EVALUATION OF STRATEGIES TO ACHIEVE COMPLIANCE WITH A LEGAL RISK ASSESSMENT DOCUMENT BY FARMERS IN IRELAND

John McNamara,
Teagasc – Agriculture and Food Development Authority,
Kildalton College, Piltown, Co. Kilkenny, Ireland
Email: *John.G.McNamara@teagasc.ie*

James Phelan
University College Dublin, Ireland.

Patrick Griffin and Anthony Morahan
Health and Safety Authority, Ireland.

Frank Laffey
Farm Safety Partnership Advisory Committee, Ireland.

Abstract

Recent legislation in Ireland permits farmers who are self-employed or who employ three or less employees to meet legal duties regarding safety and health management by complying with the terms of a Code of Practice and completing a Risk Assessment Document. A three year National Initiative commenced in 2005 to develop the Code of Practice and Risk Assessment Documents and to evaluate strategies to assist farmers to effectively complete and implement their legal requirements. Preliminary findings of an evaluation of the initial phase of the Initiative are presented in this paper. The evaluation was conducted among farmers who attended a half-day training course on completing and using the Risk Assessment Document are compared with a group of farmers who completed it without training. The study findings indicate that 74% of farmers who returned the document for evaluation completed it satisfactorily. Satisfactory completeness rates were similar whether a training course was or was not attended. However, 100% of participants stated that attendance at the training was worthwhile. The on-farm evaluation found that just over 24% of the farms were not achieving a satisfactory standard of safety and health management and this was unrelated to the level of completeness of the document or attendance at a training course. Further research is required to determine what further assistance is required by farmers who either do not complete the Risk Assessment Document or achieve a satisfactory standard of safety and health management.

Key Words: Farm Safety; Health; Risk Assessment; Training; Safety Legislation.

Introduction

In Ireland the issue of improving the safety and health record of farmers presents a major on-going challenge. There are 270,000 persons employed in agriculture on 143,000 Irish farm holdings (CSO, 2001). Approximately 27% of workplace deaths in Ireland occur in agriculture (including forestry) (HSA, 2007), even though just 6.0% of the working population is employed in the sector (CSO, 2003). Regarding non-fatal accidents in Ireland a recent estimate indicates an injury rate per 100,000 farms of 1,800 (McNamara et al, 2007). Health, generally, is neglected by farmers in Ireland (Hope et al, 1999) and farmers have above average mortality rates arising from accidents and ill health (O'Shea, 1997). At an international level, farming has long been ranked as a hazardous occupation and is ranked in the top three occupations with the highest incidence rates of injuries in the United States (DeRoo and Rautiainen, 2000). While injury and ill health leads to tragedy, human suffering and disability, it also has the

potential to impact adversely on the farm business (McNamara et al, 2007). McNamara et al, 2007 also reported that farm incomes were reduced, on average, by 15% on farms where the farm operator reported a disability. Physical and mental health also correlates highly among farmers. Melberg, 2003 reported that severe injury, illness or disablement negatively influenced farmer's mental health. Thus strategies to assist farmers to effectively incorporate injury and ill health prevention into farm management are urgently needed both in Ireland and internationally.

A three-year national initiative commenced in Ireland in 2005 to assist farmers to effectively manage safety and health. The commencement of this initiative coincided with the enactment of the Safety, Health and Welfare at Work Act, 2005. This legislation updated previous legislation enacted in 1989 and strongly emphasizes the requirement for active management of safety, health and welfare at all workplaces. Small scale enterprises whose owners are self-employed or which employ three or less employees are allowed to meet legal duties regarding safety and health management by complying with the terms of a Code of Practice and completing a Risk Assessment Document prepared for a specific sector, such as Agriculture (Section 20(8) of the legislation).

The initiative is being undertaken jointly by the Health and Safety Authority, the state agency responsible for ensuring compliance with this legislation and Teagasc, the state agency responsible for provision of research, training and advice to the agriculture sector. Farmer's representatives provided an input into the development of the initiative through membership of a statutory advisory committee to the Health and Safety Authority, known as the Farm Safety Partnership Advisory Committee (FSPAC).

Development of the Initiative

The overall aim of the National Initiative is to develop a Code of Practice and Risk Assessment document, evaluate strategies to assist farmers to effectively complete and implement the documents and then commence a national programme to assist farmers to comply with the legislative requirements. A Teagasc Health and Safety Officer was appointed as Project Manager to develop and manage implementation of the Initiative within Teagasc and a Health and Safety Authority Inspector had overall charge of the legislative aspects of the project. These officials formed a steering committee to implement the Initiative.

The National Initiative had the following phases:
Phase 1, (2005 -2007): Develop Risk Assessment Document and evaluate its use and implementation by a sample of 1,000 farmers.
Phase 2 (2005- 2006): Develop the Code of Practice Document and conduct the statutory required consultation process for the documents developed in phases 1 and 2.
Phase 3 (2007 -2008): Commence a national training programme to assist farmers to comply with the legislative requirements.

Development of the Risk Assessment Document and evaluating the effectiveness of its use by farmers was prioritized in Phase 1 of the Initiative as this document is central to assisting farmers to manage safety and health. Previously, in 2003 a non-statutory Farm Safety Self Assessment Document was circulated, by post, to all farmers by the Health and Safety Authority (Health and Safety Authority, 2003). However, this document was completed by only 28.5% of farmers, nationally (McNamara et al, 2006) and no evaluation was undertaken of how satisfactorily this document was completed or the subsequent actions undertaken by farmers to improve safety and heath on the their farms. To initiate the National Initiative in 2005, Phase 1 commenced with development of a pilot Risk Assessment Document, taking into consideration the views of organizations represented on the FSPAC.

The pilot Risk Assessment Document consisted of a series of sections where the safety and health control measures were outlined in question format. Farmers were required to identify controls both in place and missing on their farms. Each section was accompanied by a page giving fatal farm accident data in pie chart format related to the specific area. Pictures showing the necessary control measures were also included. A Farm Safety Action List Page was provided where farmers were required to list the control measures not in place and to set a time schedule for their completion. The final Risk Assessment Document developed can be viewed at www.hsa.ie.

It was decided to evaluate completion and implementation by farmers of the Pilot Risk Assessment Document following circulation by post. Additionally, as the completion rate of the previously circulated Farm Safety Self Assessment Document was low, it was decided to include in Phase 1 of the initiative provision of a half-day training course on Farm Safety and Health with particular reference to providing training on completion of the pilot Risk Assessment Document and then to evaluate document completion and the implementation of subsequent control measures on farms by course participants.

Each half-day training course included: a short introduction on the objectives of the course, a discussion exercise on the causes of farm accidents and a presentation on the causes of fatal farm accidents, viewing of DVD clips where victims described their accident occurrence, a presentation on the key requirements of safety and health legislation and a session of about 3 hours where each section of the Risk Assessment Document was explained and a short DVD on the content of the Risk Assessment Document being considered was shown. Farmer participants were then given time to consider the questions asked in the Risk Assessment Document as they related to their own farm. Each course had an attendance in the 40 to 50 farmers and was facilitated by at least two Teagasc training and advisory staff members. A Farm Safety Handbook already published by the Health and Safety Authority was distributed to farmer participants as an information source on safety and health to accompany the course.

Implementation of the Initiative

During November/December 2005, training was provided to Teagasc staff in six counties chosen to implement the pilot Initiative. The counties were chosen regionally on the basis of having a high level of fatal farm accidents and because farmers were involved in a range of farming enterprises.

Training was provided to the Teagasc County Manager, an Education Officer and approximately six Agricultural Advisers in each county. The role of the Teagasc manager was to manage implementation of the Initiative in each county. Education Officers have a specialized role at county level in providing training and have particular expertise in safety and health training. The role assigned to Education Officers was to present the training courses. Each Adviser provides advice to an average of 120 clients and the role assigned to each adviser was to promote farmer involvement in the Initiative, to assist the Education Officer in the delivery of the course by such means as stimulating discussion and to assist farmers individually and in small groups to complete the pilot Document. Advisers also had the role of providing follow-up advice to clients following the course. A detailed Memorandum of Implementation was developed and supplied to all Teagasc staff involved in the Initiative to ensure that courses were delivered consistently (Teagasc, 2005).

During January and February 2006, farmers in five counties were invited to attend a half-day course by their adviser. The invitation indicated that the course would assist farmers to comply with their legal duty of completing a Risk Assessment under the new legislation. It also pointed out that following attendance at a course, participants would be exempted from a routine inspection by HSA inspectors (other than where an accident or dangerous occurrence was reported) for 2006. Courses were free of charge and were advertised jointly by Teagasc and the Health and Safety Authority in the local farming press and on local radio. Approximately 1,500 farmers participated in these half-day courses in Spring 2006. Farmers in the

sixth county received no training, but 800 were sent the Risk Assessment Document and requested to complete it. The purpose of this paper therefore is to present initial findings of an evaluation of Phase1 of the National Initiative

Objectives of the Evaluation

The objectives of the evaluation were: 1) to evaluate the impact of participation at a half-day training course on completion of the Risk Assessment Document; and 2) to evaluate the role of completion of the Risk Assessment Document in assisting farmers to manage safety and on their farms.

Methodology

The following methods were used to complete the evaluation:

1) An evaluation of farmers and advisors (who participated in the training) perceptions of the utility of the training courses, 290 completed farmer evaluation questionnaire and 27 from advisers were analyzed.

2) An examination of a sample of Risk Assessment Documents completed by farmers after their participation on the training courses. Following attendance at the courses approximately 600 farmers were supplied with a pre-paid envelope and requested to return the document to Teagasc when they had completed it, 336 completed documents were received.

3) Approximately 300 farmers who did not attend a training course (the sixth county) were written to with the request to return the document to Teagasc for evaluation. This process resulted in 137 completed Documents being returned. These Risk Assessment Documents were analysed and a **Completeness Score** of Satisfactory or Unsatisfactory recorded for each document. A satisfactory score was allocated when all sections of the document were properly completed, with no major inconsistencies. Otherwise documents were regarded as unsatisfactory.

4) An on-farm follow up evaluation was carried out on 66 farms, 49 of whom had obtained training and 17 who had not received training. The purpose of the farm visits was, firstly to check the accuracy of completion of the Risk Assessment Document with the actual safety and health situation on the farm. A check-list was developed and used for the purpose of checking completeness. This was done by modifying and expanding one developed by Teagasc (Teagasc, 1997). An **Accuracy Score** of Satisfactory or Unsatisfactory was again recorded for each farm. Secondly an assessment of the management of safety and health on each farm was conducted. A **Safety Score** was allocated to each farm. This score estimated the overall level of management of safety on the farm. Thus this score reflects the long term management of the farm. The following two point **Safety Score** was used: 1 – Satisfactory; 2- Unsatisfactory. Farms in compliance with Safety, Health and Welfare at Work legislation and where safety and health were being managed on a satisfactory basis were allocated a satisfactory score. Otherwise they were recorded as unsatisfactory.

Farm visits were undertaken by two persons, a Teagasc Health and Safety Officer and a Health and Safety Authority Inspector both of whom were qualified and experienced in occupational safety and health as it relates to farms.

All evaluations conducted should be regarded as preliminary due to the short time period between completion of the training and the preliminary evaluation. Further evaluations are planned for 2007.

Results

Results presented relate to a preliminary evaluation of Phase 1. Because of the lag between training and the subsequent impact of training, evaluations will also be carried out in 2007 and later.

Evaluation of the Training Courses

The principal reason given by farmers for attendance (290 responses) were: to comply with legislation (43%); improve safety and health on own farm (47%) and invitation from Adviser (10%).

Particularly strong positive responses were received to questions about the importance of safety management, motivation to implement safety and health controls and plans to make safety improvements following attendance at the course. In relative terms, the least positive responses were obtained to questions on the adequacy of discussion among participants, the overall length of the course being about right and the number of participants.

Table 1: Farmers Opinions (%) on the Adequacy of the Training Courses (N=290)

	5	**4**	**3**	**2**	**1**
Attendance worthwhile	47	53	0	0	0
Overall length of course about right	25	65	6	4	0
Helped me understand legal duties	42	56	2	0	0
Number of participants satisfactory	33	59	7	1	0
Adequate discussion among participants	19	61	12	8	0
Will complete Document within 2 weeks	37	59	4	0	0
Motivated me to implement measures	50	47	3	0	0
Will make safety improvements.	42	58	0	0	0
Worthwhile to offer to all farmers	66	32	1	0	0
Safety management is important	82	17	0.5	0	0.5

5=Strongly Agree: 4=Agree: 3=Neither: 2=Disagree: 1 = Strongly Disagree.

Participant's perceptions of the training methods used and on the completion of the Risk Assessment Document also indicate very positive responses (Table 2). Use of visual approaches including use of the DVD clip of accident victims describing their accident and those showing safety and heath controls received the highest scores. Aspects receiving the least positive comments included: level of discussion on accidents locally; number of questions in the document and ease of understanding of questions in the document. Notably, a medical doctor's message (delivered on DVD) on farmer's health was described as OK or poor by 27% of respondents.

Table 2: Farmers Perceptions (%) about Training Methods and the Pilot Risk Assessment Document (N=290)

	5	4	3	2	1
Good Use of Power Point	51	47	2	0	0
DVD of victims describing accidents worthwhile	65	33	2	0	0
Discussion on accidents worthwhile	30	55	13	2	0
Completion of document in groups useful	35	59	5	1	0
DVD showing safety and health controls worthwhile	55	43	2	0	0
Number of questions in Document right	17	69	12	2	0
Questions in Document easy to understand	22	65	11	2	0
Pictures aided communication	23	73	4	0	0
Pie Charts showing data useful	41	56	2	1	0
Adequate information provided	24	69	5	2	0
Doctors DVD message about health*	28	45	22	4	1

5=Strongly Agree: 4=Agree: 3= Neither: 2=Disagree: 1= Strongly Disagree.
**5=Excellent: 4= Very Good: 3=OK: 2=Poor;1=Very Poor.*

Almost 22% of farmers stated that they felt they would have difficulty implementing controls in the Risk Assessment Document and two thirds of these respondents outlined their concern. The concerns related to: electrical installations (25%); upgrading of machinery and buildings (20%); costs associated with implementing controls (13%); using a bull chain (13%); chemical container disposal and chemical storage (11%); health/older people/children (9%) and other (9%).

Positivity towards the issue of safety and heath is further indicated by the fact that 93% of farmers stated that Teagasc should include health and safety as a topic at seminars and farm walks, while 86% of course participants stated that they were willing to attend a practical on-farm demonstration as a follow-up to the half–day training course.

Regarding Advisers perceptions of the training course, 89% considered that their clients considered the course worthwhile and 90% considered the course was well structured. Advisers were requested not to actively raise Safety and Health issues with farmers on the course so that the level of follow-up queries could be gauged. However, just 12% of Advisers reported receiving a high or very high level of queries from farmers.

Evaluation of Documents

Document Completeness was recorded as satisfactory for 74% of all documents assessed (473). The documents assembled originated from farms with the following principal farm enterprises: drystock (43%); dairying/drystock (41%) and tillage (16%). Little difference in level of completeness across enterprises was noted. Similarly no significant differences were noted for level of completeness between those who did and did not attend the half-day training session.

On-Farm Risk Assessment Document Evaluation and allocation of a Safety Score

The On-Farm Evaluation revealed that the Accuracy Score assigned to a document was accurate in 92.4% of cases. This gives confidence that the Risk Assessment Document Completeness Score findings reflect the actual situation on farms. No significant relationship was found for the following variables when related to Document Completeness: farm safety score; number of controls specified in the document;

farm enterprise; full or part time farmer; farm size; farmer age category; regular health check undertaken; plans for farm development, if controls had been implemented, or if a Self Assessment Document had been completed previously.

Regarding the Safety Score of farms, 74.2% of farms were allocated a satisfactory score. No significant relationship was found between Farm Safety Score and number of controls specified, full or part time farmer, farm size, regular health check undertaken, if farm development was planned or if a Self Assessment Document had been completed previously. A significant relationship was observed between Safety Score and enterprise (P=0.039), with dairy farms on average performing worse than drystock or tillage farms. A significant relationship was also observed between Safety Score and controls implemented (P=.000). Those who received an unsatisfactory Safety Score had implemented no improvements compared to 70% of farms receiving a Satisfactory Score.

Safety Scores for Individual farm elements are presented in Table 3. Farmyard/Buildings and Farmer Behavior (77.3% and 78.1% respectively) were the areas causing most problems. Other elements receiving a low percentage of satisfactory scores included safety related to Livestock (82.1%), Electrical facilities (84.9%) and Machinery (89.1%). Where an unsatisfactory Safety Score was allocated an unsatisfactory Farmer Behavior Score was allocated in 93.8% of cases.

Table 3. Number of Farms and % receiving a Satisfactory Safety Score for Individual Farm Elements

Safety Score	Number	Percentage Satisfactory
Tractors	63	95.5
Machinery	57	89.1
Livestock	56	82.1
Farmyard/Buildings	66	77.3
Electrical	66	84.9
Chemicals	60	85.0
Health Issues	66	92.5
Protective Equipment	64	87.5
Children	27	92.7
Older Farmer	18	89.0
Farmer Behavior	64	78.1
Safety Score	66	75.8

Discussion

The study findings indicate that 74% of farmer respondents completed the Risk Assessment Document satisfactorily. Satisfactory Completeness rates were similar whether a training course was or was not attended. It is worth noting that only, 28.5% of farmers, nationally, completed a similar document when circulated previously (McNamara et al, 2006), so the response to training suggests it has a positive role in assisting farmers' with Risk Assessment Document completion.

The on-farm evaluation found that 24.2% of the farms were not achieving a satisfactory standard of safety management. These findings suggest that circulation of the Risk Assessment Document on its own or when explained as part of a half day course, as outlined, has limitations for a significant number of farmers with regard to completing the document satisfactorily or motivating them to implement controls in the immediate aftermath of the course. This finding regarding implementation of control measures is not unexpected in the light of relevant Irish and International literature. In Ireland, converting farmers'

high levels of awareness for safety into high levels of adoption has been identified as the key challenge to improving safety standards (Finnegan, 2007). Regarding implementation of management practices by farmers in Ireland a time lag tends to occur between gaining knowledge of its adoption and the subsequent use of this knowledge to improve practices (Phelan, 1985).

At an International level, there are few evaluations of interventions available to determine what types of programmes are most effective in reducing farm injuries (DeRoo and Rautiainen, 2000). The so called Three-E Method of accident prevention involving Engineering (implementation of physical controls), Education and Enforcement (internally within organization or externally) has had success in industrial settings but not in agriculture (Murphy, 1992). The reason for this difference, according to Murphy, was that a greater level of control exists in the industrial workplace.

Further initiatives with this research will assess the impact of more comprehensive training in improving satisfactory health and safety levels on farms as well as examining the impact of training over a longer time period.

Acknowledgements

The input of participating farmers and Teagasc training and advisory staff to the Initiative is acknowledged.

References

CSO – Irish Central Statistics Office (2001). Statistical Yearbook of Ireland, Stationery Office, Dublin, Ireland. 373pp.

CSO – Irish Central Statistics Office (2003). Quarterly National Household Survey, Stationary Office, Dublin, Ireland. 52pp.

DeRoo, L.A., and Rautiainen, R.H., (2000). A Systematic Review of Farm Safety Interventions. American Journal of Preventative Medicine. 18 (4S) pp 51-62.

Health and Safety Authority (2004). Annual Report for 2003. Health and Safety Authority Publication, 82 pp.

Health and Safety Authority (2007). Fatal Statistics by Economic Sector 2000-2007.Available at www.hsa.ie

Finnegan, A., (2007). An Examination of the Status of Health and Safety on Irish Farms. Unpublished Ph.D., UCD, Dublin.

Hope, A., Kelleher, C., Holmes L., & Hennessy, T. (1999). Health and safety practices among farmers and other workers: a needs assessment. Occupational Medicine. 49 (4), 231-235.

McNamara, J., Moran, B., & Cushion, M. (2007). National Survey of Farm Accidents in Ireland. Paper presented at Irish Agricultural Research Forum. p 125.

McNamara J., Connolly L., Cushion, M., & Laffey F. (2006). Progress with completion of safety statements by farmers in Ireland. Paper presented at Irish Agricultural Research Forum. p 92.

McNamara, J., Ruane, D.J., Whelan, S., & Connolly, L. (2007). A Preliminary Investigation of the Incidence and Impact of Disability on Irish Farms. Journal of International Agricultural and Extension Education 14 (2). Paper accepted.

Melberg, K. (2003). Farming, Stress and Psychological Well-Being: The Case of Norwegian Farm Spouses. Socilogia Ruralis, 43(1) pp 56-76.

Murphy, D.J. (1992). Safety and Health for Production Agriculture. St Joseph, MI, the American Society of Agricultural Engineers.

O' Shea, E. (1997). Male Mortality Differentials by Socio-Economic Group in Ireland. Social Science and Medicine. 45 (6), 803-809.

Phelan, J. (1987) An Analysis of Factors Associated with Decisions Related to Property and Management Transfer on Irish Farms. Unpublished Ph.D., National University of Ireland. University College Dublin.

Teagasc (1997). Certificate in Farming Host Farmer Safety Inspection Protocol. Teagasc internal document.

Teagasc (2005). Memorandum for implementation of joint Health and Safety Authority – Health and Safety Pilot Project on Farm Health and Safety at County level. 9pp.