Oklahoma Cooperative Extension Service
Division of Agricultural Sciences and Natural Resources
Oklahoma State University

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Agricultural Safety and Health Series: On-Site Farm Safety Survey[1]

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OBJECTIVE

The On-Site Farm Safety Survey was conducted as a needs assessment phase of the ongoing safety project directed by the Department of Extension Biosystems and Agricultural Engineering at Oklahoma State University. The funding was provided by the National Institute for Occupational Safety and Health (NIOSH). The survey was carried out to meet Objective Eight for Year Two of the project (1991-92).

PLANNING

A Graduate Research Associate was hired to oversee the survey portion of the project. Several meetings were held with members of the Project Safe Team in order to plan the survey. A questionnaire was developed, reviewed, and revised several times before the final instrument was ready. The team reviewing the questionnaire included Dr. Jim Criswell, Entomology; Dr. Gerrit Cuperus, Entomology; Dr. Ben Shaw, Agricultural Education; Dr. Chuck Hibberd, Animal Science; Dr. Miguel Barerra, Agricultural Education; Dr. James Key, Agricultural Education; Dr. Michael Smolen, Agricultural Engineering; Pat Lewis, Agricultural Engineering; Judy Oskam, Agricultural Engineering; and Edward Barnes, Agricultural Engineering. Mr. Charles Drake, legal counsel for the University, was consulted regarding liability that could be incurred through the survey. He approved the survey instrument as non-threatening to the population being surveyed.

SURVEYORS

Three graduate students in Agricultural Education were hired to conduct the surveys. Each assistant received extensive training through the use of videos, safety specialists, safety manuals, and supervised field practice. In addition to training in the field of technical information, the students also received training in personal relations.

POPULATION

The County Extension Directors in each county were contacted and asked to provide the names and phone numbers of six to ten farmers/ranchers who would be willing to participate in the survey. In addition, the directors were asked to suggest names of people whose operations were typical of the area. Because it was a voluntary project, some counties did not respond to the second mailing and phone calls that were used to follow up the first request. Eventually, 68(88%) of the 77 counties in Oklahoma were surveyed. A total of 209 farms were visited.

SURVEY

After names were received from the County Extension Offices, the survey coordinator contacted each person by telephone to explain what was involved in the project and also to set up a date and time for the surveyor to visit their farm/ranch. It was left to the

1. For more information about agricultural safety and health, contact: The National Institute for Occupational Safety & Health, 4676 Columbia Parkway, Cincinnati, Ohio 45226, 1-800-35-NIOSH, or, Project Director, Oklahoma Agricultural Health Promotion System, Oklahoma State University, (405)-744-7089

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individual to ensure whether or not their farm was surveyed. In order to facilitate the surveyors' transportation, all the farms in one county were visited on the same day or on consecutive days, thus avoiding additional travel expenses. (In a few counties, Agriculture Agents set up the visits themselves.)

On average, the surveys took thirty minutes to an hour to complete. There were a number of variables, such as size of the farm, that influenced the amount of time required at each site. The surveyors found that the farmers were, for the most part, extremely interested in farm safety and all factors making their farms safer.

FINDINGS

A problem was considered major if less than half of the farms surveyed were following recognized safety practices in carrying out this operation.

Demographic Information

Of the farms surveyed, the average size of the farm was 1607.7 acres and the average number of miles to the nearest fire station was 5.48 miles. The results of the survey also showed that the average number of years the owner of the farm had been farming was 26.9 years.

Regarding training in first aid, 131(63.90%) of the farmers surveyed indicated that they or a member of their family had received some type of first aid training, while 74(36.10%) indicated that no one in their family had received any first aid training.

Farm Buildings

Of the farms surveyed, 92.31% did not display NO SMOKING signs in fuel storage or refueling areas, 42.23% did not have fire extinguishers readily available, and another 16.51% needed improvement. Forty-seven percent of the farms surveyed did not have a first aid kit, and 6.83 percent of those that did, needed improvement (Table I).

Crop and Feed Storage Areas

Of the farms surveyed, 54.55% did not have warning labels in crop and feed storage areas, and another 14.87% needed improvement. Of the 30.58% that were labeled, 82.70% of the labels had both words and pictures.

Seventy-two percent of the farms surveyed did not have fire extinguishers readily available in crop storage areas, and 5.51% needed improvement (Table II).

Chemical Storage and Application

The results of the survey showed that 29.67% of the farms did not store chemicals in a room or building which could be locked to keep out children and livestock.

Of the farms surveyed, 61.72% of the entrances to chemical storage areas were not posted to warn others of the hazards inside and to inform firefighters in the event of a fire.

The results of the survey showed that 11.59% of the farms did not have proper first aid equipment available, and another 25.12% needed improvement in this area.

Sixty-seven percent of the farms surveyed did not have NO SMOKING signs posted in and around buildings where chemicals were stored. Of the farms surveyed, 44.93% of chemical storage areas were also used for some other purpose (Table III).

Equipment and Machinery (Other than Tractors)

Fifty-eight percent of the farms checked did not have all combines equipped with fire extinguishers, and another 6.25% needed improvement (Table IV). The survey found that 81.16% of the PTO shields were in place on equipment and machinery. Approximately 89% of other guards and shields were in place.

Tractors

Seventy-eight percent of the farms surveyed did not have all tractors equipped with fire extinguishers, and 7.32% needed improvement (Table V). The survey results showed that approximately 75% of the tractors had either ROPS or ROPS cabs. Of those tractors with ROPS or ROPS cabs, 64.44% had seatbelts. Fifty-six percent of the tractors checked did have PTO master shields in place.

Livestock Facilities

Statistics on safety and livestock facilities can be found in Table VI.

Table I. Farm Buildings

		YES N(%)	NO N(%)	N/I* N(%)	N/A** N^
1.	Are buildings free of unnecessary accumulations of trash, litter, junk, and other debris which could fuel a fire, cause falls, or get in the way?	117(56.79)	33(16.02)	56(27.19)	3
2.	Are buildings well lighted?	160(78.82)	20(9.85)	23(11.33)	4
3.	Are above-ground fuel storage tanks at least forty feet from any building?	113(60.75)	63(33.87)	10(5.38)	22
4.	Are above-ground fuel storage tanks child-proofed?	123(66.13)	50(26.88)	13(6.99)	21
5.	Is the area near fuel storage tanks free of weeds and other easily combustible material?	147(79.03)	16(8.60)	23(12.37)	12
6.	Are NO SMOKING signs displayed near fuel storage or refueling areas?	12(6.59)	168(92.31)	2(1.10)	27
7.	Does each major farm building have a fully charged ABC-type fire extinguisher readily available?	85(41.26)	87(42.23)	34(16.51)	3
8.	Does each major farm area have a well-maintained first aid kit for use in the event of personal injury?	94(45.85)	97(47.32)	14(6.83)	1
9.	Are important emergency phone numbers clearly written and posted near each telephone?	108(55.38)	68(34.87)	19(9.75)	12
10.	Does all electrical wiring insulation appear to be in good condition?	166(84.69)	6(3.06)	24(12.25)	13
11.	Are the floors of buildings free of badly broken and raised concrete, slippery spots, small curbs, or other spots that could cause falls?	169(92.86)	9(4.94)	4(2.20)	27
12.	Are there telephones or radios in vehicles or buildings away from the home base?	89(59.33)	56(37.33)	5(3.34)	57

* N/I = Needs Improvement ** N/A = Not Applicable for this farm

^ Those farms responding with Not Applicable were not figured into the overall percentages.

Table II. Crop and Feed Storage Areas

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
13.	Can entrances to grain, feed or silage storage areas be closed or locked to keep children out?	86(68.80)	30(24.00)	9(7.20)	84
14.	Is each grain/feed bin and storage area clearly labeled to warn of the hazards of flowing grain/feed and the potential for entrapment?*	37(30.58)	66(54.55)	18(14.87)	88
16.	Are silo and bin ladders in good condition?**	94(88.68)	8(7.55)	4(3.77)	101
17.	**				
18.	***				
19.	Is there a charged ABC-type fire extinguisher readily available in crop storage areas?	28(22.05)	92(72.44)	7(5.51)	77
20.	Are respirators or dust masks available for use when handling dusty or moldy grain or feed, or cleaning inside a bin?****	96(77.42)	27(21.77)	1(0.81)	83
21.	Does the grower fumigate his/her own grain?*****	48(49.48)	49(50.52)	0	107

N/I = Needs Improvement N/A = Not Applicable

^ Those farms responding with Not Applicable were not figured into the overall percentages.

* Question 15 asked what type of information the labels indicated in Question 14 contained. Results were Words -- 8(15.38%) Pictures -- 1(1.92%) Both Words and Pictures -- 43(82.70%)

** Question 17 asked how many bins had permanent ladders both inside and out. Because the surveyors were not able, in many cases, to determine the existence of inside ladders, the results given are for outside ladders only. It was found that 72.25% of the bins had outside ladders.

*** Question 18 asked how many silos were labeled to warn of the hazards of silo gas. Only a small number of the farms surveyed had silos, and 40.63% of these were labeled.

Table II. Crop and Feed Storage Areas

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
**** Question 20 also asked the surveyor to indicate what type of respirator or mask was available on the farms that had them. Results were Cannister -- 16(15.54%) Positive pressure -- 8(7.77%) Dust mask -- 79(76.69%)					
***** Question 21 also asked the surveyor to indicate whether or not warning placards and proper respiratory equipment were available on farms where the surveyor did fumigate his/her own grain. Results were: Warning placards available -- YES 23 (47.92%) NO 25 (52.08%) Proper respiratory equipment -- YES 20 (41.67%) NO 28 (58.33%)					

Table III. Chemical Storage and Application

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
22.	Are all chemicals stored in a room or building which can be locked to keep out children and livestock?	87(41.63)	62(29.67)	5(2.38)	55
23.	Is the entrance to the chemical storage area posted to warn others of the hazards inside and to inform firefighters of the contents in the event of a fire?	10(4.78)	129(61.72)	4(1.92)	66
24.	*				
25.	Is the chemical mixing place outside or in an open, well-ventilated part of the building?**	163(78.84)	2(0.97)	0	42
26.	***				
27.	Is proper first aid equipment available, including a large amount of water?	94(45.42)	24(11.59)	52(25.12)	37
28.	Are all empty chemical containers disposed of properly?	128(61.54)	16(7.69)	27(12.98)	37
29.	Is the storage area reserved for chemicals only?	48(23.19)	93(44.93)	6(2.89)	60
30.	Are NO SMOKING signs displayed in and around buildings where chemicals are stored?	5(2.40)	140(67.31)	1(0.48)	62
^ Those farms responding with Not Applicable were not figured into the overall percentages.					
* Question 24 asked approximately what percentage of chemicals are stored in their original containers. The survey showed that 98.32% were stored in original containers.					
** Question 25 also asked surveyors to indicate where chemical mixing takes place. Results showed: Same Place Always-- 87(61.70) In the Field -- 54(38.30)					
*** Question 26 asked what kinds of equipment were available for use with chemical applicators. The results were: Gloves: YES - 124 NO - 42 (118 Rubber, 4 Leather 1 Plastic, 1 Cotton) (74.70%) (25.30%) (95.16%), (3.22%), (0.81%), (0.81%) Goggles: YES - 79(48.77%) NO - 83(51.23%) (1 Survey indicated a respirator was used) Boots: YES - 149 NO - 15 (63 Rubber, 83 Leather, 2 Both, 1 ?) (90.85%) (9.15%) (42.28%) (55.70%) (1.35%) (0.67%)				

Table IV. Equipment and Machinery (other than tractors)

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
31.	*				
32.	**				
33.	Is the auger inlet shielded to prevent contact with the auger?	76(59.84)	30(23.62)	21(16.54)	82
34.	Is the winch cable free of corrosion, wear, or damage which would reduce its strength?	111(92.5)	5(4.16)	4(3.34)	88
35.	Are there any power lines near those areas where portable augers/elevators are located or generally used?	49(39.20)	70(56.00)	6(4.80)	83
36.	***				
37.	Is each combine equipped with a ten-pound (minimum) ABC-type fire extinguisher?	34(35.42)	56(58.33)	6(6.25)	113

Table IV. Equipment and Machinery (other than tractors)

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
38.	Are ladders and steps in good repair and free of mud and grease?	103(96.26)	2(1.87)	2(1.87)	102

^ Those farms responding with Not Applicable were not figured into the overall percentages.

* Question 31 asked approximately what percentage of PTO shields were in place. It was found that 81.16% were in place on equipment and machinery.

** Question 32 asked approximately what percentage of other guards and shields were in place. The survey indicated that 88.59% of these were in place.

*** Question 36 asked the surveyor to indicate approximately what percentage of the self-propelled and towed equipment was equipped with an unfaded SMV emblem and reflectors or lights. Results showed the following
Unfaded SMV Emblem --74.83% Reflectors or Lights -- 87.86%

Table V. Tractors

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
39.	Are PTO master shields kept in place?	116(56.04)	45(21.74)	46(22.22)	2
40.	Have defective mufflers and other exhaust components been replaced?	189(91.75)	6(2.91)	11(5.34)	2
41.	Are the operators' platforms free of grease, mud, and tools?	166(80.58)	14(6.79)	26(12.63)	2
42.	Are reflectors and SMV emblems clean, unfaded, and undamaged?	121(60.80)	37(18.59)	41(22.61)	9
43.	Is each tractor equipped with a five-pound (minimum) ABC-type fire extinguisher?	30(14.63)	160(78.05)	15(7.32)	4
44.	Are cab windows and mirrors clean to maintain clear visibility?	143(94.08)	4(2.63)	5(3.29)	57
45.	Are tires in good condition and inflated to proper levels?	188(92.16)	6(2.94)	10(4.90)	2
46.	Are the fuel, oil, and hydraulic systems in good condition?	192(94.12)	3(1.47)	9(4.41)	2
47.	*				
48.	**				

^ Those farms responding with Not Applicable were not figured into the overall percentages.

* Question 47 asked approximately what percentage of the tractors had ROPS or ROPS cabs. It was determined that approximately 74.69% of the tractors had either ROPS or ROPS cabs.

** Question 48 asked approximately what percentage of the tractors indicated in Question 47 also had seatbelts. It was found that 64.44% of the tractors had seatbelts.

Table VI. Livestock Facilities

		YES N(%)	NO N(%)	N/I N(%)	N/A N^
49.	Are pens and loading chutes adequate for the job, sturdy, and well-repaired?	171(86.36)	9(4.54)	18(9.10)	10
50.	Are gates and lot fences adequate for the job, sturdy, and well-repaired?	173(87.82)	9(4.57)	15(7.61)	10
51.	Is feeding, grinding, and other equipment properly shielded and all shields in place?	65(82.28)	2(2.53)	12(15.19)	126
52.	Are loading troughs on augers, elevators, and conveyors covered with grating?	39(86.66)	3(6.67)	3(6.67)	161
53.	Are vents clear and fans operative in confinement housing?	18(90.00)	1(5.00)	1(5.00)	187
54.	Are ponds fenced to keep children out?	64(52.46)	54(44.26)	4(3.28)	84
55.	Are there at least two exits from each area used for working livestock?	190(96.45)	5(2.54)	2(1.01)	11

^ Those farms responding with Not Applicable were not figured into the overall percentages.