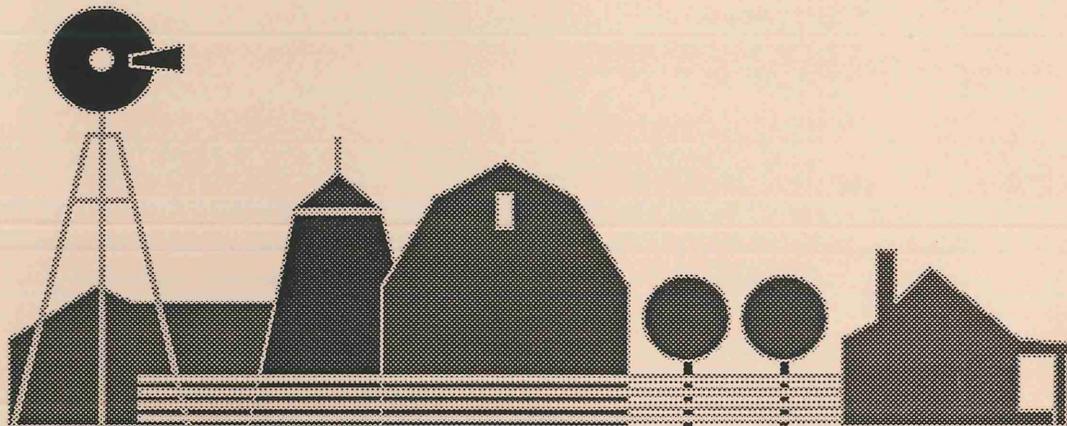




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Using Inspections to Promote Farm Safety: A Summary of the Farm Insurance Safety Audit Project (FISA)

February 1994



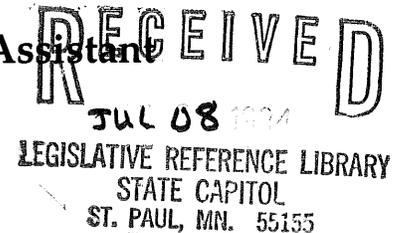
By: John M. Shutske, Ph.D. - Agricultural Safety and Health Specialist, University of Minnesota's Extension Service and Department of Agricultural Engineering; and Daniel Bryant, Graduate Research Assistant, School of Public Health, Division of Environmental and Occupational Health

Special thanks to James Faber, Reinsurance Association of Minnesota; Michael Kaufman, Unity Mutual Insurance; Michael Flugum, Hassan Mutual Insurance; Ben Machovsky and other loss control inspectors representing the cooperating companies and the Mutual Inspector's Association; the boards and policyholders of Hassan and Unity Mutual Insurance Companies; Stacy Wirtjes, Undergraduate Research Assistant at the University of Minnesota; the State of Minnesota; the Minnesota Advisory Task Force on Farm Safety; and, the Minnesota Department of Agriculture for their support and funding provided for this project.

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John M. Shutske, Ph.D.
Daniel Bryant, Graduate Research Assistant



Background

Agriculture is the most hazardous industry in the United States according to death rates published by the National Safety Council. Minnesota averages nearly 40 farm work-related deaths and an estimated 17,000 injuries each year. Many factors influence the risk level of farming, including factors inherent in the work environment, in the "agent" involved in the injury (such as a specific tractor or machine), and in the person injured. The Farm Insurance Safety Audit project (FISA) focused on making changes in the work environment by correcting specific hazards that make common agents of injury more dangerous.

Traditional approaches to farm safety and health have operated under the assumption that conditions can be improved through safer and better engineering of farm equipment and facilities; through policy and regulation; and through educating farm workers and operators. This study focused on a combination of these methods. The FISA pilot project explored the role and potential effectiveness of farm insurance inspectors in detecting hazardous conditions and conveying hazard correction information to the farm operator. Another component investigated in this pilot study was the potential effectiveness of insurance premium discounts as incentives to change.

Many rural insurers conduct loss control inspections for their farm policy holders. Many of the inspectors employed by rural insurers are familiar with farming procedures and equipment and are trusted by their customers. Their potential as farm safety and health educators had never been investigated, however.

In 1991, the Minnesota state legislature allocated \$44,000 for a pilot study to investigate the potential impact of insurance based inspections and incentives to eliminate farm hazards. These funds, distributed through the State Department of Agriculture to investigators with

the University of Minnesota and Minnesota Extension Service, were used to study the inspection process on nearly 200 farms in central Minnesota.

The Process

Many of Minnesota's township mutual insurance companies employ loss control inspectors. These inspectors have traditionally examined farm property risks including electrical wiring, heating systems, housekeeping, and general conditions of homes and outbuildings. The township mutual insurance system in Minnesota provides some level of insurance for approximately 80% of the state's farms, and therefore was the natural choice for assistance in carrying out the research project.

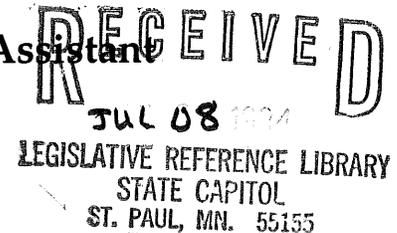
Inspections were conducted in cooperation with two Minnesota insurance companies, Hassan Mutual in St. Michael, and Unity Mutual in Waite Park. James Faber of the Reinsurance Association of Minnesota was instrumental in bringing together the University's project investigators with the local companies and staff.

The inspection scheme employed in this study included a pre- and post-inspection of common hazards likely to cause injury and/or occupationally-related health problems on Minnesota farms. These additional hazards were added to the list of property hazards normally examined during the inspection process. The hazards selected represented concerns in areas of health, life, property, and liability insurance, giving the findings relevance to different insurer categories.

At the time of the pre-inspection, inspectors distributed educational materials discussing the various hazards with specific recommendations for correcting them, including sources of safety equipment. Between inspections, customers were provided with a letter from their insurance company listing hazards discovered during the pre-inspection, and encouraging them to make changes to correct these hazards. This correspondence was coordinated by the University research staff. Customers were also reminded of the voluntary nature of these changes, a requirement of the University's Human Subject's Committee in response to the potential sensitive nature of the inter-relationships between the customer, insurance company, and the University.

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actually required these changes in their underwriting and risk management process. And, it would be highly useful to determine how hazard change is influenced with increasing levels of incentives. For example, how does doubling or tripling the incentive compare with the \$100 studied here? And, at what point does an incentive scheme become optimal for both the insured and the insurer, in terms of lower cost and lower paid-out losses by insurers?

Through this study, we have learned that farm property insurance inspectors can have a positive impact on changing the level of risk on Minnesota farms in a positive direction. Staff of the University of Minnesota's Extension Service will continue to work with the Mutual Inspector's Association, the Reinsurance Association of Minnesota, the Minnesota Association of Farm Mutual Insurance Companies, and other interested groups to educate their staffs and customers about farm safety and farm hazard reduction.

Half of the inspected group was randomly selected and offered a \$100 cash incentive to make all of a subset of the hazard corrections. This offering was made in a separate paragraph of the letter with all other parts of the letter being exactly the same for both groups. This incentive was designed to approximate a 10% premium rebate, based on average levels of insurance coverage across the targeted population. The other half of the group, which will be referred to as the control group, was asked to make the same set of corrections. However, with the control group, no mention was made of the financial incentive in the letter. The control group provided a baseline to measure the incentive group against.

A post-inspection was conducted 3-4 months following the first inspection. During the post-inspection, the same hazards were examined on-site by inspectors with the same audit form, and changes were examined and analyzed by investigators.

During the entire inspection study, staff representing other Minnesota companies active in farm loss control activities participated in several educational workshops and activities to keep them updated on project progress. These sessions also covered topics designed to enrich the inspectors' knowledge of farm safety and hazard control.

Results

The results of the two audits show that numerous hazards exist on central Minnesota farms, and that hazard levels vary among different hazard types. Figure 1 shows several items of interest found to be in a safe condition at the time of this initial inspection.

Between the first and second inspections, 29% of the hazards found deficient during the first inspection were upgraded to a safe condition. Stated another way, during the first inspection, 1,188 specific hazards were found on the inspected farms, and 347 of these hazards actually were corrected following the one-on-one contact between the insured and the inspector and the follow-up correspondence.

Figure 1. Percentage of Potential Hazards Found in Safe Condition at First Inspection

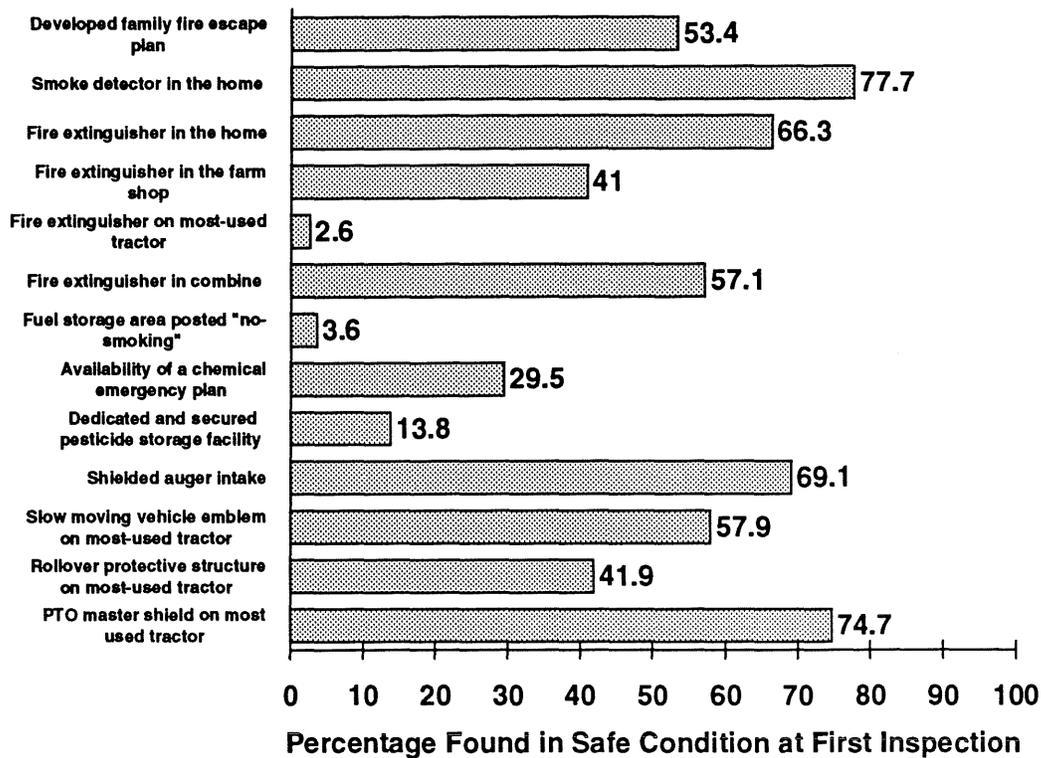


Figure 2 shows the percentage of individuals who made changes for specific hazards for both the incentive and control groups. These percentages reflect the level of change for those items that were actually found to be deficient at the time of the first inspection.

The difference between the group offered the incentive and the control group indicated that the incentive did appear have a desirable impact in inducing change for many of the specific hazards. The incentive group made 32% of the total recommended corrections, and the control group made 26%. This represents a six percentage point difference or a relative difference between the two proportions of 23.1%.

This means that if the results of this pilot study were realized in a study where equal numbers of hazards were discovered in two sample populations, the group offered the incentive would make approximately one-quarter more of the recommended changes. However, without additional research in other areas of the state, region, or U.S., these results may not be generalizable.

Figure 2. Percentage of Hazards For the Incentive and Control Groups Found Deficient at First Inspection That Were Corrected by Time of Second Inspection

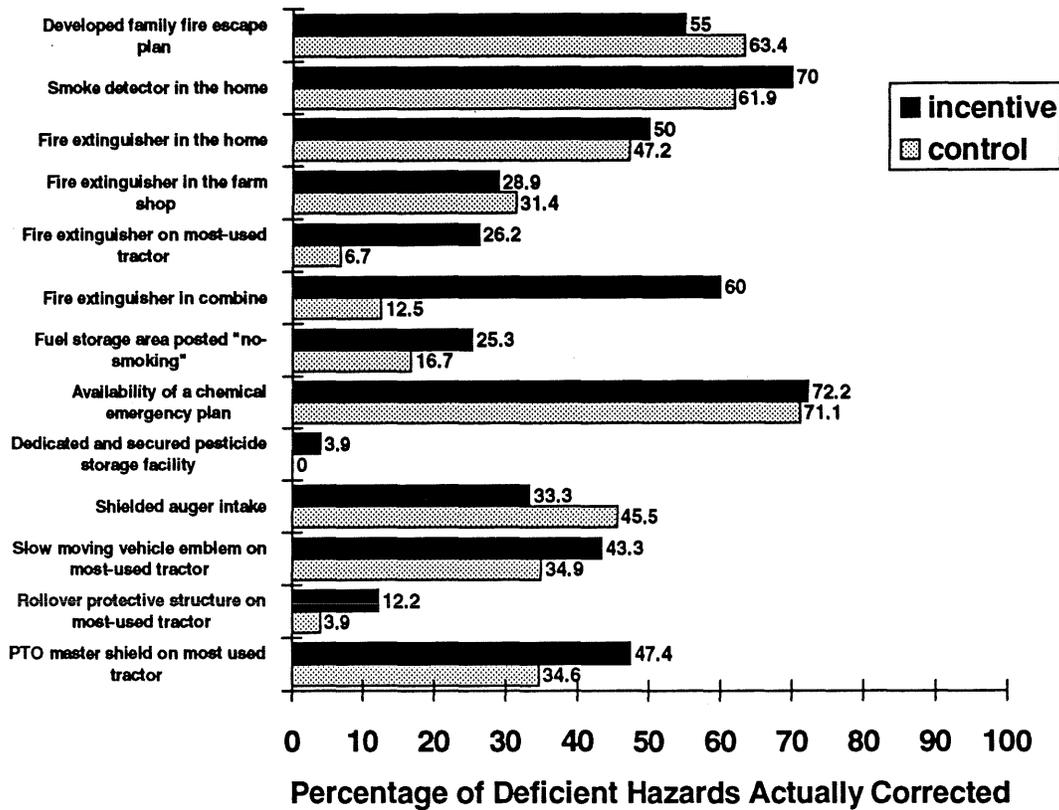


Figure 3 shows the results of the inspection for both the incentive and the control groups combined. Again, these percentages represent the proportion of farms where hazardous conditions found during the first inspection were indeed corrected.

Figure 3. Percentage of Total Hazards Found Deficient at First Inspection That Were Corrected by Time of Second Inspection

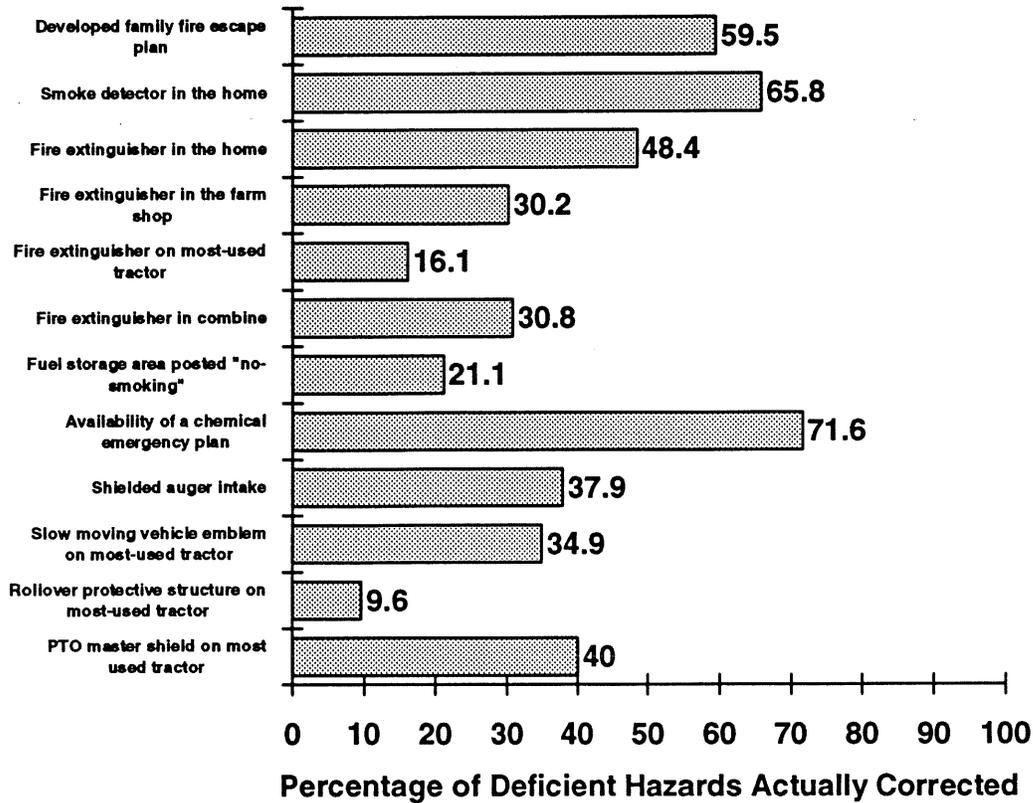
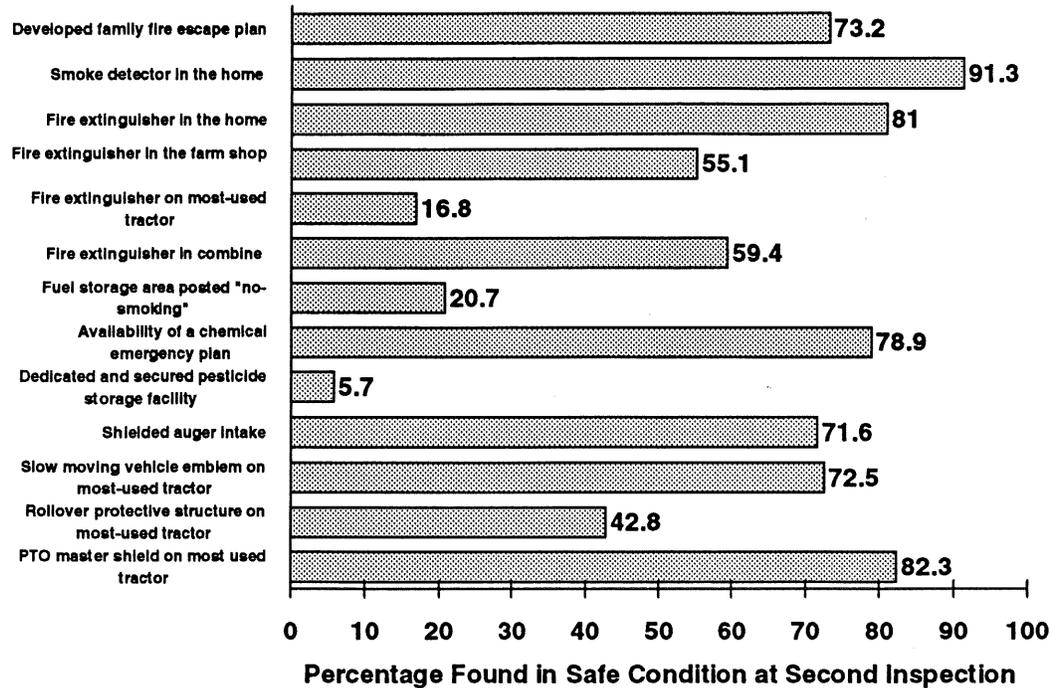


Figure 4 shown below shows the final state of safe conditions after the second audit was complete. Every hazard condition showed improvement, with the exception of provisions for a secured pesticide storage facility. This is likely due to seasonal variations where chemical storage on-site varied between the inspections, since the pre-inspections were performed in the fall/winter seasons, while the post-inspection was performed during the spring. Note that there are high levels of compliance at the end of the inspection process with several of the hazard categories. These include smoke detectors in the home (91.3%), PTO master shields on most-used tractors (82.3%), and fire extinguishers in homes (81.0%).

Figure 4. Percentage of Potential Hazards Found in Safe Condition at Second Inspection



Conclusion

In summary, the farm inspection process documented through this pilot project appeared to have positive impact in reducing hazards. A total of 29% of the hazards discovered during the initial inspection were corrected by the time of the second inspection. This overall impact for both the control and incentive groups seems greater than initially expected, given the voluntary nature of these changes.

Additional research is needed before generalizing the findings to other areas of Minnesota and the U.S. It would also be useful to further study the nature of safety device installation and removal habits during the course of a typical working season. Although the changes observed during this study occurred between two on-site inspections, we cannot say with 100% certainty that the inspection process can be given full credit for all of the changes that occurred.

Further research would also be useful to determine the impact if insurance companies

actually required these changes in their underwriting and risk management process. And, it would be highly useful to determine how hazard change is influenced with increasing levels of incentives. For example, how does doubling or tripling the incentive compare with the \$100 studied here? And, at what point does an incentive scheme become optimal for both the insured and the insurer, in terms of lower cost and lower paid-out losses by insurers?

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