors also ranked high. A total of 31 percent in the Iowa group surveyed said one reason for the decision to let their child drive was that extra help was needed. Another 21 percent said that the kids", wanted to do it."

When asked, "If cost were not a consideration, would you use roll-over protection?" 89 percent said they would; 96 percent would use safety shielding; and 50 percent would use day care. These figures may be slightly high. We all know it is good to have good intentions. Most of this group, 92 percent, said they know that tractors and other machinery are the largest source of accidents involving children. Many of the safety recommendations buck tradition, values, and economic needs on farms.

We featured the results of this study along with an article about the farm family safety walk-about program developed by the Institute of Agricultural Medicine and Occupational Health. We contributed funding and featured an article last year about the farm safety day camps for kids, pioneered at a hospital in Cedar Falls, Iowa.

Living on a farm 60 miles from Des Moines, I frequently see and hear about farm neighbors and relatives who exhibit a casual disregard for dangerous situations involving children. Child care is a crucial problem. A survey of 1,500 Minnesota farm women reinforces the fact that finding affordable, quality child care in rural areas is difficult. Of these women surveyed who are employed off-farm, 44 percent use child care.

Even women who do not work off-farm, in that survey said that they needed child care options to allow them to accomplish their farm work. Being married to a farmer and being the mother of a four-year-old, I understand the problems of keeping children safe while growing up on the farm. I have child care arrangements for our daughter.

Occasionally, as any other parent in that situation knows, arrangements do fall through. Many times it is hard to even get a high-school babysitter in the evenings in rural communities.

Sometimes I have to fall back on my mother-in-law. That creates concern on my part. She is usually involved in the field work or the hog chores. Fortunately, my husband shares my view that a tractor cab is no place to babysit children and a farrowing house is not a play area.

On the other hand, I see the dangers of never allowing our daughter to venture under supervision beyond the house yard.