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State Action for Safe Farms

January 1991

Minnesota Department of Agriculture, 90 West Plato Blvd., St. Paul, Minnesota 55107



Final Report of the
Minnesota
Advisory Task
Force on Farm
Safety

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Final Report of the Minnesota Advisory Task Force on Farm Safety
January 1, 1991

Minnesota Department of Agriculture, 90 West Plato Blvd., St. Paul, Minnesota 55107

The Advisory Task Force on Farm Safety was established by law out of the growing realization that agriculture, an important industry in Minnesota, has become more and more dangerous for those making their living in it. It is also an industry that has not had its safety and health needs adequately addressed. According to the authorizing legislation, enacted in 1989, "the principal purpose of the task force is to determine ways in which the very high risks of accident and injury to farm operators and their families and employees can be minimized." The task force was directed to report to the house and senate committees on agriculture with findings "and recommendations for legislation on farm accident prevention and other public policy changes that would be likely to improve health and safety on Minnesota farms." Pursuant to that directive, the task force issued a preliminary report last year. This document is presented as the final report of the advisory task force.

Too Many Killed or Maimed

In the task force's preliminary report, it was noted that agriculture is America's most hazardous occupation, vying with mining for the highest death rate. In addition, approximately 300 children are killed each year in farm-related activities throughout the nation. Over half are traumatic, machine-related fatalities, according to the National Coalition for Agricultural Safety and Health (N-CASH).



In Minnesota, there were an average of 48 farm work-related deaths per year during the 1980s. Most involved machinery, with tractors being most frequently involved, according to the Minnesota Extension Service. Tractor roll-overs are the single greatest cause of traumatic farm fatalities.

The task force found that economic pressures are a contributing factor which often result in improper maintenance of equipment, taking shortcuts, farming at night after working another job, or putting children to work at

what might be considered age-inappropriate tasks. Farmers work under dangerous conditions, often many miles away from the nearest hospital or rescue squad.

Farm safety has been neglected in program and financial support among government, academia and farm organizations. Federal occupational safety and health regulations do not apply to farms with 10 or fewer employees. In some ways Minnesota is ahead of neighboring states, in both private and public sectors. A number of private

initiatives have been made simply as a result of the task force's activities.

Acute and Chronic Disease: Often Overlooked

Beyond what was presented in the preliminary report, the task force has also looked into a less obvious but also serious problem: that of occupationally-induced acute and chronic disease. Farmers and farm workers suffer from increased rates of respiratory disease, certain cancers,

acute and chronic chemical toxicity, and dermatitis. The Division of Environmental and Occupational Health at the University of Minnesota's School of Public Health and N-CASH provided the task force with the following information.

"Agriculturally-related respiratory disease affects over 40% of certain high risk groups, such as persons working in swine confinement units," says N-CASH. "Dairy farmers are more likely than other farm subgroups to contract farmers' lung and organic dust toxic syndrome, which are induced by high concentrations of fungi and bacterial toxins found in agricultural dusts."

Farmers have consistently higher rates of leukemia, Hodgkin's disease, non-Hodgkin's lymphoma, and multiple myeloma, as well as cancers of the stomach, prostate, and brain. The causes have not been identified conclusively, but under suspicion are nitrates, pesticides, viruses, antigenic stimulants, and various fuels, oils, and solvents. There is insufficient evidence to prove or disprove a connection between the diseases and their suspected causes.

"To undertake the epidemiologic studies necessary to show clearly the association of a particular type of cancer with exposure to a specific pesticide would require many years of work at a cost of several million dollars per year. The necessary resources and level of effort would be prohibitive," says the Division of Environmental and Occupational Health. "New methods are needed that provide answers in a shorter time period and tell us how pesticides and other potentially toxic agents damage human tissues." One of the task force's principal recommendations addresses this assessment

People Near You Die in Farm Mishaps

While the statistics say that agriculture is one of America's most dangerous industries, the task force members found that statistics don't tell the whole story. Each farm fatality is very personal event. What follows are profiles of a few victims of fatal farm accidents in Minnesota in 1990 and how they died. The information was compiled by the Minnesota Extension Service.

January 3: Rodney Bornholdt, 54, Wasioga, Dodge County, was using a tractor to lift round hay bales when he raised one of the bales too high and it rolled down the arms of the front end loader, pinning him against the seat of the tractor and killing him.

January 6: John Anderson, 60, Belgrade, Stearns County, was attempting to cross an uncontrolled railroad crossing, on a private road, while on his tractor. A Soo Line train broadsided the tractor, resulting in the death of Mr. Anderson 3 hours later.

January 22: Michael Delzer, 35, Dodge Center, Dodge County, was attempting to drive a tractor on to a flatbed truck when it slipped off the ramp and pinned him against the ground, killing him instantly.

February 27: Chad A. Bach, 18, St. Leo, Yellow Medicine County, was working alone on a neighbors farm, when he was attempting to repair an auger located inside a silo. As he entered the silo, he apparently was overcome by gases and was asphyxiated.

April 22: Stephanie Ann Biel, 2, Browns Valley, Big Stone County, was riding on a tractor with her grandfather when she opened the cab door, fell out, and was run over by the rear wheels. Her father was working in the same field when the accident occurred, moving rocks.

May 4: Stacy Schutz, 4, Chisago County, was riding in a feeder box that was being pulled by a tractor. She apparently fell from the box as it was crossing a field and was subsequently run over by the wheels of the box, killing her instantly.

May 24: Craig Peine, 9, Dakota County, was helping out with chores on the family farm when he fell into the auger of a silage lagoon. He became trapped and was dead on the scene from massive traumatic injuries.

June 8: Leverne Hanson, 79, and Alice Hanson, 69, Rock Dell, Olmsted County, were trying to get a large tractor started in their farmyard. The tractor had a faulty starter, so the couple had the wheels of the tractor turned to gain access to the starter in an attempt to jump start the engine. The engine did start, but the tractor was in gear, and ran over the couple, killing them both instantly.

July 24: Jeffery Beranek, 4, Brown County, was sitting in the passenger seat of the pickup truck being driven on the family farm. The passenger door of the pickup somehow opened, causing the child to fall from the pickup and die after hitting the ground.

September 1: Michael J. Loomis, 24, Houston County, was riding in a wagon being pulled across a field by a tractor. Mr. Loomis decided to try and get into the tractor by walking down the tongue of the wagon and was killed when the wheels of the wagon ran over him.

October 17: David Miller, 44, Winthrop, Sibley County, died of injuries he received when his foot slipped into and became caught in a grain auger he was working near.

October 28: John Sikkink, 47, Forest Lake, Washington County, was attempting to move a tree that was hitched to his tractor when it tipped over, pinning him underneath. The tractor subsequently caught fire, resulting in the death of Mr. Sikkink from a combination of crushing injuries and burns.

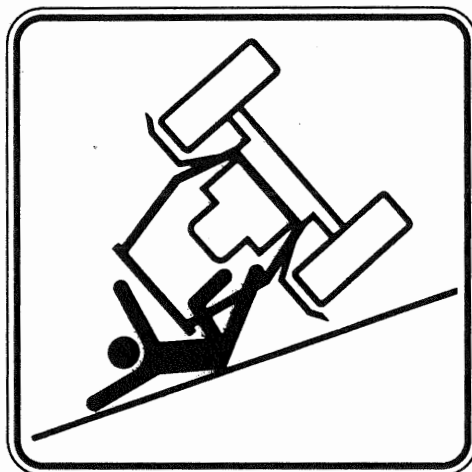
October 31: Eric Myhre, 27, Caledonia, Fillmore County, was killed instantly when a power takeoff shaft disengaged from a grain auger and struck him.

November 2: Garry Kramer, 43, Valley Springs, Rock County, and his son, Peter, 5, were traveling north along Rock County Township Road 110 at 9:30 a.m. in an International 1086 tractor, pulling two gravity boxes filled with corn. They were attempting to cross railroad tracks when a Burlington Northern train collided with the tractor, throwing Garry and his son upon impact. Garry died later from the injuries he received; Peter was found three miles south of the crash site near Interstate 90, wandering in a state of shock. He is expected to recover from his physical injuries.

November 10: Wil Meierhofer, 59, Little Falls, Morrison County, was driving his tractor northbound on Morrison County 76 at 5:30 p.m. when he was struck from

behind by a Morrison County patrol car. Meierhofer was thrown from the tractor to the pavement and died at the scene.

November 16: Ernest Lessard, 51, Oklee, Red Lake County, was attempting to remove grain from the side draw of a bin after it stopped flowing out. He went inside the bin and began using a pole to bring the grain to the opening. In the process, the buildup of grain collapsed. The Red Lake County Sheriff's Department was contacted via 911 and attempted to rescue Ernest by cutting a hole in the back of the bin. However, it was too late. Ernest died of suffocation at the scene.



Task Force Members

The following persons have served on the task force:

Linda Mork (Renville farmer and Minnesota Farmers Union member),
Barb Ruhland (Watkins farmer and Minnesota Farm Bureau Federation member),

Theresa Pesch (Meeker-McLeod-Sibley Community Health Services

director),

Joe Lund (president, Farmhand, Inc.)

Jim Faber (vice president for loss control, Reinsurance Association of Minnesota)

David Nicolai (Cenex/Land O' Lakes agronomy specialist),
George Foster (Minnesota Extension Service agricultural engineering head),

Carol Bufton (Minnesota Safety Council president),

Myron Erickson (citizen member from Granite Falls),

Senator Joe Bertram (from Paynesville), and

Representative Steve Dille (from Dassel).

Assistant Commissioner of Agriculture Herb Halvorson was appointed chair. Staff work was done by Tony Anderson, formerly a public affairs specialist with the Minnesota Department of Agriculture and now a consultant to the task force. Significant consultation was also provided by Tom Brennan, farm safety specialist with the University of Minnesota, and by Paul Gunderson, director of the Center for Health Statistics at the Minnesota Department of Health.

Activities and Resources

After issuing its preliminary report in February 1990, the task force continued its study and development of recommendations. The resource persons consulted included the following:

Cletus Schertz, Larry Jacobson, Kevin Janni, Forrest Bear (all professors of Agricultural Engineering at the University of Minnesota),
 Ian Greaves, Bill Toscano, Jack Mandel (all from the Division of Environmental and Occupational Health at the University of Minnesota's School of Public Health),
 Dean Herzfeld, Shari Gahring, Wanda Olson (all from the Minnesota Extension Service),
 Major Ron Bolin, trooper Bob Cartwright (both with the State Highway Patrol),
 Robin Kinney (with Linder Farm Network),
 Tom Rothman (with Minnesota Agriculture Network),
 Jane Gay (with the Iowa Agricultural Health and Safety Service Project at the University of Iowa),
 Dick Byrne, Jack True (both with the 4-H tractor safety training program),
 Mel Ptacek (with the Farm Equipment Association of Minnesota and South Dakota),
 Bill Field (with Purdue University's farm safety program),
 Jim Ertl, Paul Day (both with the FFA program at the Minnesota Department of Education),
 Richard Beamer (with the U.S. Department of Labor Wage and Hour Division), and
 Bill Bulger (director of agronomy services with the Minnesota Department of Agriculture).

The task force members dedicated themselves to a careful, thorough study. Many suggestions came before the task force. Each was reviewed carefully. Only those suggestions with broad support have been recommended. If a suggestion was considered unenforceable, not cost effective, or for some other reason not appropriate at this time, it was not recommended. The recommendations the task force is making to the committees on agriculture in this report have been through a rigorous screening and development process and have the full support of the task force members, individually and as a group.

Recommendations

The following recommendations to the State of Minnesota are given in order of priority set by the task force.

- 1) **Continue to support the farm safety specialist position at the University of Minnesota.** This is the highest priority for the task force. In its first few years of existence, the staff in this position has been instrumental in providing safety training and information for county extension agents. At this time, a tenure track faculty member has been hired to fill this position. Continuing it would be the most effective use of the state's resources. The task force also hopes that the initiatives of this new program will be supported as they arise.
- 2) **Revitalize and greatly expand the availability of the 4-H/FFA tractor and machinery operation, maintenance and safety training program.** The need for greater availability of safety training is considered by the task force to be undisputable. From its popular beginning in the early 1970s, the program has been offered in fewer and fewer communities in the state. The task force is concerned that the 4-H organization might significantly reduce the tractor safety program or even eliminate it entirely. In contrast the task force recommends that it be expanded.
- 3) **Prohibit persons under 12 years of age from driving tractors or self-propelled farm machinery on public roads. Allow persons 12 to 15 years of age to drive such implements on public roads only if they have received certification from the 4-H safe machine operation training program for the implement they are operating.** Much input was taken on this "regulatory" recommendation. Persons ages 12 to 15 would be allowed to drive farm implements on public roads only if they have received safety training certification. In no instance would a person under 12 years of age be allowed to operate a tractor or other self-propelled farm implement on a public road.
- 4) **Provide funding for a pilot project to develop a comprehensive farm safety audit to be conducted by the Minnesota Extension Service in cooperation with selected farm insurance companies.** Insurance inspec-

tors would identify safety and environmental health hazards on the farm and recommend steps to eliminate or mitigate those hazards. The effectiveness of offering an insurance premium reduction as an incentive for making improvements would be tested. This recommendation was the centerpiece of the task force's preliminary report last year. The task force has also raised a total of \$4,000 in cash and pledges from private sources to contribute to this project.

5) **Establish an interagency, interdisciplinary research center for agricultural health at the University of Minnesota to undertake basic and applied research on the health effects of environmental and traumatic health risks.** This is another high priority of the task force. There are many areas in need of research to prevent injury and death, to reduce long term exposure to potentially hazardous agents, and to deal with health problems once they have developed. A center of this type would be the most effective way to coordinate research activities.



6) **At the time of resale, require used farm tractors to have a master shield that meets or exceeds original equipment specifications for safety and require lighting and slow moving vehicle signs to be in compliance with state requirements, exempting occasional sales such as farmer-to-farmer and farm auctions.** Included in this requirement would be all sales covered by the sales tax law.

7) **Direct the Department of Public Safety to study reflector and lighting requirements for farm vehicles and the drivers license exemption for persons operating farm implements on public roads, recommend clarifying language and improvements, and initiate public education regarding lighting and reflector requirements.** The task force saw enough confusion as to what the law requires regarding lighting and reflectors on farm implements that it decided this directive is necessary. Regarding the drivers license exemption, the task force is concerned that the exemption is being

abused by some who have had their drivers licenses taken away. The task force urges consideration of how to avoid abuses of the exemption which threaten public safety while also preserving the ability of such persons to carry out their necessary farm-related duties on public roads.

8) **Create a farm safety commission to advise the proposed Center for Agricultural Health and Safety, raise funds and develop resources for farm safety promotion, and develop "best management practices" for safe use of farm equipment,** including suggested use

of features such as guards, shields, decals, hydraulic hoses, engine starter interlocks, and roll over protective structures. Promotional projects could include, but not be limited to, farm safety advertisement campaigns, educational programs, tractor safety training, and safety audit programs. The commission should be broadly constituted in a pattern similar to the Advisory Task Force on Farm Safety.

9) **Direct the state pesticide applicator education and training review board to formally evaluate the effectiveness of the Minnesota Extension Service pesticide**

applicator training programs in improving safe handling of pesticides. Training program effectiveness and improvement is the task force's objective here. The board is staffed and funded by the Minnesota Department of Agriculture through its Agronomy Services Division. A directive will be sufficient for the board to adopt this project.

10) **In 1993, evaluate the need for a state-funded surveillance system to track the frequency, severity and causes of injuries and environmental health incidents on farms.** The Minnesota Agricultural Statistics Service, Minnesota Department of Health, and the University of Minnesota are currently developing a model for a statewide surveillance system with funding from the federal Centers for Disease Control. At this time, federal funding is sufficient for surveillance needs. A statewide survey, coordinated by the proposed research center, conducted every four years is recommended. Compared to

mandatory reporting by hospitals and physicians this is the most effective means of monitoring the nature, causes, and severity of injuries on farms (an area for which little information is available at this time) and merits support. If federal funds are not available, state funding is recommended.

Advisories

Two areas without recommendations warrant advisories.

1) The Minnesota Extension Service is urged to increase education initiatives regarding livestock buildings including a) demonstration of improved ventilation and waste management systems and b) holding workshops to raise awareness of health issues related to livestock confinement buildings. Education in production should be balanced with safety training.

2) The State of Minnesota, University of Minnesota, and other public institutions with settings such as experiment stations, parks, and roadsides where agricultural equipment is used are advised to maintain their equipment to at least meet original equipment standards or reasonable facsimile for safety features.

Appendix

The extension farm safety specialist position at the University of Minnesota

This position was created by Minnesota law in 1987 and funded by a special appropriation. It was provisionally filled beginning in January 1989. During the first two years of the staffed position, groundwork was done in assessing agricultural safety programs in Minnesota, establishing working relationships with major farm insurance organizations, and initiating safety training programs for experiment stations, county extension services, vocational agriculture classes, and the Minnesota Agriculture Student Training Program.

Research proposals were initiated or contributed to by the specialist, Tom Brennan. Mr. Brennan participated in the Governors Council on Fire Prevention and Control and the Minnesota Fire Safety Project and also provided consultation to the Advisory Task Force on Farm Safety.

Brennan worked closely with farm journalists in developing several high profile articles in both print and broadcast media.

The extension farm safety specialist position has now been filled by John Shutske. Mr. Shutske has a Ph.D. from Purdue University, which has among the most extensive farm safety programs in the country. Shutske is a tenure-track faculty member. His objective is to create and develop a farm safety education and research program in Minnesota with a track record of success in improving farm safety such that it will rival Purdue's program. He brings enthusiasm and ambition to the position along with the drive to aggressively and proactively establish safety as a priority in Minnesota agriculture.

Besides working through the Agricultural Engineering Department, Shutske will serve as an adjunct faculty member at the School of Public Health's Division of Environmental and Occupational Health. The primary goal of this relationship is to assure that the research results generated there will be communicated to farmers and the agricultural industry in order to take advantage of that knowledge. He will also participate in the proposed Center for Agricultural Health and Safety.

Research will be a significant part of Shutske's activities. Likely areas of investigation include safer farmstead design, injury/fatality data collection and analysis, improved fire detection and suppression methods, evaluation of various teaching methods and strategies for safety behavior, and interaction of "human factors" (such as fatigue, age, and emotion) and safe equipment use.

Revitalizing the tractor and machinery operation, maintenance and safety training program

The need for safety training certification for those under 16 years of age is considered by the task force to be an undisputable need. The program offered through 4-H and FFA has fallen into disuse in recent years. The program is only available in a handful of locations in the state. It is likely that many under the age of 16 who are employed by farmers other than their parents are in violation of state and federal laws because they are operating tractors or other hazardous equipment without safety training certification. The task force is concerned that 4-H might signifi-

cantly reduce the program or even eliminate it altogether. This would remove nearly all opportunity for 14 and 15 year olds to do farm work for hire, since most work for hire involves driving a tractor or other farm implement. In contrast, the task force recommends that the program be reactivated and revitalized around the state.

Lack of awareness of the program, low priority given to safety, the cost of the program, and the lack of availability of training providers were all cited to the task force as obstacles to reactivating the program. Suggestions for overcoming these obstacles given to the task force included taking a marketing approach to make the course more appealing (for example, calling the course a "machinery training school" instead of "safety training"), charging a fee to participants to help cover the cost, creating a training requirement with a delayed effective date that would allow time for programs to take notice and get geared up, and establishing a standardized curriculum that could be picked up and offered by other educational providers such as technical colleges or private, for-profit schools.



Prohibiting persons under age 12 and allowing only 12 to 15 year olds with 4-H certification to drive tractors and other farm implements on public roads

Currently there is no minimum age for driving a tractor on or off a public road. The minimum age for driving "for hire," on or off the road, is 14 years of age with 4-H safety training certification. Under this recommendation in no instance would a person under 12 years of age be allowed to operate a tractor or other self-propelled farm implement on a public road. Each expert queried said that the minimum age for anyone driving a tractor on a public road should be at least 14 or 15 with safety training certification. The task force was of the opinion that an age limit of 14 or 15 might be desirable from a safety standpoint, but that it would not be politically possible to enact and that a minimum age of 12 is a significant improvement over

no minimum age at all. This requirement would also provide an incentive for revitalizing the 4-H tractor safety training program.

A pilot project to develop a comprehensive farm safety audit

The task force is interested in promoting farm safety through the adoption of a voluntary farm safety audit program by the insurance industry. Minnesota's 118 township mutual insurance companies in Minnesota insure 85

percent of the state's farms, making them excellent agents for promoting farm safety. These companies currently employ inspectors who evaluate farms for a minimum standard of insurability. They could go beyond this level to provide a comprehensive farm safety audit.

Such a program would incorporate education and an incentive to change attitudes and behavior. The incentive would be a discount on the insurance premium in exchange for meeting certain safety standards. In order for the

industry to adopt this program, quantitative and qualitative measurements are needed to demonstrate its level of effectiveness.

The Minnesota Extension Service's Department of Agricultural Engineering will design the research project and audit instrument in conjunction with the insurance industry. Township mutual insurance companies would be invited to participate in a two-year pilot project to research the effectiveness of a farm safety audit program. Participating companies and their insured farmers would be divided into three groups: an experimental group in which insured farmers would be offered a free comprehensive safety audit by the insurance auditor, a second experimental group in which insured farmers would be offered the audit with the incentive of a discount on their insurance premium if they meet certain safety standards, and a control group which would be monitored without audits or incentives.

The auditors would be able to inform the farmers about where and how they can improve their safety rating, including what safety equipment to purchase. The farmers in the two experimental groups who accepted the audit would be offered a second, follow-up audit at a later date. In addition to the information collected for the insurance rating, other information useful for farm safety promotion and research could also be collected.

The farms visited in the first year would constitute the experimental and control groups. Measurements would be taken on the rate of acceptance of the offer to perform an audit, with and without the incentive. Their insurance claims before and after the audit would be analyzed. The initial safety ratings established by the audits would be compiled to form a picture of the safety conditions on farms in Minnesota. The level of improvement in the follow-up audits would also be measured.

An interagency, interdisciplinary research center for agricultural health and safety

In this time of severe financial constraints and restructuring of our institutions of higher learning, there is discouragement at the failures of the past. But there is also hope for the future and opportunity in the present. An exciting new concept in integrative, collaborative research into agricultural health and safety is proposed. There are many areas of agricultural health and safety with limited research results. Discipline-centered research, while effective at coming up with very precise answers, does not always ask the right questions. And while there might not be waste or duplication of efforts, the knowledge gained by one is often not available to another. The proposed Center for Agricultural Health and Safety would build a cooperative team to share the understanding that varying perspectives can contribute and attempt to ask the right questions to advance this important concern.

The Center will be based in the Division of Environmental and Occupational Health in the University of Minnesota School of Public Health and comprise multidisciplinary, interagency personnel drawn from various state organizations, including the following: the University of Minnesota's School of Public Health, Medical Schools (Twin Cities and Duluth), Colleges of Agriculture, Bio-

logical Sciences, Human Ecology, and Veterinary Medicine (including the Minnesota Agricultural Experiment Station and the Minnesota Extension Service), College of Veterinary Medicine, and College of Biological Sciences; Minnesota Department of Agriculture; Minnesota Department of Health; and the farmer clientele represented through the major farm organizations.

The primary mission of this Center will be to coordinate basic and applied research in health, safety and injury prevention, emphasizing a multidisciplinary, interagency structure. Health problems that likely will be targeted for research include cancer and early markers of genetic damage, respiratory complaints, blood and immunologic changes, skin problems, reproductive effects, and nervous system disorders. Agricultural chemicals and livestock confinement buildings will be primary areas of investigation in health research. Safety issues to be addressed will likely include strategies for reducing risks to the farm population of traumatic injury and death, including risks of tractor rollovers and runovers, other machinery related incidents, animals, and human factors. Prevention investigations might include farmstead, building and equipment design improvements, and creation of voluntary standards for livestock building air quality.

Secondarily, the mission will be to facilitate fundraising from federal agencies (including the U.S. Public Health Service, U.S. Department of Agriculture and the U.S. Environmental Protection Agency), national foundations, and local industries for research. A center would give visibility, credibility, and leverage for getting research funding from federal and other non-state sources and provide a professional setting for allocating state-funded research in this area. The integrative structure and collaborative working relationships envisioned here is precisely what non-state funding sources are looking for. Minnesota could attract available federal and foundation funding by establishing a Center and a track record of performance.

The structure of the Center will consist of a Working Committee, comprising representatives from each of the participating organizations. The Committee will be headed by a director and a deputy director. Staff support will be provided by a small administrative core located in the Division of Environmental and Occupational Health on

the Minneapolis campus of the University of Minnesota. The proposed farm safety commission would serve as an advisory council to the Center. The task force believes that the input of farmers and others outside the university is very important and sees the incorporation of this viewpoint in the governing of the center as a breakthrough in the integrative research efforts of land grant universities.

The center's participants will determine the specific research projects to be pursued. A process which includes peer-review and a request-for-proposal method is important to the credibility of the research results. A center could effectively provide for these needs. The legislature may direct funding toward topical areas or objectives of public interest. At the end of the first year, the Working Committee will present a report detailing the research areas identified as the highest priorities for future investigations, and for preserving the health and safety of agricultural workers in the state of Minnesota.

The importance of surveillance in mitigating traumatic injury and death

Several different approaches have been used in the past in order to collect basic information about agricultural injury and other health-related events. These include use of hospital discharge data, emergency room logs, reports from physicians offices, insurance claim information, death certificates, newspaper reports, and telephone-based and mail-out surveys of farmers themselves. Each has its drawbacks, although the objective associated with each of these approaches is to develop information which can be used to design, target and deliver interventions capable of reducing or eliminating agricultural injury and disease.



By 1993 information will be available which will permit the Minnesota Legislature to develop an informed perspective on the most effective approach to surveillance of agricultural injury and other health-related conditions. By 1993 the several Minnesota state agencies (and other agencies such as the voluntary farm organizations and the Minnesota Safety Council) will have a final proposal ready for legislative deliberation and will also have completed nearly a decade of pilot tests of several approaches. Because these activities are presently federally funded, no additional state resources are requested at this time.

Because the need for information about agricultural injury and other health-related events is so critical, the current surveillance activities have been designed to provide necessary detail. These activities will last until 1992 and will provide a useful baseline for the design, targeting, and delivery of interventions already under way or in the planning stages.

An example of the kind of information that is needed pertains to tractor rollovers. Tractor rollovers are the leading cause of traumatic death in farming. It is further known that Roll Over Protective Structures (ROPS) are an effective means of mitigating injuries from accidents. ROPS have been standard equipment on new tractors since 1985 and are available for retrofit on tractors going back to the mid-1960s. However, it is not known which tractors driven by which operators under which conditions are most likely to be involved in tractor fatalities. Without this information it is difficult to determine the risk of death or injury from a tractor rollover and thus justify, either to a farmer or to the state, that it would be advisable to pay the cost of a ROPS retrofit.

