



The Farm Safety Audit: An Educational Breakthrough

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PROBLEM

Hazards on farms result in injuries and deaths each year. However, motivating producers to make changes to reduce hazards has been an enormous challenge. Ag safety specialists have experimented with different educational approaches, but few have resulted in major impact.

SOLUTION

Research and trials in the past ten years demonstrate a promising new educational approach. This approach is *not* the traditional extension workshop, newsletter or fact sheet. Rather, it is an improved method of a safety audit conducted on the farm. A safety audit is conducted when someone walks around the farm, observes the presence of hazards and evaluates them. Extension educators can conduct such an audit for a producer. However, with some training, producers can conduct their *own* audit. Research and trials have shown that a safety audit leads to the correction of safety hazards on farms.

AN EDUCATIONAL DATA COLLECTION METHOD

The audit is comprised of a list of safety hazards on farms. Associated with each hazard is a rating scale (1-5) to evaluate the degree of the hazard. What is most significant about this scale, as opposed to many others, is that there is a carefully defined description of the physical characteristics associated with each level of hazard or number. Additionally, each level of hazard is mutually exclusive from the others. For instance, look at the simple but well defined scale for:

Pesticide Storage

- 1 A separate, lockable storage structure or location is locked.
- 2 A separate, lockable storage structure or location is unlocked.
- 3 A lockable structure or location within another building; is locked.
- 4 A lockable structure or location within another building; is unlocked.
- 5 No lockable storage; storage in open building/area, no controlled access.

Having a description for each number on the scale reduces the likelihood of misinterpretation by the observer in evaluating the hazard. You can see a safety audit that was developed in Pennsylvania for 10 typical farm hazards at the end of this document.

USE OF THE PENNSYLVANIA SAFETY AUDIT

Trials among farm youth in Iowa (unpublished data), trained auditors (Murphy et. al., 1998), farmers in PA (Landsittel et. al., 2001), and insurance agents (Legault and Murphy, 2000) have demonstrated that when different people observe the same hazard using this audit, a similar score results. In scientific terms, a similar score among observers means that the inter-rater reliability is high, testifying to a lack of bias in the scale and thus, quality data.



ADVANTAGES

Using an audit for an evaluation of hazards on a farm has many advantages that make such an audit worthwhile.

- When the producer conducting a self-audit circles the number with the description of what is wrong, the description identifies for the producer *how the hazard can be corrected*. The descriptions in the scale for each hazard are *educational*.
- Both youth and adults can with training, conduct the audit.
- The results of an initial audit on farms provide a needs assessment and can lead to targeted programs by an extension educator.
- If extension staff conduct a second safety audit, six months or a year later on farms where an initial safety audit has taken place, the audit can reveal the impact of an education program across farms. The audit makes a worthwhile post program evaluation technique.
- Research and trials have demonstrated that use of the safety audit as a self audit and as an observation tool, can act as a motivator for the producer to correct farm hazards.
- An on-farm safety audit provides an opportunity for an extension educator to visit a farm to conduct an audit, or to explain to the producer how to implement a self audit, and tally the results. Additionally, the on-farm visit allows for social rapport. The extension educator can discuss any other farm concerns with the producer and the producer can ask questions.
- If doing multiple audits, an extension educator can consider developing a program for a computer or palm pilot, and entering the data while walking around the farm.

LIMITATIONS

A quality audit takes knowledge of the array of characteristics associated with a hazard in the field and a commitment of time. Both limitations can be overcome if a few extension staff work as a team on an audit.

APPLICATION TO OTHER PROGRAMS

A walk around safety audit can be developed to evaluate other environments that concern extension— child care facilities, urban and forest trees, and restaurant kitchens.

This research based evaluation technique can be used as a self audit or observation tool. It can also be used by adults and children in youth programs.

RESOURCES using OBSERVATION in Pennsylvania

Pennsylvania Program Evaluation [Website](#)

[Tipsheet #37](#): Observation: An Underused Method to Collect Data

[Tipsheet #61](#): Using Observation to Evaluate Skills

PA EXAMPLE Observation 1: [Better Barnyard Management](#)

PA EXAMPLE Observation 2: [Impact of a Food Safety Program](#)



Landsittel, D. P., D. J. Murphy, N. E. Kiernan, and L. Hard. 2001. "Evaluation of the Effectiveness of Educational Interventions in the Pennsylvania Central Region Farm Safety Pilot Project." *American Journal of Industrial Medicine* 40:145-152.

Legault, M. L., and D. J. Murphy. 2000. "Evaluation of the Agricultural Safety and Health Best Management Practices Manual." *Journal of Agricultural Safety and Health* 6(2):141- 153.

Murphy, D. J., N. E. Kiernan, D. L. Hard, and D. Landsittel. 1998. "The Pennsylvania Central Region Farm Safety Pilot Project: Part 1 - Rationale and Baseline Results." *Journal of Agricultural Safety and Health* 4(1): 25-41.

Sischo, W. M., N. E. Kiernan, C. M. Burns, and L. I. Byler. 1997. "Implementing a Quality Assurance Program Using a Risk Assessment Tool on Dairy Operations." *Journal of Dairy Science* 80:777-787.

Barnyard Conditions and Management. Worksheet #4.

<http://cropsoil.psu.edu/Extension/FAS/FAShomepage.htm>

How to Do Risk Assessments and Management Plans for Johne's Disease

<http://www.vetsci.psu.edu/Ext/pdqa/How to do RAs and MPs for Dairy and Beef Herds 11.pdf>

Biosecurity Risk Assessment for Farm Visitors and Exhibitions

<http://www.vetsci.psu.edu//Ext/Biosecurity/BioMain.htm>

The Farm Safety Audit and Check List: See last three pages of this file.



The Farm Safety Audit

INSTRUCTIONS:

- 1 Identify the tractor, machine, structure, facility, or other items to be audited.
- 2 Circle the appropriate number to identify the hazard level for each hazard topic.
- 3 REMEMBER - Hazard topics that are rated as a 4 or 5 should be addressed first. Then hazard topics that are rated a 2 or a 3 should be addressed next. Hazard topics that are rated a 1 are the ideal.

HAZARD ROLLOVER PROTECTIVE STRUCTURES (ROPS)

- 1 A manufacturer approved ROPS cab with all glass in place and a door that shuts properly.
- 2 A manufacturer approved ROPS cab with missing or improperly-shutting door or missing window glass; a 4-post ROPS.
- 3 A manufacturer approved two post ROPS.
- 4 A modified or homemade ROPS.
- 5 No ROPS installed on the tractor or tractor with weather cab only.

Notes:

SLOW MOVING VEHICLE (SMV) SIGN

- 1 On, properly placed, bright in color.
- 2 Faded, not in correct place; noticeably bent; upside down; partially obstructed; muddy.
- 3 Missing.

Notes:

PTO DRIVELINES

- 1 Driveline shaft shield is in place, is in good condition, and it can easily rotate but chain prevents shield from rotating.
- 2 Driveline shaft shield is in place but is bent, cracked, sliced, and/or does not rotate freely.
- 3 Driveline shaft shield is missing or never had one.

Notes:



HEADLIGHTS AND WARNING FLASHERS

- 1 Both headlights and all warning flashers working, and are clearly visible.
- 2 Both headlights and some warning flashers working or one headlight and all warning flashers are working.
- 3 One headlight and/or some warning flashers not working.
- 4 No headlights working but warning flashers working or headlight(s) working but warning flashers not working or visible from one direction only.
- 5 None; no headlight or warning flashers work.

Notes:

FIRE EXTINGUISHERS

- 1 A 10-pound ABC type extinguisher is accessible on each floor of a building or within 50 feet of a structure; is mounted; fully charged.
- 2 Only one 10-pound ABC type extinguisher is available or charged; extinguisher is not easily accessible, not mounted; only Class A or class BC extinguishers are present.
- 3 Fire extinguishers are not charged, are missing, or have never been there.

Notes:

HOUSEKEEPING

- 1 All walkways are clear; litter has been disposed; buildings look neat and tidy.
- 2 All walkways are clear; some litter is present; buildings look somewhat untidy.
- 3 Walkways are not clear; litter is present; buildings are cluttered and messy.

Notes:

PESTICIDE STORAGE

- 1 A separate, lockable storage structure or location is locked.
- 2 A separate, lockable storage structure or location is unlocked.
- 3 A lockable structure or location within another building; is locked.
- 4 A lockable structure or location within another building, is unlocked.
- 5 No lockable storage; storage in open building/area no controlled access.

Notes:



ABOVE-GROUND FUEL STORAGE

- 1 Tank is located at least 40 feet from other buildings or structures; tank has double wall or placed in concrete box or surrounded by an earthen dike to contain leaks/spills; tank and/or tank stand is protected by a barrier if in heavy traffic area.
- 2 Tank is located at least 40 feet from other buildings or structures; tank and/or tank stand is not protected by a barrier but is in a heavy traffic area.
- 3 Tank is located less than 40 feet from other buildings or structures; tank is not surrounded by even an earthen dike; tank and/or tank stand is not protected by a barrier but is in heavy traffic area.

Notes:

BULL PENS AND STALLS

- 1 Safety pass-throughs are 14 inches wide; gate latches shut automatically.
- 2 Safety pass-throughs are less than 14 or more than 18 inches wide; gate latches have to be shut manually.
- 3 Safety pass-throughs are not present; gate latches are hard to operate; bull(s) are allowed to roam freely with the cows.

Notes:

GROUND-LEVEL MANURE STORAGE PONDS

- 1 A strong, secure fence surrounds the pond and is constructed so that children and others cannot enter the pond area; gate(s) are locked; a hazard warning sign is prominently displayed at all access points and/or sides, and is easily read.
- 2 A strong, secure fence surrounds the pond and is constructed so that children and others cannot enter the pond area; gate(s) are locked; a hazard warning sign is present but corroded and hard to read.
- 3 A fence surrounding the pond that can be passed through/under by children, but will keep adults out; gate(s) are locked; a hazard warning sign is not present.
- 4 There is not a fence surrounding the pond; a hazard warning sign is prominently displayed around the pond's perimeter.
- 5 There is not a fence surrounding the pond; a hazard warning sign is not present.

Notes:

For further information about the farm safety audit, please contact Dennis Murphy (djm13@psu.edu). For assistance in developing an observation tool, contact Nancy Ellen Kiernan (nekiernan@psu.edu). This Web site is copyrighted by the Pennsylvania State University. The information may be used for educational purposes but not sold for profit.