

Influences on safe/unsafe practices

Farmers' perspectives

Prepared by **BOMEL Limited**
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The agriculture industry has been identified as a priority area by the HSC/E due its high rate of fatal and major injury accidents (Revitalising Health and Safety Strategy Statement, June 2000). Agriculture has the highest fatal accident rate of any other sector and this rate continues to rise, which is of particular concern in an industry where the workforce is declining year on year. The farmers most at risk are the self-employed, although as with all areas of industry small businesses are particularly hard for the HSE to target through the usual contact methods such as interventions with intermediaries. In order to understand more about the influences on safe and unsafe farming practices BOMEL was commissioned to explore the source and strength of these influences with two distinct farmer groups (the self-employed and farm employers/employees) using the Influence Network technique. With a better understanding of these influences HSE will be able to design interventions appropriate to the target group that will have maximum impact across the sector. The results of this study will also provide a benchmark against which the sector team can compare their own observations of the critical influences.

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RESTRICTED COMMERCIAL
HEALTH AND SAFETY EXECUTIVE

INFLUENCES ON SAFE / UNSAFE PRACTICES – FARMERS' PERSPECTIVES

EXECUTIVE SUMMARY

Background

The agriculture industry has been identified as a priority area by the HSC/E due its high rate of fatal and major injury accidents (Revitalising Health and Safety Strategy Statement, June 2000). Agriculture has the highest fatal accident rate of any other sector and this rate continues to rise, which is of particular concern in an industry where the workforce is declining year on year. The farmers most at risk are the self-employed, although as with all areas of industry small businesses are particularly hard for the HSE to target through the usual contact methods such as interventions with intermediaries. In order to understand more about the influences on safe and unsafe farming practices BOMEL was commissioned to explore the source and strength of these influences with two distinct farmer groups (the self-employed and farm employers/employees) using the Influence Network technique. With a better understanding of these influences HSE will be able to design interventions appropriate to the target group that will have maximum impact across the sector. The results of this study will also provide a benchmark against which the sector team can compare their own observations of the critical influences.

The Agriculture Sector

In order to put the current study in context, a brief review of the agriculture sector was undertaken. The total area of agricultural land in the UK is approximately 18.4 million hectares (DEFRA, 2003). UK farming is particularly varied and most regions are home to all types of British farming. The South West is the largest and most rural region and is dominated by livestock farming. In terms of the workforce, there are approximately 550,000 people in agriculture although this figure is steadily declining as people gradually leave agriculture due to the poor economic climate and in more recent years crises such as BSE and foot and mouth disease. The farmers that remain have to constantly diversify their businesses in order to stay afloat and still money remains tight in an increasingly competitive food market.

The agricultural safety record currently shows considerable room for improvement. HSE RIDDOR data indicates that in the year 2002/03 there were 9.5 fatal injuries per 100,000 workers which is an increase compared with 9.2 in 2001/02 (HSC, 2003). Numbers of major injury and over 3-day injury accidents are also increasing although the high level of under reporting of non-fatal accidents suggests the figures could be even higher (HSC/LFS, 2002).

The Influence Network Approach

In June 2002 the HSE sector team took part in an Influence Network workshop to explore the possible underlying causes on the high number of farming fatalities. The structured approach facilitated a productive and insightful discussion around the many possible causative factors involved in farming accidents. The inspectors also identified significant variations in practices across the industry, for example the differences between small and large farms; variations with regard to type of farming; capabilities of the young compared to the ageing workforce; and the quality and availability of information compared to access and relative

uptake. It also identified a number of key issues specific to agriculture such as the ageing workforce; change in cattle breed; focus on productivity not safety; and the availability of good quality information and advice but poor take up.

It was felt that the Influence Network methodology worked well and it would be useful to adopt this approach with farmers to discuss the source and strength of the influences they perceived as having a significant affect on farm safety. Taking the same approach also enabled comparisons to be drawn between the three workshop groups.

The Farmer Workshops

Influence Network workshops were held with two distinct farming groups at the beginning of 2004 to avoid peak work seasons. The first workshop was conducted with self-employed farmers in the South West and the second was held with farm employers and employees in the South East where the larger arable farms are situated. Each workshop had a good attendance from a range of farmers within the target groups ensuring that the findings were reflective of a range of different views. Both workshop groups worked through the following activities:

- Identification of the factors that influence safe / unsafe farming practices
- Rating and weighting of these factors in terms of current practice and their influences on other factors
- Identification of possible safety improvement measures that can be channelled through the HSE

Rating the Factors

Analysis of the group discussions and a selection of ratings assigned by workshop participants enabled an assessment to be made regarding how each group of farmers rated the different influences in terms of current industry practice. Results showed that the farmer groups showed significant alignment in their views, suggesting there are many poor quality factors that are common across the agriculture sector. The factors perceived to be poor by both workshop groups were as follows:

Direct Level Factors			
Motivation / morale	Organisational Level Factors		
Fatigue / alertness	Recruitment	Policy Level Factors	
Information / advice	Training	Safety management	Environmental Level Factors
Suitable human resources	Procedures	Profitability	Political influence
External conditions	Planning		Regulatory influence
Stress	Incident management and feedback		Market influence
	Pay and conditions		Societal influence

- Contractor usage is increasing and in general is perceived to make a positive contribution to farm safety
- Inspection and maintenance is typically conducted by the farmers themselves with a focus on remaining productive and reflects the value placed on equipment
- A sudden change in the weather can have a significant impact on planned farming activities, which can result in extreme fatigue and stress
- Most training is typically too expensive, not practical nor delivered in context
- There is a strong industry culture, which encourages safe sharing of equipment and services, and this translates into positive individual farm cultures.
- At this point in time, profitability is particularly poor
- Farmers feel society has a poor public perception of the agriculture industry.

Alignment Between the Views of the HSE Sector Team and Farmers Perspectives

Throughout the report the results of the HSE sector team workshop were contrasted and compared with the findings from both farmer workshops. The inspectors' original observations of the industry were strongly reflected in the feedback given by farmers. This suggests that the team has a good grasp of the key issues affecting agricultural safety. One significant area that they did not pick up on, at least explicitly, was that safety management systems in the form expected by regulatory bodies are not always as applicable to some areas of the agriculture industry as they may be to other industry sectors. This particularly causes the self-employed farmer to become overburdened with heavy bureaucracy, much of which does not even apply to their business. This serves to heighten already significant levels of fatigue and stress.

Agricultural Risk Control Models

In order to identify the factors with most potential for agricultural risk control within small and large farms, poor quality factors were compared with high impact factors. This made it possible to see which influences were exerting a significant impact on farm safety whilst at the same time showing considerable room for improvement and therefore should be considered as factors with the greatest potential for reducing agricultural risk. The following factors were highlighted as potential risk control areas in both farmer workshops:

- Fatigue / alertness
- Suitable human resources
- External conditions
- Training
- Political influence.

Potential risk control areas particularly strong for small farms were:

- ☐ Stress
- ☐ Profitability
- ☐ Market influence.

Potential risk control areas particularly strong for large farms were:

- ☐ Motivation/morale
- ☐ Situational awareness / Risk perception
- ☐ Compliance
- ☐ Regulatory influence.

Both farmer workshops and the HSE workshop provided a valuable insight into the potential risk control areas across the agriculture industry. In order to triangulate the evidence and develop a model of agricultural risk that was both balanced and representative in its treatment of the key influences, all three workshops were amalgamated. Risk control factors were rated on a scale of 1 to 5, 1 indicating the greatest potential to reduce agricultural risk. This scale provided an indication of each factor's risk control potential in relation to other factors on the network. Training and political influence were rated as the factors with the most potential to control agricultural risk. The findings were then assessed in terms of which factors were exerting the *widest* influence on farm safety. The main paths of influence across the whole sector were qualitatively traced based on the risk control analyses and qualitative points made throughout the workshop session (see Figure 1.1).

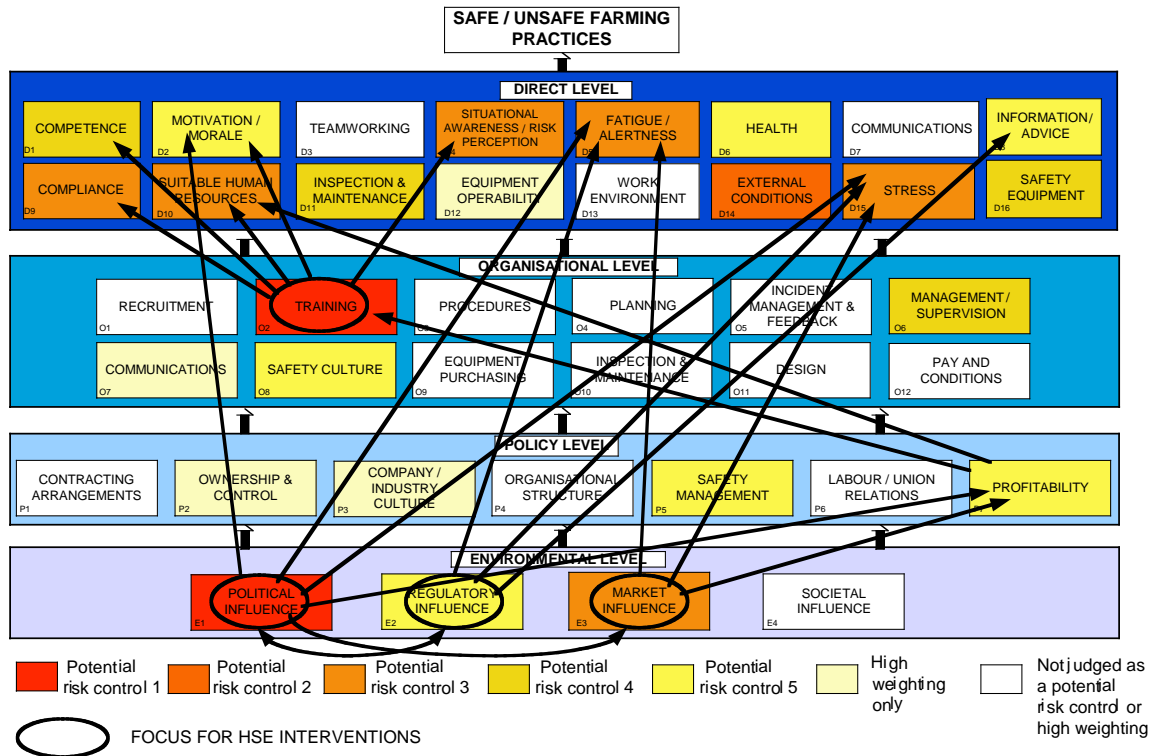


Figure 1.1 Agricultural risk control model and critical paths of influence

The circled factors were perceived to be having the widest influence across the agricultural risk control model. It was therefore suggested that in order to have maximum impact HSE should look to design interventions addressing these target areas.

Recommendations

Throughout the workshops farmers were asked how the HSE might help them improve safety on their farm and throughout the industry. The farmers made a number of suggestions that were mapped against the four key influences identified in the Influence Network analysis: training, Government, HSE and the market. Many of the recommendations were widely applicable across the sector. However, some suggestions were specific to different farm groups, for example the request for more information on accidents and incidents came from the larger farms whereas the self-employed farmers were more interested in having a legislative 'crib sheet' to reduce the paperwork burden.

HSE Interventions

- Continue with the SADs and also extend the audience to include larger farms and contractors
- Raise HSE's online profile
- Communicate health and safety information through different channels such as 'Farmers' Weekly'
- Provide more accident/incident feedback

- Rather than asking for evidence of procedures and documented risk assessments, ask farmers to show how they have ensured they are safe
- Start thinking about how safety management can be better delivered and assessed in the agriculture industry
- Inspectors must be competent and experienced in agriculture
- Increase the number of proactive inspections.

Government/DEFRA

- Work with DEFRA to help reduce the amount of administration/regulations coming through
- Work with Government to provide a legislative 'crib sheet' detailing everything the self-employed farmer needs to know about running a business to being safe on the farm
- Act as an intermediary between farmers and Government with regard to their welfare and safety
- Make Government aware of the detrimental influence it and the actions of some of its agents can have on farmers' health and safety.

Market

- Work with people in the food supply chain to help them become aware of the influence that they have on safe/unsafe farming practices
- Encourage Government to set fixed food prices and discourage foreign imports
- Encourage Government to encourage consumers to purchase food produced in Britain
- Involve the retailers in auditing farm safety policies
- Work with retailers to promote UK originated food.

Training

- Introduce regional on-farm training days
- Run training courses and SADs from November to May
- Regulate training courses provided by equipment manufacturers and commercial training bodies
- Promote national or regional agricultural training circles/groups
- Develop a deeper understanding about the role of training in this industry context, e.g. most appropriate format and desired benefits.

HSE to work more closely with the following industry groups:

- ☐ Trade associations such as the National Farmers Union
- ☐ Equipment manufacturers
- ☐ Equipment designers
- ☐ Industry journals such as Farmers' Weekly
- ☐ DVLA
- ☐ Contractors
- ☐ Abattoirs.

Cornwall and Somerset) and more northerly farms tend to be smaller, family owned businesses that breed and sell livestock and livestock produce. In contrast, farms in the South East of England and easterly regions are more dominated by arable farming and tend to be more progressive in terms of outlook, education and business diversification, e.g. farm shops, letting out parts of the farm, B&Bs etc.

The South West is the largest and most rural region in England, accounting for 15% of the nation's total land area. Agricultural production in the South West is dominated by pastoral livestock (grassland) farming, which also makes it the 'greenest' region. Farm holdings are typically much smaller than the English average, particularly in Devon and Cornwall. Twice as many people are directly employed in agriculture in the South West than the national average, with 66,000 depending upon it directly for their livelihoods. Dairy farming accounts for 41% of land use in the South West and land is also used extensively for reared cattle and sheep (29%) (NFU online, 2003).

Arable farming is predominant in the South East, along with horticulture (fruit, vegetables, ornamental trees and shrubs, cut flowers and bulbs). Overall almost 14% of England's cereal crop is grown in this region. East Anglia is also known for its cereal crops, with farmers growing more than a quarter of England's wheat and barley. Farmers in East Anglia also grow more than half England's entire sugar beet crop and almost a third of England's potato crop. Due to the large amount of grain produced in this region, it is also home to 1.3 million pigs (second largest herd in Britain) and its hens produce approximately 2.2 million eggs a day (NFU online, 2003).

The West Midlands encompasses every aspects of farming in the UK, including livestock, arable and horticulture. In the East Midlands 1.3 hectares of land (nearly 80% of the region's total land area) is utilised by agriculture and horticulture (NFU online, 2003). As with the West Midlands, the diversity of the farm produce is vast.

Some 37% of holdings in the North West are classed as cattle and sheep and 24% as dairy holdings. This compares to national figures of 28% and 12% and highlights the importance of the livestock sector in the North West (NFU online, 2003). Interestingly, the agricultural workforce in the North West has a higher proportion over the age of 45 than the national average (NFU online, 2003).

The North East (incl. Yorkshire and the Humber) accounts for just over one million hectares of agricultural land. The production of beef cattle and sheep is the main agricultural enterprise of the region, although the North East also holds over 10% of the national dairy herd and is also home to over 30% of the English breeding pig herd (NFU online, 2003).

Agriculture accounts for some 8% of the rural workforce in Scotland and is valued at around £2 billion a year. In rural areas, where the industry is regarded as an integrated part of the rural economy, the contribution to economic, environmental and social benefits can be significantly higher. Beef production is the largest single sector of the agriculture industry in Scotland and in

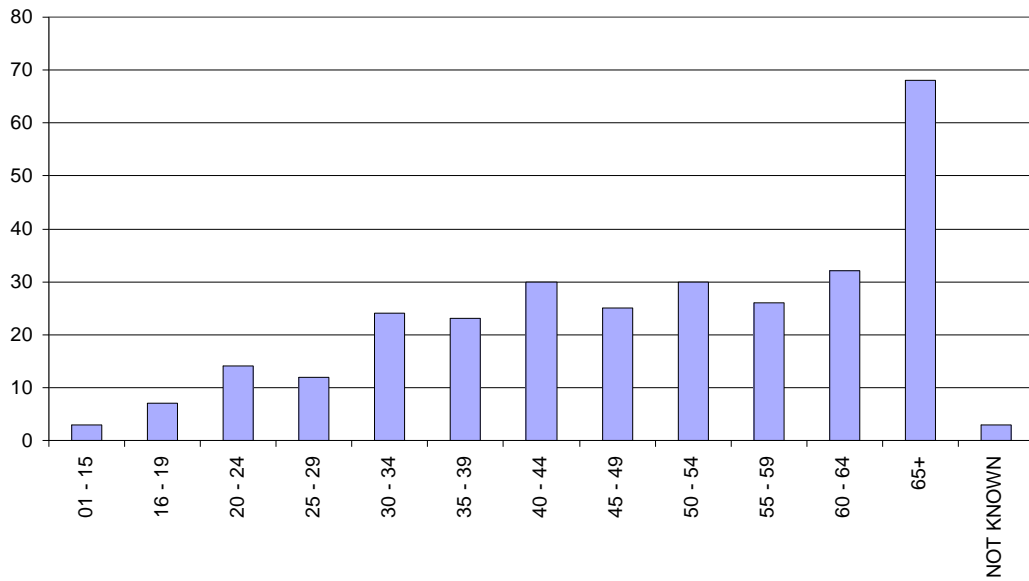


Figure 2.3 Agricultural fatalities between 1996/97 and 2002/03 by age

In order to understand more about the main causes of fatal injuries, Figure 2.4 highlights the top 10 types of accident that have caused death to agricultural workers between 1996/97 and 2002/03 based on HSE RIDDOR data.

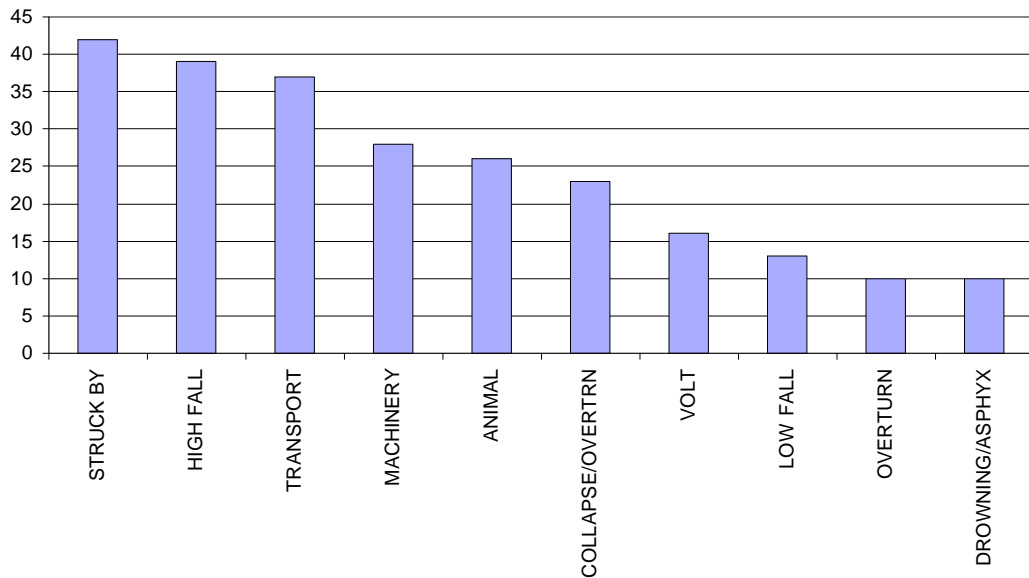


Figure 2.4 Agricultural fatalities between 1996/97 and 2002/03 by accident kind

Figure 2.4 highlights that being struck by moving or falling objects, falling from a height (through fragile roofs, trees etc) and being run over by a vehicle or a vehicle overturning (transport) account for the most fatalities amongst agricultural sector workers.

MAJOR INJURY AND OVER 3-DAY INJURY ACCIDENTS

The rate of reported major injury accidents involving employees increased from 213.9 major injuries per 100,000 employees in 2000/01 to a rate of 239.3 in 2001/02. There was also a similar trend in reported over 3-day injuries to employees, with the rate of over 3-day injuries to employees at 493.3 injuries per 100,000 employees in 2000/01 and increasing by 26% to 621.9 in 2001/02. These figures reflect an overall upward trend in the rate of over 3-day injury accidents to employees since 1998/99 when it was at its lowest at 427.5, 45% less than in 2001/02 (HSC, 2002). These accident rates only apply to employees due to the high rate of under reporting of non-fatal accidents amongst the self-employed. More worryingly results from the 1999/2000 Labour Force Survey (HSC/LFS 2002) indicate that only 28% of non-fatal injuries were reported in 1999/2000 in the agriculture sector. This suggests that the real rate of non-fatal injuries could be significantly higher than current figures indicate.

Figure 2.5 highlights the top 10 types of accident that have caused a major injury or over 3-day injury to agricultural workers between 1996/97 and 2002/03 based on HSE RIDDOR data.

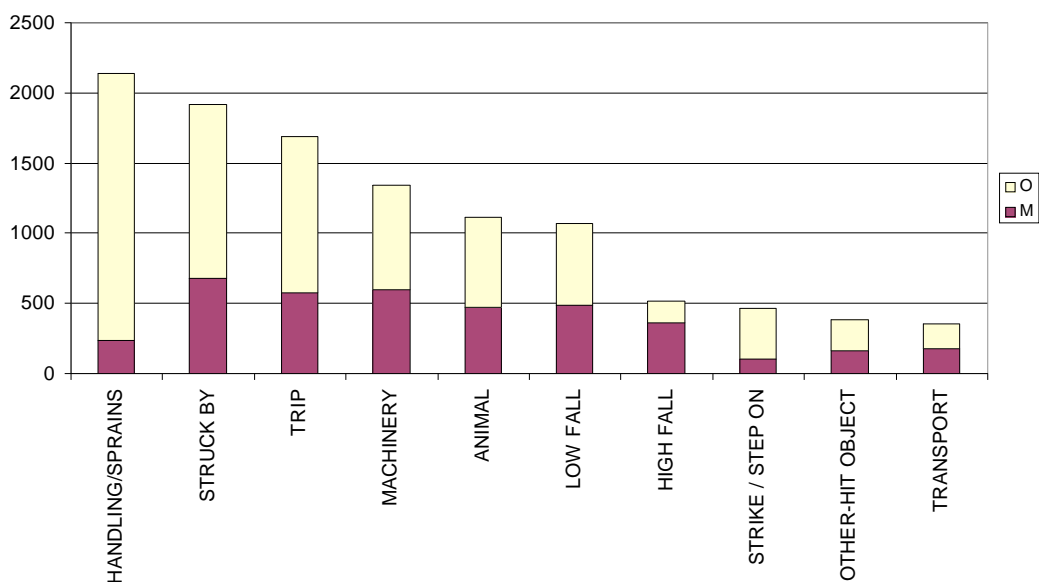


Figure 2.5 Non-fatal accidents between 1996/97 and 2002/03 by accident kind

Figure 2.5 highlights that handling sprains and strains, being struck by a moving or falling object and slips and trips are the most common non-fatal accident kinds reported amongst agricultural employees.

ILL HEALTH

The SWI (self reported work related injury) survey in 2001/02 estimated that 30,000 people whose current or most recent job in the last eight years was in the agriculture, hunting, forestry and fishing industries suffered from an illness which they believed was caused or made worse by this job. The corresponding prevalence rate, 6500 per 100,000 people working in the last eight years, was statistically significantly higher than the average for all industries.

A hierarchical representation of the domains is shown in Figure 3.2. This illustrates the generic model adapted and used by BOMEL in other project work for the HSE. This Influence Network approach has a strong human factors basis and distinguishes the sub-influences in each domain across distinct human, hardware and organisational factors. The influence interactions are modelled qualitatively and quantitatively using bespoke software developed by BOMEL both to facilitate the elicitation of expert judgements and to automate the analysis.

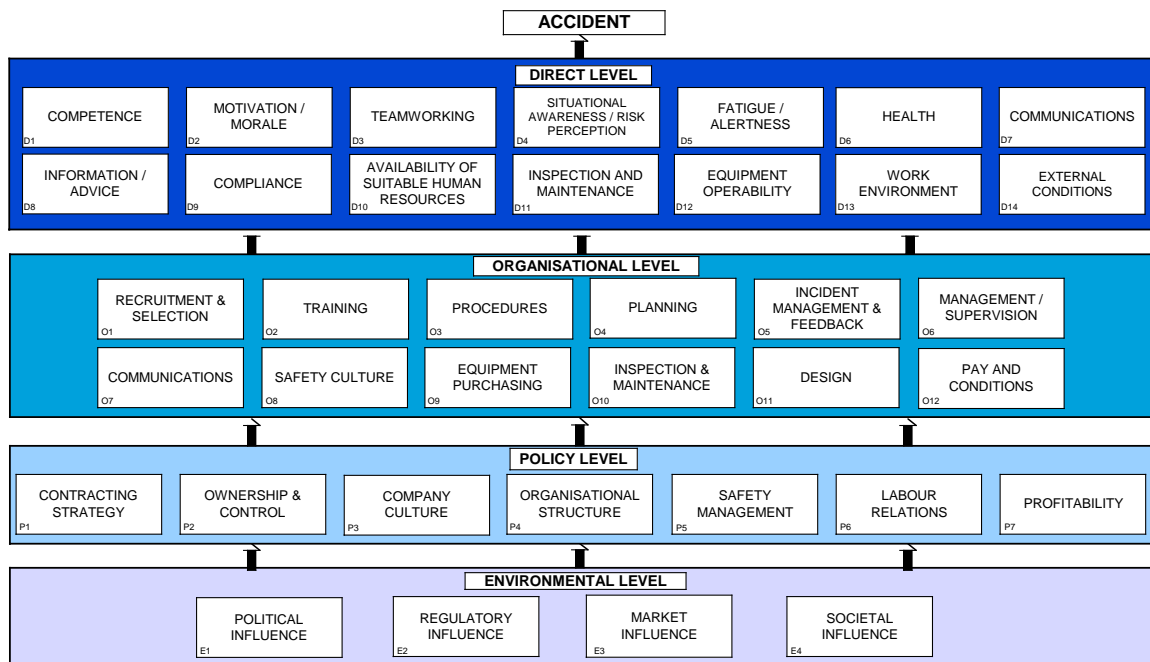


Figure 3.2 Generic Influence Network model

Subject matter experts (i.e. practitioners from the field) are invited to participate in a workshop which aims to identify best and worst practice in the industry in relation to each influence for the particular situation under consideration. Participants will also be invited to discuss the various attributes of current practice for each factor. This leads to a quantitative rating for current practice using a scale of 0 to 10 representing worst to best practice. Separately, the significance of each influence is assessed, such that whether or not the quality of the influence is good or bad (e.g. compliance), it may nevertheless be significant in its weighting on, for example, the degree of compliance that may result.

This structured process of documenting practices as they relate to the subject, is in itself enormously enlightening to the BOMEL facilitators and the industry participants alike. In addition, the network quantification enables crucial influences and key factors to be revealed and for alternative risk controls (e.g. improving safety culture as opposed to more training, say) to be compared in relation to cost, schedule and impact potential. Importantly, the approach helps determine which influences shape an aspect of performance and to what extent, and this helps

