



Construction health and safety for the new Millennium

Prepared by **Entec UK Ltd**
for the Health and Safety Executive
and the Institution of Civil Engineers

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Construction health and safety for the new Millennium

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Findings reported during the consultation include:

Clients have significant influence over construction health and safety. Evidence suggests that they are not using this to the full and benefits could be gained by effective use of this influence or reduction of sensitivity to it. The industry could improve how it engenders and sustains safety culture, with site management identified specifically. In many cases, management commitment is low, implying a need to convince them of the importance of health and safety performance to the future prosperity of their company. Awareness of health risks is generally below that of safety risks and emphasis should be placed on increasing understanding of the causes and prevalence of ill health. Continued lobbying for health and safety within syllabi should improve poor safety skills. The discharge of designer duty is frequently criticised and approaches proposed are to increase the motivation and knowledge of designers regarding health and safety, and to improve the design risk assessment.

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EXECUTIVE SUMMARY

This study aims to provide evidence to help review the current approach to the management of health and safety in the UK construction sector, and to identify opportunities for improving health and safety performance.

The study has been completed in four stages:

- a) Identification of factors that contribute to *injuries* and *ill health* in UK construction by means of a *statistical analysis* of HSE data to identify trends and produce trade risk indices;
- b) *Consultation* with a cross section of UK construction industry to gain an understanding of sector wide and project specific issues;
- c) Review of interventions implemented *overseas* to identify learning opportunities for the UK;
- d) Elaboration of *opportunities* to improve health and safety in the UK.

Statistical analysis

Injury data

From the analysis of injury data from the five years 1993/94 to 1997/98 it is concluded:

- The overall number and rate of fatal injuries has decreased slightly (10%) since the introduction of the CDM Regulations in 1994. However, the overall downward trend in the number of accidents which started before CDM is slowing.;
- The average rate of fatalities for the primary building trades is 1 in 11,000 per year. This is below the HSE Intolerable Risk Criterion (1 in 1,000) and also below the 1 in 10,000 guideline;
- There are a number of trades above the 1 in 10,000 target, namely the scaffolding trade (1 in 5,400), the roofing trade (1 in 3,800) and the steel erectors, barbending and structural trades (1 in 3000);
- The changes in reporting procedures in 1996 has resulted in large numbers of injuries being reported as occurring to the miscellaneous trades such as 'Builder', 'Other Building', 'Construction' and 'Other Construction'. This creates uncertainty in the calculation of trade risk indices. It is recommended that steps be taken to reduce the tendency for accidents to be assigned to broad categories such as 'Other Building', 'Construction' and 'Other Construction';
- Employed workers appear to have an average annual rate of injury over twice that of self-employed workers (1 in 15,000 compared to 1 in 35,000). However, there is uncertainty in these figures in regard to the estimated ratios of employed to self-employed over the five years;
- If the ratios employed to self-employed are correct, the figures indicate an unchanged rate of fatalities for self-employed workers;
- A comparison of injury trends in CDM against non-CDM projects has not been possible due to a lack of data;
- An analysis of injury trends by size of company has not been possible due to a lack of data.

Ill health data

From the analysis of ill health data for the period 1996 to 1999 it is concluded:

- The incidents of life threatening respiratory diseases in the construction industry is estimated to be about 200 to 300 per annum. When compared to the total number of fatal injuries due to

accidents in construction industry over the same time period (236) and allied to the probable under reporting of occupational ill health, the number of fatalities in the construction industry due to ill health probably exceeds those due to injury;

- The greatest number of reported cases of musculoskeletal disease is for builders. Builder is however a very general category and therefore conclusions cannot be drawn as rates of incidence cannot be calculated;
- There appears to be tendency for the occupation to be recorded as 'Builder'. This hinders the analysis of trade risks. Of the trade categories that have been used:
 - floorers have high incidences of respiratory, skin and musculoskeletal disease;
 - the roofing trade appears to be one of the most hazardous as they have quite high incidence of respiratory and skin disease (in conjunction with a high fatal injury rate);
 - Carpenters / Joiners, Bricklayers / Masons, Painters and Plumbers are trades that suffer from respiratory, skin and musculoskeletal diseases.

UK Consultation

The consultation involved forty three group sessions with a total of eighty nine interviewees. The sessions were designed to be of under an hour, but many interviewees were willing and pleased to prolong them. A structured questionnaire was used with pen-ended discussion.

The interviewees reflected the make up of the industry, covering a range of sectors (process industry, house building etc), roles (Client, Designer, Contractor, Planning Supervisor, Insurance, Trade Association etc), sizes of organisation and projects. Two thirds of the interviewees have over 10 year's experience in UK construction.

Against nine hypotheses, the comments from the consultation are summarised as follows:

- Hypothesis: The Construction, Design and Management Regulations (CDM) have been successful in reducing fatalities on construction projects;
 - Conclusion: CDM Regulations are believed to have probably been successful in reducing fatalities on construction projects but there are still areas where improvements can be made.
- Hypothesis: There has been a shift in the population of casualties from employed to self-employed;
 - Conclusion: Self-employed are perceived to have more accidents than employed workers. However, it is considered that the self-employed substantially under report accidents, and therefore if there are more self-employed there will be more accidents unreported. It is thought that in general the level of safety of workers has increased, but this is not uniform across employed and self-employed categories.
- Hypothesis: Health and safety improvements are not being implemented effectively due to organisational obstacles;
 - Conclusion: The construction industry is complex covering a large number of players. The CDM regulations are thought to have had a positive role in helping to define the responsibilities of the different roles, however some organisational issues are still outstanding. The interaction in the supply chain is thought to often be divisive rather than supportive.
- Hypothesis: Health and safety improvements are not being implemented effectively due to operational obstacles;

- Conclusion: Although it is considered there have been improvements in areas such as planning, there are thought to be still considerable operational obstacles which cause poor health and safety performance, most notably a lack of resources.
- Hypothesis: Health and safety improvements are not being implemented effectively due to insufficient health and safety knowledge and skills;
 - Conclusion: There is perceived to be considerable short falls in the knowledge held by certain groups, most notably the client, designer and worker, and this gap is not currently being met through training provision. In contrast, site managers and supervisors are perceived to have an increased level of understanding of health and safety, but can improve. The extent of refresher training to consolidate understanding is poor.
- Hypothesis: Standard safety technology (management procedures, equipment, safe working procedures etc.) does not meet the special needs of the construction sector, such as temporary work sites, temporary staff, changeable physical work environment, etc;
 - Conclusion: Although the construction industry considers it has unique characteristics, it does not feel these should be used as excuses for poor health and safety. Procedural controls and other documentation are felt to have improved considerably with the introduction of CDM and guidance is available. The major issues surround implementation on site.
- Hypothesis: There is insufficient focus on the “soft” aspects of safety such as safety culture;
 - Conclusion: There is general agreement that an effective and proactive safety culture is essential to improve the safety record. The current position within the construction industry is there is insufficient focus on this area due mainly to the short term view commonly taken by the industry.
- Hypothesis: Attention is focused on the more obvious safety hazards, with less concern for health hazards, such as dust;
 - Conclusion: It is felt that currently safety is given a higher priority as it has a more visible and immediate impact. However, health issues represent considerable hazards in the construction sector and interviewees agreed that more emphasis is needed in this area.
- Hypothesis: Recent health and safety regulations have not been adequately implemented and this has led to accidents and ill health.
 - Conclusion: The extensive and complex nature of regulations gives rise for concern amongst interviewees and there is difficulty in interpreting some regulations. This confusion can slow their implementation and reduce their impact. In addition the current low level of enforcement visits and prosecutions is considered to be failing to provide sufficient deterrent for poor health and safety performance.

International survey

The international survey has sought ideas that could be adopted by the UK. For practical purposes the number of countries examined is restricted to three. Through discussions with regulators, academics and industry representatives, France, Sweden and USA were selected.

The three countries surveyed are familiar with the health and safety issues found in the UK. There are differences in emphasis, but the themes are similar, in particular: client effectiveness, health risk awareness, safety skills, design for safety, and management commitment. None of the countries raised topics that had not been noted in the UK consultation.

The comparison of accident statistics shows the UK to be no worse than other countries. This observation alone suggests it is unlikely that proven approaches, of a fundamental nature, are to be found overseas. However, whilst recognising that approaches employed elsewhere cannot be easily transplanted and may not lead to improvements due to the complex interrelationship of factors, the survey has thrown up some practices that may offer benefits to the UK:

- Mentoring schemes in which proactive companies are linked to less well performing companies (USA);
- Industry wide scheme for workers to undergo an annual medical examination (France);
- Inspection of sites by occupational physicians (France);
- Health surveillance records of employees (and moving with the employee) to be kept for 40 years (USA);
- The use of health and safety specific insurance schemes, with premiums adjusted to historical performance (France and USA);
- Inspectors focusing on high hazard site activities (USA);
- Inspectors targeting poorly performing companies (USA);

The international survey also detects a growing importance being given to company reputation. This is mentioned to be the case in USA and Sweden

Opportunities for improving health and safety in UK Construction

Opportunities to improve construction health and safety are identified in seven areas.

Client influence

The findings from UK consultation and international survey emphasise that Clients have significant influence over construction health and safety but are not using this influence to the full. Therefore, opportunities lie in either assisting and encouraging Clients to use their influence effectively, or, as an alternative strategy, reducing the sensitivity of construction health and safety to Client influence.

If it is believed Clients have the ability to exercise beneficial influence over health and safety, then raising their skills will bring benefits. The industry feels many Clients are ignorant of their role and are detached from their projects. Therefore, there are opportunities to further integrate Clients into the construction project process and educate them. An indirect approach could be taken to influencing clients through other Duty Holders. In particular, as Designers are likely to be a Client's first point of contact, there are opportunities to ensure construction health and safety is considered in the interaction of these two parties.

The alternative approach is to desensitise construction health and safety from Client influence. Why is the interaction between the other duty holders not sufficient to ensure a positive attitude toward health and safety? This approach is likely to involve adjusting the roles and responsibilities within the regulations, with particular attention given to the degree of independence in the health and safety function.

Health risk awareness and management

Health risk awareness is generally below safety risks and the management of occupational health is weak. There is scope for increasing the understanding of the causes and prevalence of ill health. The lessons of health monitoring programmes, such as those applied in certain sub-sectors (e.g. rail) should be examined.

Managing health and safety culture

It is apparent that the sector has scope for improving how it engenders and sustains its safety culture. There are opportunities to encourage the development of safety culture, particularly through promotion of good practice.

As well as general promotion, a specific target is site management. Although it is claimed site managers have come a long way, it is felt they have plenty of room for improvement. If the industry is to grasp the opportunities that safety culture offers it needs to develop the skills of its site managers and provide them with necessary tools. Consequently, there is an opportunity to assist the industry in doing this.

Management ownership and commitment

Key to getting management to put more effort into health and safety is to further convince them of the importance of health and safety performance to the future prosperity of their company.

Either there must be commercial advantages in good standards of health and safety or there are to be commercial disadvantages from poor performance. There are opportunities down both routes.

A signal picked up in the UK consultation and international survey is that companies are increasingly concerned with protecting their reputations. Although it appears that at present health and safety performance is not seen by many construction companies to be a reputation hazard that ranks with the likes of environmental stewardship, reputation management is in its infancy. If the case can be made for health and safety performance being treated as a core reputation hazard and cemented into the emerging reputation management frameworks, benefits are likely to accrue as reputation management grows in popularity.

Safety skills

To increase safety skills, opportunities lie in the area of training and competence standards.

The message from the consultation process is that professional and trade qualifications vary in the extent to which they teach safety skills and understanding. Continued lobbying for health and safety to be given due attention within syllabi is therefore justified.

The growing number of self-regulated competence schemes is to be encouraged. Consideration should be given to assist these schemes in overcoming operational difficulties, such as concerns small contractors have over the cost of joining many schemes.

In view of the high risk levels of some trades, an option for consideration is legislative formal regulation for 'safety critical construction work'. Duty holders could be required to define minimum competence standards, and to have in place systems to assure these are met.

Variation in the industry

It is likely that the variation seen in the industry is due in part to inconsistencies in the awareness and understanding of good health and safety practice. This points to weak or incomplete feedback which in turn hinders the scope for learning. Therefore there are opportunities to encourage the sharing of lessons learnt and best practice and to create feedback mechanisms and provide feedback.

Safety by design

Two lines of approach are considered to be open:

- Increase the risk analysis skills of those involved in design risk assessments;
- Improving risk assessment techniques.

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1. INTRODUCTION

Despite the implementation of the Construction Design and Management regulations 1994, the number of deaths and injuries in the construction sector remain high. Why is this? The importance of this issue is highlighted by the observation that construction deaths account for 30% of all employee deaths in the UK in 1995/96. In addition, there is growing governmental concern for occupational health. This raises the questions of what are the root causes of recent accidents, injuries and ill health and how have personal, site, managerial and organisational factors in the construction sector effected these? In addition, what has been the impact of recent occupational health and safety regulations and initiatives, such as the health surveillance regulations and the “Good health is good business” campaign?

Issues such as price based competition, short term projects, changing physical work environment, multiple contractors etc. appear to be particularly important in the construction sector. These characteristics pose a number of problems including inhibiting investment in health and safety, confusing accountabilities for site safety and creating the impression that safety is a “cost”. Whilst the CDM regulations address some of these obstacles, such as clarifying responsibilities and requiring inclusion of health and safety in project plans, no research has been identified on their impact on motivation, attitudes or culture or the factors guiding management health and safety decisions.

Clearly the efficacy of current and alternative strategies depends on the cause of health and safety problems in the construction sector. This study examines the factors underlying health and safety management behaviours and the impact recent industry developments, regulations and HSE promotions have had on health and safety performance. Depending on which phenomena are paramount, it could be suggested that the HSE and industry groups should focus alternatively on regulatory, educational or persuasive initiatives. For example, if the problem lies with the level of health and safety expertise in the industry this would suggest that attention should focus on upskilling the industry, but if the problem lies with inadequate safety “technology” this would suggest a need to innovate new safety practices, equipment and techniques.

1.1 OBJECTIVES

The study aims to provide clear empirical evidence to help review the current approach to the management of health and safety in the UK construction sector, and to identify opportunities for improving health and safety performance. The benefits include:

- A firm, objective and demonstrable empirical base on which to debate the way forward;
- An up to date understanding of the personal, managerial, physical and sector level factors operating in the UK construction industry;
- Review of strategies available for improving health and safety performance in the construction sector;
- Assessment of whether the approach to management of health is comparable to the approach adopted for safety hazards, and whether construction management attitudes to these areas of responsibility are congruent;
- Recommendation of strategies which take account of organisational, operational and physical factors specific to the construction sector;
- Assessment of the impact on attitudes and culture of recent regulations and initiatives in the construction sector to date.

1.2 STUDY PROGRAMME

The programme is divided into four parts:

- Identification of factors that contribute to injuries and ill health in UK construction by means of a *statistical analysis* of HSE data to identify trends and produce trade risk indices;
- *Consultation* with a cross section of UK construction industry to gain an understanding of sector wide and project specific issues;
- Review of interventions implemented *overseas* to identify learning opportunities for the UK;
- Elaboration of *opportunities* to improve health and safety in the UK.

1.2.1 Statistical Analysis

The statistical analysis involves:

- A review of construction industry employment statistics and reporting of injuries;
- A review of the overall injury rates for both employees and self-employed operatives;
- An examination of the injury rate for the main building trades and the causes of these injuries; and
- A review of the occupational ill health data available and the prevalence of ill health, including respiratory, skin and musculoskeletal disease and hearing loss, for the main building trades.

It is the intention of the analysis to:

- Assess the trends in employment and injury reporting within the Construction Industry;
- Assess the overall trends in fatalities and injuries in the industry;
- Determine if there has been a shift in the injuries from employees to self-employed operatives;
- Determine if there is an influence on the injury rates by size of company and size of project (i.e. CDM / non CDM);
- Detect whether trends in fatal and non-fatal injury and ill health rates can be linked to the major changes in industry, such as changes in the pattern of employment and changes in the nature of work.

1.2.2 Consultation

The consultation is intended to be representative of the industry, covering clients, designers, planning supervisors, contractors and such like from all sizes of firms and types of projects, e.g. demolition, new build, refurbishment, etc.

The consultation is to develop a profile of:

- a) industry attitudes towards health and safety management. For example;
 - are health and safety awarded the same status?
 - which health risks are perceived to be significant?
 - what types of risks are perceived as being serious in your trade?
- b) key behaviours and postulated reasons for these behaviours. This covers:

- identification of key behaviours, attitudes and practices influencing health and safety performance, such as management (e.g. insufficient time, inadequate health and safety budget), competence (lack of training etc), safety techniques (e.g. inadequate procedures and PPE), cultural factors (e.g. lack of concern for personal well being) and commitment (e.g. safety seen as a cost);
 - identification of factors/reasons for these behaviours, such as price based competition, lack of health and safety expertise/awareness, and unique physical circumstances on construction sites etc.
- c) how have health and safety practices and attitudes changed in the 1990's?
- d) why have attitudes changed? (e.g. Health Surveillance regulations, CDM & "6 pack", Cost of Accidents publications, increased employee liability costs, new client expectations etc).

The interviews use both an interview proforma and open discussions, in order to explore the following hypotheses:

- The objective for The Construction, Design and Management Regulations (CDM) have been successful in reducing fatalities on construction projects;
- There has been a shift in the population of casualties from employed to self-employed;
- Health and safety improvements are not being implemented effectively due to organisational obstacles;
- Health and safety improvements are not being implemented effectively due to operational obstacles;
- Health and safety improvements are not being implemented effectively due to insufficient health and safety knowledge and skills;
- Standard safety technology (management procedures, equipment, safe working procedures etc.) does not meet the special needs of the construction sector, such as temporary work sites, temporary staff, changeable physical work environment, etc;
- There is insufficient focus on the "soft" aspects of safety such as safety culture;
- Attention is focused on the more obvious safety hazards, with less concern for health hazards, such as dust;
- Recent health and safety regulations have not been adequately implemented and this has led to accidents and ill health.

1.2.3 Review of strategies implemented overseas

The statistical analysis and UK consultation are to establish the main areas where it is considered that efforts should be focused to bring about improvements in health and safety performance in the UK construction industry. The next stage seeks pointers on how these key problems have been resolved or avoided in other countries. The review targets two EU states and one non-EU country which are thought to provide lessons for the UK. These countries are selected through discussion with regulators, academics and industry representatives. Where possible the country's statistics on injury and ill health in construction are examined to validate any postulated claims about the benefits of interventions.

1.2.4 What strategies should be prioritised in the UK?

The results of these investigations are drawn together to identify the opportunities open to improving health and safety in the industry, and consider which regulatory, educational and inspection tactics should be prioritised or developed to further reduce injuries and illness in the construction sector.

2. STATISTICAL ANALYSIS OF INJURY AND ILL HEALTH OCCURRENCE

2.1 INTRODUCTION

The objective of the statistical analysis is to calculate trade risk indices, using HSE injury records and the employment statistics, for injuries (fatal and non-fatal) and ill health.

This allows trades to be compared to each other and to standard risk criteria, in particular the 'HSE Intolerable Risk criteria of one fatality per 1,000 workers per annum, and to the guideline rate of one fatality per 10,000 workers per annum. An examination of trends in the nature of injuries for each trade is carried out also.

The analysis of the ill health data includes an examination of which trades are more susceptible to each illness and the consequences of each type of ill health.

2.2 OVERVIEW OF APPROACH

The statistical analysis has four main stages, namely:

- Data gathering;
- Alignment of data;
- Production of injury indices; and
- Interpretation and analysis.

The injury statistics are from the Health and Safety Executive (HSE) and the ill health statistics from the University of Manchester. The employment statistics are from the Construction Industry Training Board (CITB), the Government Department of the Environment, Transport and the Regions (DETR) and the Office of National Statistics (ONS).

A major task is the alignment of the data. The difficulties in this task include:

- Differences in the definition of operatives trade between the sources of data;
- The change in the definition of major injury (changed in 1996); and
- Differences in the dates for years ending between sources of data.

The most appropriate definition of operatives trades within the construction industry is judged to be the CITB 1997 standard classification (CITB b). These are shown in Section 2.2.2. The most appropriate date for year ending is March, as per the HSE injury statistics.

2.2.1 Alignment of Employment / Injury Data

Employment Data

There are three sources of data for employment statistics. The first data set is from the ONS publication 'Labour Market Trends' and this gives the total number of people employed within the construction industry for the period 1993 to 1999, but it does not split them between operatives' trades or their employment status (self-employed, employees, trainees).

The second data set is from the DETR document ‘Housing and Construction Statistics’. This gives the number of operatives employed within the construction industry and the numbers are broken down by the operatives’ profession. The statistics are derived from the tax returns of companies within the construction industry and do not include self-employed operatives. It does not include construction professional and technical staff who work for professional partnerships.

The third data set is from the CITB documents ‘Construction Employment and Training Forecast’ (CITBa) and ‘Construction Employment and Training Forecast 1999 - 2001’ (CITBb). This gives the total number of operatives employed within the construction industry for the period 1993 to 1999 and is broken down into operatives’ trades. It does not include construction professional and technical staff who work for professional partnerships.

Table 2.1 shows that a discrepancy of circa 20%, between the total number of operatives in the construction industry in the statistics supplied by the ONS and the CITB. Table 2.1 show that professional & technical staff who work for professional partnerships make up approximately 20% of the total number of operatives within the construction industry and these operatives are not included in the CITB statistics. These operatives are not included in this study.

Table 2.1
Total number of operatives within the construction industry (ONS/CITB Data)

Year	Total Number of Operatives (ONS)	Total Number of Operatives (CITB)	Difference between CITB and ONS Figures	Estimated Percentage of Professional & Technical staff who work for Professional Partnerships (CITB)
1995	1,734,750	1,375,000 ¹	20.7%	-
1997	1,758,500	1,384,200 ²	21.3%	19.2%

¹ from CITBa ² from CITBb

The employment data require the following operations:

- Correction of the ONS total construction employment figures to exclude the professional & technical staff who work for Professional Partnerships from the study (these are not included in the CITB model);
- Alignment of the DETR operatives trades (trade categories) to the CITB 1997 standard classification;
- Alignment of the DETR (Y/E September) and CITB (Y/E December) to HSE injury data (Y/E March); and
- Calculation of the split between employees and self-employed for each trade using a ratio calculated from the ONS, DETR and CITB figures, which is outlined in Appendix D.

Injury Data – HSE, 1992/93 – 1995/96

The statistics in this data set are provided in two parts. One part is the number of fatal injuries to workers in the construction sector as reported to Field Operations Division (FOD) and the other is the non fatal (major and minor) injuries to employees in construction as reported to FOD and Local Authorities (LA). Both are in the same format but require the following operations:

- Translation of code for nature of injury (e.g. amputation, laceration, etc.);
- Translation of code for personnel status (i.e. employee / self employee);
- Translation of code for operatives trades (e.g. carpenter, roofer, etc.);

- Division of injury data into four groups (i.e. Primary Building Trades, Other Building Trades, Non Building Trades and Trade Not Specified); and
- Alignment of trades to the CITB 1997 standard classification.

The documents used to translate the above codes are shown in Appendix A.

Table 2.2 and Table 2.3 show the Primary Building Trades and the Other Building Trades respectively. Appendix B gives the trades that are not included in this study (i.e. Non Building Trades and Trade Not Specified).

Injury Data – HSE, 1997/98 – 1998/99

The statistics in this data set include the number of fatal injuries in the construction sector to workers as reported to HSE's FOD, Chemical Hazards Industrial Division (CHID) (excluding pipelines and explosives) and Nuclear Safety Directorate (NSD) (conventional safety only) and Local Authorities. The data require the following operations:

- Division of injury data into four groups (i.e. Primary Building Trades, Other Building Trades, Non Building Trades and Trade Not Specified); and
- Alignment of trades to the CITB 1997 standard classification.

Table 2.2 and Table 2.3 show the fourteen Primary Building Trades and the Other Building Trades respectively. Appendix C gives the trades that are not included in this study (i.e. Non Building Trades and Trade Not Specified).

Table 2.2

Classification of primary building trades (CITB/DETR/HSE)

CITB 1997	CITB 1995	DETR	HSE 1993 -1996	HSE 1997 - 1999
Carpenters and Joiners	Carpenters and Joiners	Carpenters & joiners	Carpenter/Joiner	Carpenter / Joiner
Painters	Painters	Painters	Painter / Decorator	Painter / Decorator
Plasterers	Plasterers	Plasterers	Plasterer	Plasterer
Roofers	Roofers	Roofers	Slater / Roof worker	Roofer
Floorers	Floorers Floor and wall tiling specialists	Flooring contractors	-	Floorer
Glazier	Glaziers	Glaziers	Glazier	Glazier
Scaffolders	Scaffolders	Scaffolding specialists	Scaffolder Steeple jack	Scaffold / Steeple
Plant operatives	Plant operatives (includes road vehicle drivers)	Plant hirers	Drivers	Plant Drivers Fork Lift Driver Crane Drivers Drivers Mate Other Mach/Plant Other / Trans / Mach
Electricians	Electricians	Electrical contractors	Electrician Electrical fitter Electrical joiner	Electric Fitter Cable Jointer Other Electrical
Plumbers	Plumbers	Plumbers Heating and ventilation engineers	Plumber/Pipe fitter	Plumber / Heating
Bricklayers	Bricklayers		Bricklayer Stonemason	Bricklayer / Mason
General Operatives (includes non construction operatives)	General Operatives (includes non-construction operatives)	Building and civil engineering contractors	All labourers	Building Labour Crafts Mates Other Labour Other Manual
Steel Erectors / Structural	Steel Erectors / Structural	-	Structural Steel Erector	Structural Steel Erector
Maintenance workers	-	-	Maintenance Personnel	Maintain Fitter

Table 2.3
Classification of other building trades (CITB/DETR/HSE)

CITB 1997	DETR	HSE 1993 -1996	HSE 1997 - 1999
Other Specialist Building Operatives	Civil engineers	Pavior/Road man	Paviors
Plant Mechanics / Fitters	Demolition contractors	Banksman	Other Building
Other Civil Engineering Operatives	Reinforced concrete specialists	Demolition worker	Construction
	Asphalt and tar sprayers	Foundation worker	Engine/Elec
	Constructional engineers	Piling hand	Builder
	Insulating specialists	Welder	Other Construction
	Suspended ceiling specialists		Other Craft/Manual
	Miscellaneous		Other Wood
	General Builders		Rail Construct Road Construct Welders

2.3 PRODUCTION OF TRADE INDICES

Trade risk indices are calculated by dividing the number of injuries for each group by the number of operatives in each group. This is done for the years between 1992/93 and 1998/99. Indices are calculated for:

- fatalities and injuries in the primary building trades;
- for fatalities and injuries for employee and self-employed operatives; and

The nature of injuries (i.e. amputation, fracture, etc) is also examined for each of the primary building trades.

2.3.1 Ill health Data

The ill health data is from the Centre for Occupational Health, University of Manchester, which is a constituent of the Occupational Disease Intelligence Network (ODIN). The data is from a number of schemes:

- Occupational Physicians Reporting Activity (**OPRA**), 1996 - 98;
- Occupational skin surveillance (**EPIDERM**), 1996 - 98;
- Surveillance of Work-related or Occupational Respiratory Disease (**SWORD**), 1996 - 98;
- Musculoskeletal Occupational Surveillance Scheme (**MOSS**), 1997 - 99; and
- Occupational Surveillance Scheme for Audiological physicians (**OSSA**), 1997 - 99.

The collation and reporting of ill health data has begun only in recent years and known not to be comprehensive. It is not possible to determine changes in ill health trends over this time as the data

available is for the years between 1996 and 1999 only and it generally takes many years for the ill health symptoms due to occupational exposure to manifest themselves. It is possible to examine the trades that are most at risk from each type of ill health and comment on the severity of each type of ill health.

2.4 RESULTS

2.4.1 Trends in Employment Statistics and Reporting of Injuries

Introduction

This section examines the changes in the number of people employed in the construction industry and also the changes in the way injuries are reported. In particular it considers:

- Has there been significant changes in the total number of people that are employed in the construction industry?
- Has there been significant changes in the number of people that are in each of the Primary Building Trades?
- Has there been any change in the reporting procedures and classification of workers within the construction industry?

Trends

Figure E.1 shows overall employment in the construction industry fell from over 1.41 million in 1993 to 1.37 million in 1994 and remains constant at this number in 1995 and 1996. Employment rises sharply in 1997 and continues to increase in 1998 and 1999. Table 2.4 shows the trend in employment is similar for most trades within the construction industry.

Table 2.4
Percentage change in employment for the primary building trades from October-1993

Trade	October-1994	October-1995	October-1996	October-1997
Carpenters and joiners	+1	-1	-3	+26
Painters	-6	-8	-7	+14
Plasterers	-5	0	-13	+8
Roofers	-1	-5	-11	+13
Floorers	-2	-10	-10	+8
Glaziers	+1	-10	-37	-34
Scaffolders	-7	-7	-19	-7
Plant operatives	+1	-1	-14	-11
Electrical trades	-3	-5	+2	+20
Plumbers & Heating and Ventilation Engineers	-6	-4	-7	+6
Building & Civil Engineer Contractors	+1	-12	-16	-1
General Operatives	No data	No data	No data	No data

Trade	October-1994	October-1995	October-1996	October-1997
Steel Erectors / Structural	No data	No data	No data	No data
Maintenance workers	No data	No data	No data	No data

Table 2.5 gives the breakdown of fatal injuries within the construction industry by trade. The Building Trades account for 84 - 90% of all fatalities, with the Non Building Trades accounting for 6 -13 %. The number of fatal injuries reported with the Trade Not Specified varies from 0 - 4%. The Building Trades similarly account for more than 85% of all non-fatal injuries. This study examines injuries reported by the Building Trades.

Table 2.5 also shows a significant shift in the number of injuries reported for the Primary Building Trades to the Other Building Trades in 1996/97. This is judged to be due to a change in the reporting procedures in 1996, which altered the definitions of Trade categories significantly. The most important of these changes was the introduction of three new trade categories, namely 'Other Building', 'Construction' and 'Other Construction'. These trades account for 41%, 26% and 29% of all fatal injuries reported in 1996/97, 1997/98 and 1998/99 respectively. A similar trend is observed in the reporting of non-fatal injuries under the trade categories of 'Other Building', 'Construction' and 'Other Construction'.

Table 2.5
Division by trade of fatal injuries within the construction industry

Year	Building Trades (Percentage Injuries of Total)			Non Building Trade (Percentage Injuries of Total)	Trade Not Specified (Percentage Injuries of Total)
	Primary Building Trades	Other Building Trades	Total (Primary and Other) Building Trades		
1993/94	77	7	84	13	0
1994/95	75	12	88	7	0
1995/96	76	10	86	9	0
1996/97	44	46	90	6	4
1997/98	58	29	86	13	1
1998/99	56	33	89	11	0

It must be noted that the number of employees within the construction industry appears to be underestimated by the DETR 'Housing and Construction Statistics'. This is apparent in Figure E.2, which shows the ratio between employees and self-employed, calculated from the DETR and ONS statistics to be of the order 25:75 and ratio calculated from the RoSPA data to be of the order 50:50.

2.4.2 Trends in Overall Injury Rates and Injury Rates for Employed and Self-Employed

Introduction

This section examines the overall trends in the number and rate of injuries in the construction industry for the period between 1992/93 and 1998/99. There is a perception within the Industry of a shift in the number of injuries from employees to the self-employed operatives, since the introduction of the CDM Regulations and this section examines if this is the case. Therefore this section addresses:

- What are the overall trends in number and rates of fatal injuries since the introduction of the CDM Regulations?
- What are the overall trends in number and rates of non-fatal (major and minor) fatal injuries since the introduction of the CDM Regulations?
- Is there a difference between the rate of injuries for employees and self-employed operatives and how has this changed since the introduction of the CDM Regulations?

Overall Trends

Figures E.3, E.4 and E.5 show Building Trades account for greater than 85% of all fatal and non-fatal injuries within the construction industry and the Non Building Trades account for less than 15% of the injuries.

Figure E.3 shows the average rate of fatal injuries for all personnel in the construction industry is approximately 1 in 20,000 over the last six years, which is similar to the probability of being involved in a fatal road accident. It also shows a slight downward trend in the overall number and rate of fatalities in the construction industry since the introduction of the CDM Regulations in 1993. Note, Figure E.3 includes unvalidated data for 1999/2000 fatalities.

Figure E.4 shows the number of major injuries is fairly constant between 1993/94 and 1995/96 and then a sharp increase in the number of injuries from 1995/96 to 1998/99. The increase in 1996 is thought to be due partly to changes in the reporting procedures, which include:

- Changes in classification of major injuries in 1996, where some minor injuries were reclassified as major injuries; and
- Changes to the Injury Reporting Procedures, which increased is thought to have the reporting rate of major injuries.

However, major injuries continue to rise beyond 1996, suggesting the trend may reflect more than a reporting change. It can be speculated that either inexperienced workers entering the industry were more susceptible to injury, or the total hours worked increased in which case the number of incidents would rise even if the underlying rate remained steady.

Figure E.5 shows that the number of minor injuries decreased between 1993/94 and 1998/99. It is however difficult to draw conclusive trends from the number and rate of minor accidents, as their rate of reporting is not high, creating uncertainty in the data.

Comparison between Employees and Self-Employed

Figure E.6 shows not only is the number of fatal accidents far greater for employees, but also the rate of fatal accidents is far greater than for self-employed workers. The average rate is approximately 1 in 7,000 for employees and 1 in 50,000 for the self-employed.

Moreover the number of self-employed deaths continues to be a fraction of employee deaths suggesting there has been no transfer between the two populations. Notwithstanding this, it is believed the DETR data (used to calculate these injury rates) underestimates the number of employees within the construction industry and hence overestimates the number of self-employed personnel.

Figure E.7, however shows a similar picture for the fatal injury rates for employees and self-employed personnel. This data is based on HSE Injury data. This shows the average fatal injury rate for employees is approximately 1 in 15,000, whilst the average fatal injury rate for self-employed is approximately 1 in 35,000. Both sets of data indicate the fatal injury rate is much higher for employees in the construction industry.

Figures E.6 and E.7 both show a moderate overall reduction in the number and rate of fatal injuries for employees within the construction industry since the introduction of the CDM Regulations. However there is no discernible change in the number or rate of fatal injuries for self-employed workers since the introduction of the CDM Regulations.

Figures E.8 and E.9 give the number and rate of reported major injuries for employees and self-employed personnel. Figure E.8 uses injury data from the HSE and employment statistics from the DETR and the ONS. Figure E.9 uses HSE data published by RoSPA. Both figures show the number and rate of reported major injuries for employees change little in the period between 1992/93 and 1994/95 but a large increase in the rate of major injuries in the period 1995/96 and 1998/99 for employees. This can be attributed to a number of factors such as changes in classification of major injuries in 1996 and changes to the injury reporting procedures. It also coincides with a sharp increase in the total number of workers in the industry.

Figures E.8 and E.9 show the number and rate of reported major injuries gradually decreasing in the period 1992/93 and 1998/99. The rate of reported major injury is much lower for self-employed personnel compared to employees. There is also no increase in the number of reported accidents in 1996/97, when changes in reporting procedures changed. These factors appear to indicate that major injuries to self-employed personnel are not reported as comprehensively reported as major injuries to employees.

2.4.3 Trade Risk Indices

Introduction

This section presents the risk indices produced from the HSE injury records and the employment statistics, and seeks identifiable trends in fatal and non-fatal injury for employees and self-employed personnel in the Primary Building Trades. These trade risk indices are compared to the HSE Intolerable Risk level (1 in 1,000) and the 1 in 10,000 guideline. The most common nature of injury (i.e. amputation, fracture, etc) is also examined for each building trade. This section therefore addresses the questions:

- What trades are most at risk in the construction industry?
- What of the most common type of injuries effecting the construction industry and are some trades more at risk to particular types on injuries?

Injury Rate for Primary Building Trades

Figure E.10 and Table 2.6 show the fatal injury rates for the Primary Building Trades. The three trades within the construction industry that are most hazardous are:

- The steel erectors, barbending and structural trade;
- The roofing trade; and
- The scaffolding trade.

The average fatality rate in these three trades is 1 in 4,000 per worker per annum, which is below the HSE Intolerable Risk Criteria (1 in 1,000), but above the 1 in 10,000 guideline. This is equivalent to a 1 in 100 probability of having a fatal injury in a 40 year working life. There is no sign of a decrease in the fatality rate in these trades since the introduction of the CDM Regulations.

Figure E.11 and Table 2.7 show the rate of major injuries in these trades is also higher than most other trades within the industry and there has been no perceptible reduction in the rate of major injuries since the introduction of the CDM Regulations. The average rate of major injuries in these three trades is on average 1 in 258 per worker per annum, which is equivalent to a 1 in 6 probability of suffering a major injury in a 40 year working life.

Table 2.6
Probability per annum of primary building trade operative sustaining a fatal injury

Trade	1993/94	1994/95	1995/96	1996/97	1997/98	Average
Steel Erectors / Barbending / Structural	No data	No data	1 in 3,781	No data	1 in 2,250	1 in 3,016
Roofers	1 in 3,006	1 in 3,202	1 in 4,974	1 in 2,885	1 in 4,757	1 in 3,764
Scaffolders	1 in 6,380	1 in 8,868	1 in 2,534	1 in 3,091	1 in 5,912	1 in 5,357
Average for Primary Building Trades	1 in 10,866	1 in 12,037	1 in 10,254	1 in 9,538	1 in 11,782	1 in 10,896
Glaziers	1 in 13,611	1 in 13,727	0 fatalities	1 in 8,536	0 fatalities	1 in 11,958
Plant operatives	No data	No data	1 in 19,250	No data	1 in 13,533	1 in 16,392
Painters	1 in 13,382	1 in 15,067	1 in 24,660	1 in 18,608	1 in 22,893	1 in 18,922
Floorers	No data	No data	No data	1 in 19,540	0 fatalities	1 in 19,540
Maintenance Workers	No data	No data	No data	No data	1 in 23,000	1 in 23,000
General Operatives	No data	No data	1 in 7, 382	No data	1 in 48,640	1 in 28,011
Plasterers	1 in 37,782	0 fatalities	0 fatalities	0 fatalities	0 fatalities	1 in 37,782
Electrical Trades	1 in 20,901	1 in 15,192	1 in 9,898	1 in 64,222	1 in 150,267	1 in 52,096
Bricklayers and Stonemasons	No data	No data	1 in 97,625	No data	1 in 55,350	1 in 76,488
Carpenters and joiners	1 in 159,128	1 in 40,224	1 in 52,453	1 in 38,456	1 in 99,897	1 in 78,032
Plumbers & Heating and Ventilation Engineers	1 in 55,525	1 in 104,426	0 fatalities	1 in 102,848	1 in 58,996	1 in 80,449

Table 2.7
Probability per annum of primary building trade operative sustaining a major injury

Trade	1993/94	1994/95	1995/96	1996/97	1997/98	Average
Scaffolders	1 in 182	1 in 202	1 in 199	1 in 91	1 in 99	1 in 155
Maintenance workers	No data	No data	No data	No data	1 in 307	1 in 307

Trade	1993/94	1994/95	1995/96	1996/97	1997/98	Average
Structural Steel Erector	No data	No data	1 in 473	No data	1 in 152	1 in 312
Roofers	1 in 351	1 in 359	1 in 379	1 in 268	1 in 335	1 in 338
Plant operatives	No data	No data	1 in 441	No data	1 in 305	1 in 373
General Operatives	No data	No data	1 in 352	No data	1 in 688	1 in 520
Electrical Trades	1 in 385	1 in 388	1 in 404	1 in 765	1 in 674	1 in 523
Carpenters and joiners	1 in 674	1 in 638	1 in 670	1 in 421	1 in 529	1 in 586
Glaziers	1 in 907	1 in 858	1 in 815	1 in 219	1 in 250	1 in 610
Painters	1 in 819	1 in 711	1 in 655	1 in 465	1 in 477	1 in 625
Average for Primary Building Trades	1 in 718	1 in 642	1 in 616	1 in 635	1 in 554	1 in 630
Bricklayer / Stonemason	No data	No data	1 in 781	No data	1 in 543	1 in 662
Plasterers	1 in 1,021	1 in 918	1 in 859	1 in 576	1 in 832	1 in 841
Plumbers & Heating and Ventilation Engineers	1 in 1,406	1 in 1,066	1 in 1,367	1 in 952	1 in 881	1 in 1,134
Floorers	No data	No data	No data	1 in 1,954	1 in 1,688	1 in 1,821

Glaziers have the fourth highest fatality rate. There are approximately 8,000 glaziers in the UK and so make up only a small part of the construction industry. Table 2.6 and Figure E.10 show no fatalities in the glazing trade in 1995/96 and 1997/98 and one fatality in each of the years 1992/93 and 1993/94 and 1996/97. This gives an average rate of approximately 1 in 11,500 for 1992/93 and 1993/94 and 1996/97 and zero in the other years. This is below the 1 in 10,000 guideline. Table 2.7 and Figure E.11 show the rate of fatal injury is quite low for the glazing trade in the years between 1992/93 and 1994/95 and there is a steep rise in the rate in 1996, which coincided with the changes in reporting of injuries. The Glazing trade is therefore considered to be medium risk but it is not possible to determine if there are any significant changes in the rate of fatal or major accidents.

The following trades are considered to be medium to low risk with regard to fatal injuries from accidents:

- The Plant Operating trade;
- The Painting trade;
- The Flooring trade;
- The Plastering trade;
- The Woodworking trades; and
- The Plumbing trades.

The rate of fatality range from 1 in 15,000 for painters to 1 in 100,000 for plumbers. These rates are all below the 1 in 10,000 guideline and also below the average for the Primary Building Trades, which is 1 in 11,000. Figure E.11 also shows the rate of major injury for these trades to be below the construction industry average.

The rate of fatal and major injury for maintenance workers is also below the industry average. However the number of fatalities and major injuries for the maintenance trades is considered to be under reported, suspected to be due to a tendency to report injuries occurring while carrying out maintenance to the operative’s other trade (i.e. plumber, electrician etc). Therefore it is not possible to determine the true rate of injury to personnel engaged in maintenance work.

The rate of fatal injuries to Electrical Trades is 1 in 21,000 in 1992/93 and increases to 1 in 10,000 in 1994/95. It drops in 1996 to 1 in 60,000. This may be a reporting artifact as there was a change in the trade classification. The trade category ‘Electrical joiner’ was a significant contributor to the number of injuries in the period between 1992/93 and 1995/96. This trade category does not exist in the 1996 revised classification. It is not known if the number of injuries has decreased for the electrical trades after 1996 or if they have been reported as occurring to more generic trade categories such as ‘Crafts mates’ or ‘Building Labourer’.

It is difficult also to determine the true rate of fatal and major injury for Bricklayers and General Operatives. There is a large number of injuries assigned to the trade categories ‘Builder’, ‘Other Building’, ‘Construction’ and ‘Other Construction’. These categories are general and cannot be aligned with any great accuracy with the bricklayer and general operative category.

Figures E.12 and E.13 show the rates of fatalities for employees is much greater than self-employed operatives. This may be largely explained by the underestimation of the number of employees within the construction industry by the DETR ‘Housing and Construction Statistics’ as discussed in section 2.2.1. Some general trends however can be observed. The rate of fatalities for employees in the Painting Trade has decreased since the introduction of the CDM Regulations but there has been little overall change for self-employed operatives. The rate of fatalities has increased for employees in the Carpentry Trade but has shown little change for Self-employed Operatives.

Figures E.14 and E.15 again show the rate of major injuries for employees is much greater than self-employed operatives. The scaffolding trade, the roofing trade and the steel erectors, barbending and structural trades have again the most injuries for both employees and self-employed operatives. There is however an increase in the number of injuries for employees and a reduction for self-employed operatives.

Nature of Injury for each Trade

This section analyses the nature of fatal and major injuries for each of the Primary Building Trades in order to gain an insight into the root cause of injuries and accidents.

It is found that the vast majority of reported major injuries are fractures for all the trades examined. The nature of injury for fatal injuries are more widely distributed.

The distributions of major injuries are shown in Figures E.16 to E.28 for each of the 14 primary trades. A summary of the figures is given in Table 2.8. The number of fractures outweigh the number of all others by a factor of two.

Table 2.8
Cumulative number of major injuries for primary building trade for the years between 1992/93 and 1998/99

Trade	Cumulative Number of Major Fracture Injuries for the Period between 1992/93 and 1998/99	Cumulative Number of Other Major Injuries for the Period between 1992/93 and 1998/99
Carpenters and joiners	1,378	524

Trade	Cumulative Number of Major Fracture Injuries for the Period between 1992/93 and 1998/99	Cumulative Number of Other Major Injuries for the Period between 1992/93 and 1998/99
General Operatives	1,378	437
Electrical Trades	1,184	438
Painters	703	122
Bricklayer / Stonemason	889	196
Scaffolders	641	164
Plant operatives	624	172
Roofers	622	160
Plumbers & Heating and Ventilation Engineers	491	145
Maintenance workers	285	159
Structural Steel Erectors	294	113
Plasterers	245	54
Glaziers	110	45
Floorers	27	14

The nature of injury for fatal accidents is more widely distributed as fatal injuries are subject to detailed examination of the cause and nature of the injury and thus the reporting is more detailed. No information can be obtained from the nature of injury 'Multiple', 'Other known' and 'Other not known' and eliminating these enables the following trends to be observed:

- Figures E.16, E.17 and E.18 show the nature of most fatal injuries for the steeplejacks & scaffolder, the steel erector and structural steel erection trade and the roofing trade are 'Fractures' with some 'Concussion/Internal' injuries;
- Figure E.19 shows the nature of most fatal injuries for painters as 'Fractures' with some 'Concussion/Internal' injuries;
- Figure E.20 shows bricklayers and stonemasons also suffer mainly 'Fractures' with some 'Concussion/Internal' and 'Laceration' injuries;
- Figure E.21 shows that carpenters also experience 'Fractures', 'Concussion/Internal' injuries, but also some 'Laceration' injuries.;
- Figure E.22 shows that the Plumbing trade is most at risk from injuries due to 'Electricity';
- The electrical trades experience many injuries associated with electricity and burns. They also experience many fractures associated with working at height and with heavy objects and equipment. There is one asphyxiation. This can be seen in Figure E.23;
- Figure E.24, E.25 and E.26 show that maintenance personnel, plant operators and general operators experience a wide range of types of injury, including 'Fractures', 'Contusions' and 'Concussion/Internal' injuries;
- The total number of fatalities in the periods between 1992/93 and 1998/99 for glaziers, floorers and plasterers is too small to obtain any information. This is shown in Figures E.27, E.28 and E.29.

2.4.4 Trends in Occupational Ill health

Introduction

The issues addressed in this section are:

- Is there a high incidence of ill health in the construction industry?
- Which trades are most effected and are these ill health occurrences life threatening?
- How does the incidence of ill health compare with incidence of fatal and major injuries in the construction industry?

At the outset it must be stated that ill health statistics are available only for the period between 1996 and 1999 and are believed to be gross under estimates.

It should also be noted that the symptoms of ill health resulting from occupational exposure may take several years to develop and the causes of the ill health can be several and varied. It is acknowledged that the latent nature of ill health means the risk to 'younger' workers may not be the same as to 'older' workers i.e. these cases may (or may not) relate to past exposures.

It is possible to determine general trends from the information available. The four types of ill health considered are:

- Respiratory disease;
- Skin Disease;
- Musculoskeletal Disease; and
- Hearing loss.

These are examined in terms of the trades most affected and the potential consequences of each disease.

Respiratory Disease

Respiratory disease can be caused by exposure to dust, asbestos and other chemicals or materials. The symptoms are varied and many are life threatening. The prevalence of a number of these diseases is given in **Table 2.9**.

Table 2.9
Total estimated cases of respiratory disease by disease type

Disease	Total Number of Cases (OPRA 1996-98)	Total Number of Cases (SWORD 1996-98)	Disease Status	Percentage of Total Cases (OPRA 1996-98)	Percentage of Total Cases (SWORD 1996-98)
Asthma	27	40			
Inhalation Accident	5	16			
Alveolitis	-	2			
Bronchitis / Emphysema	12	2	Major	46 %	48 %
Infection	-	12			
Benign pleural disease	24	613			
Mesothelioma (asbestos related)	19	521	Potentially Life Threatening	54 %	51 %
Lung Cancer	13	56			
Pneumoconiosis	48	146			
Other	-	14	Unknown	0 %	1 %

The incidents of life threatening respiratory diseases in the construction industry for the period between 1996 and 1999 is estimated to be 80 (OPRA) and 723 (SWORD) i.e. about 200 to 300 per annum. When compared to the total number of fatal injuries due to accidents in construction industry over the same time period (236) and allied to the probable under reporting of occupational ill health, the number of fatalities in the construction industry due to ill health probably exceeds those due to injury. It is not possible to determine if this number is increasing or decreasing.

Table 2.10 shows the prevalence of respiratory disease across the building trades and can be summarised as follows:

- The greatest prevalence of respiratory disease is among general operatives at over 5,000 reported cases per 100,000 workers. It must be noted that the trade categories used for the reporting of ill health occurrences do not appear to be as well defined as RIDDOR and this may have artificially increased the number of estimated occurrences for general operatives;
- Table 2.10 also shows that floorers, plumbers and carpenters/joiners had quite high rates of respiratory diseases, which were 1,900, 1,800 and 1,300 per 100,000 workers respectively;
- The rate of respiratory disease for roofers is quite high at 852 cases per 100,000 operatives. This would make roofers one of the most hazardous trades within the construction industry as they are also exposed to high risks of fatal injuries;
- The rate of respiratory disease for bricklayers/stone masons and plasterers is circa 852 cases per 100,000 operatives;
- The rate of respiratory disease for electricians is circa 428 cases per 100,000 operatives.

Table 2.10
Total estimated cases of respiratory disease by occupation

Trade	Estimated Number of Cases			Rate* of Ill health Incidence per 100,000 Workers
	OPRA 1996-98	SWORD 1996-98	Total (OPRA + SWORD)	
Other Building and Civil Engineering Labourer	62	369	431	6,020
Floorer	-	39	39	1,921
Plumber		186	186	1,809
Carpenter / Joiner	25	259	284	1,526
Plasterer	12	26	38	916
Roofer	-	38	38	852
Bricklayer / Mason	24	60	84	759
Electrician	-	55	55	428
Fitter	-	44	44	-
Other Construction Trade	13	-	13	-
Construction and Related Operations	-	48	48	-

* The number of workers used to calculate this rate was the number of operatives in each trade in 1997 as per the CITB.

Skin Disease

Skin disease can again be caused by exposure to dust, asbestos and a whole host of other chemicals or materials. These diseases include contact dermatitis, contact urticaria, folliculitis/acne, neoplasia and others. The most common of these is contact dermatitis, which accounts for over 60% of all reported cases and neoplasia, which accounts for over 30% of all reported skin disease in the construction industry. Neoplasia may be benign or malignant. The remaining skin diseases can be major illnesses but are not considered to be life threatening.

Table 2.11 presents the number of reported cases of skin disease by occupation and can be summarised as follows:

- The greatest number of reported skin disease is for builders. Builder is however a very general category and therefore conclusions cannot be drawn as rates of incidence cannot be calculated;
- Floorers have very high rates of skin diseases at 1,100 per 100,000 workers. This trade is therefore exposed to chemicals or materials that give very high rates of skin and respiratory disease;
- Roofers again suffer very high rates of skin disease and have a rate of incidence of 600 per 100,000 workers. This in conjunction with their high rate of respiratory disease and also their high injury rate makes it one of the most hazardous trades in the construction industry;
- There is also a prevalence of skin disease among Carpenters / Joiners, Bricklayers / Masons, Painters and Plumbers .

Table 2.11
Total estimated cases of skin disease by occupation

Trade	Estimated Number of Cases			Rate* of Ill health Incidence per 100,000 Workers
	OPRA 1996-98	EPIDERM 1996-98	Total (OPRA + EPIDERM)	
Floorer	-	23	23	1,133
Roofer	-	27	27	605
Carpenter / Joiner	2	98	100	538
Bricklayer / Mason	-	47	47	425
Painter and Decorator	-	32	32	386
Plumber	-	23	23	224
Builder	-	121	121	-
Other Construction Trade	-	44	44	-
Other Building and Civil Engineering Labourer	3	18	21	-
Road Construction workers	36	-	36	-
Other Craft and Related Occupations	12	-	12	-

* The number of workers used to calculate this rate was the number of operatives in each trade in 1997 as per the CITB.

Musculoskeletal Disease and Hearing loss

Musculoskeletal disease and hearing loss are also major diseases within the construction industry. Table 2.12 presents the number of reported cases of musculoskeletal disease by occupation and can be summarised as follows:

- The greatest number of reported cases of musculoskeletal disease is for builders. Builder is however a very general category and therefore conclusions cannot be drawn as rates of incidence cannot be calculated;
- Floorers have very high rates of skin diseases at 2,300 per 100,000 workers. This trade appears to suffer the highest rate of ill health in the construction industry;
- There is also a prevalence of musculoskeletal disease among Carpenters / Joiners, Bricklayers / Masons, Painters and Plumbers .

Table 2.12
Total estimated cases of musculoskeletal disease by occupation

Trade	Estimated Number of Cases			Rate* of Ill health Incidence per 100,000 Workers
	OPRA 1996-98	EPIDERM 1996-98	Total (OPRA + EPIDERM)	
Floorer	12	48	60	2,956
Bricklayer / Mason	26	51	77	696
Painter & Decorator	-	48	48	578
Carpenter / Joiner	-	48	48	258
Plumber	-	24	24	233
Builder	-	126	126	-
Road Construction Worker	61	-	61	-
Welder	-	24	24	-
Construction & Related Operatives	-	24	24	-

* The number of workers used to calculate this rate is the number of operatives in each trade in 1997 as per the CITB.

Table 2.13 shows that the total number of reported cases of hearing loss within the construction industry is not high compared to other forms of ill health and carpenters/joiners and plumbers appear to be most effected.

Table 2.13
Total estimated cases of hearing loss by occupation

Trade	Estimated Number of Cases			Rate* of Ill health Incidence per 100,000 Workers
	OPRA 1996-98	EPIDERM 1996-98	Total (OPRA + EPIDERM)	
Carpenter / Joiner	-	16	16	86
Plumber	-	5	5	49
Builder	-	33	33	-
Other Builder and Civil Engineer Labourers	12	8	20	-
Woodworking machine Operatives	12	-	12	-
Other Construction Trades	-	7	7	-

2.5 CONCLUSIONS FROM THE STATISTICAL ANALYSIS

2.5.1 Injuries

The conclusions from the analysis of injury data from the five years 1993/94 to 1997/98 are:

- The overall number and rate of fatal injuries has decreased slightly (10%) since the introduction of the CDM Regulations in 1994. However, the overall downward trend in the number of accidents which started before CDM is slowing;
- The average rate of fatalities for the primary building trades is 1 in 11,000 per year. This is below the HSE Intolerable Risk Criterion (1 in 1,000) and also below the 1 in 10,000 guideline;
- There are a number of trades above the 1 in 10,000 target, namely the scaffolding trade (1 in 5,400), the roofing trade (1 in 3,800) and the steel erectors, barbending and structural trades (1 in 3000);
- The changes in reporting procedures in 1996 has resulted in large numbers of injuries being reported as occurring to the miscellaneous trades such 'Builder', 'Other Building', 'Construction' and 'Other Construction'. This creates uncertainty in the calculation of trade risk indices. It is recommended that steps be taken to reduce the tendency for accidents to be assigned to broad categories such as 'Other Building', 'Construction' and 'Other Construction';
- Employed workers appear to have an average annual rate of injury over twice that of self-employed workers (1 in 15,000 compared to 1 in 35,000). However, there is uncertainty in these figures in regard to the estimated ratios of employed to self-employed over the five years;
- If the ratios employed to self-employed are correct, the figures indicate an unchanged rate of fatalities for self-employed workers;
- A comparison of injury trends in CDM against non-CDM projects has not been possible due to a lack of data;
- An analysis of injury trends by size of company has not been possible due to a lack of data.

2.5.2 Ill health

The overall conclusions from the analysis of ill health data for the period 1996 to 1999 are:

- The incidents of life threatening respiratory diseases in the construction industry is estimated to be about 200 to 300 per annum. When compared to the total number of fatal injuries due to accidents in construction industry over the same time period (236) and allied to the probable under reporting of occupational ill health, the number of fatalities in the construction industry due to ill health probably exceeds those due to injury;
- The greatest number of reported cases of musculoskeletal disease is for builders. Builder is however a very general category and therefore conclusions cannot be drawn as rates of incidence cannot be calculated;
- There appears to be tendency for the occupation to be recorded as 'Builder'. This hinders the analysis of trade risks. Of the trade categories that have been used:
 - floorers have high incidences of respiratory, skin and musculoskeletal disease;

- the roofing trade appears to be one of the most hazardous as they have quite high incidence of respiratory and skin disease (in conjunction with a high fatal injury rate);
- Carpenters / Joiners, Bricklayers / Masons, Painters and Plumbers are trades that suffer from respiratory, skin and musculoskeletal diseases.

3. UK CONSULTATION

3.1 CONSULTATION METHOD

The consultation has been by means of sessions, each involving one or more interviewees, using a structured questionnaire and open-ended questions. The sessions were designed to be of under an hour in duration, but many interviewees were willing and pleased to prolong the sessions.

3.1.1 Structured Questionnaire

Style of the questionnaire

The questionnaire used in the study (Appendix F) is designed to be straightforward to complete, with questions being of a multiple choice or agree/disagree format.

Structure of the questionnaire

The questionnaire covers the full range of issues of concern to the study, and using it within the session ensured interviewees comprehend the scope of the study and facilitates the open-ended discussions. Hence comments from sessions can be structured in a common format.

The questionnaire is divided into six sections:

- a) *About you:* factual information on the experience and present circumstances and role of the interviewee;
- b) *About the construction sector:* the interviewee's views of the status and influences on health and safety management in the construction sector;
- c) *About construction projects:* the interviewee's views on health and safety management in projects;
- d) *Your experience of health and safety problems in projects:* the interviewees perceptions of health and safety risks and steps taken to manage them;
- e) *Recent Changes in the Construction Sector:* questions whether the interviewee perceives improvements, or worsening, of health and safety in construction over the last few years. As well as establishing whether changes have occurred, the questions attempt to determine the motivation for the changes and whether they are linked to government or industry initiatives such as Latham, Egan, CDM, Working Well Together campaign.
- f) *Improving construction health and safety:* ways in which health and safety management can be improved.

Piloting of the questionnaire

The questionnaire was piloted and revised accordingly.

3.1.2 Session format

Interviewees were briefed on the purpose of the research and thanked for their participation. A letter of introduction was provided by HSE to confirm the purpose of the visit.

Interviewees were assured their comments would be confidential and the report would refer to them only in terms of the role of their organisation, for example 'Client'. It was stressed that their responses

should be based on their UK experience and be their own views rather than reciting their company views and policies.

The interviewees were asked to complete the first, second and third sections of the questionnaire which refer to information about them and their views on health and safety within the sector as a whole and at project level. An Entec researcher was at hand to deal with queries over the meaning of questions etc. The interviewees were asked to highlight any of the issues they considered to be particularly important for later discussion.

An open discussion followed for the interviewees to put forwards their views on areas they felt strongly about which may or may not have been covered in the questionnaire. Many personal anecdotes and examples were discussed. Interviewees were then asked to complete the remainder of the questionnaire, followed by further open discussion.

Summaries of the consultation sessions are in Appendix G.

3.1.3 Reporting of the survey

The views expressed in the survey are summarised in section 3.2 and the themes emerging from the survey are discussed in section 3.3.

In section 3.2 the consultation feedback is presented without interpretation, other than being arranged under nine hypotheses:

- a) The Construction, Design and Management Regulations (CDM) have been successful in reducing fatalities on construction projects;
- b) There has been a shift in the population of casualties from employed to self-employed;
- c) Health and safety improvements are not being implemented effectively due to organisational obstacles;
- d) Health and safety improvements are not being implemented effectively due to operational obstacles;
- e) Health and safety improvements are not being implemented effectively due to insufficient health and safety knowledge and skills;
- f) Standard safety technology (management procedures, equipment, safe working procedures etc.) does not meet the special needs of the construction sector, such as temporary work sites, temporary staff, changeable physical work environment, etc;
- g) There is insufficient focus on the “soft” aspects of safety such as safety culture;
- h) Attention is focused on the more obvious safety hazards, with less concern for health hazards, such as dust;
- i) Recent health and safety regulations have not been adequately implemented and this has led to accidents and ill health.

In Section 3.3 the themes from the survey are drawn out, these being:

- Client influence;
- Health risk awareness and management;
- Managing health and safety culture;
- Management ownership and commitment;

- Safety skills;
- Variation across the industry;
- Safety by design.

There is a degree of repetition in sections 3.2 and 3.3 and a time pressed reader may wish to go directly to the latter section.

3.1.4 Make-up of the Survey

Size of the survey

The sample chosen for the survey reflects the make up of the industry, and covers a range of industry sectors (process industry, house building etc), job types (Client, Designer, Contractor, Insurance Company, Trade Association etc) and size of organisation. Forty three group sessions were conducted with a total of eighty nine interviewees.

Posts held

The eighty nine interviewees were asked about the position they currently hold, and any positions they had previously worked in and this is shown in Table 3.1. The study has covered a wide range of occupations, but there is a bias towards the health and safety professional., with approximately one third of consultees considering themselves to be safety advisers. It is therefore likely that survey results indicate people to have better safety awareness and understanding than the industry average.

Table 3.1
Types of jobs currently and previously held by interviewees

	Current position	Past positions
Labourer	7	10
Trade worker	3	20
Supervisor/ foreman/ team leader	5	18
Safety advisor	31	15
Site management	10	34
Project management	8	17
Head office management	6	13
Design / consulting engineer	1	10
Contracts management	4	15
Architect	2	3
Surveyor	2	7
Client	4	14
Facilities management	1	5

Years of experience

The interviewees represent a depth of knowledge with 64% having over 10 year's experience in the construction industry in the UK. 95% of the recipients have worked on projects subject to the CDM regulations.

Type of building and construction activities

The interviewees had experience in a variety of market sectors as shown in Table 3.2.

Table 3.2
The type of construction which interviewees have been involved in

	Number of projects			
	Many	some	few	none
Private residential refurbishment	18	15	14	41
Housing re-developments	13	20	9	47
New housing developments	15	19	13	41
Office buildings	33	25	10	21
Other commercial buildings	34	21	9	24
Decommissioning / demolition	10	24	26	28
Building maintenance	19	10	17	43
Transport infrastructure (roads, railway)	16	11	11	50
Chemical plants	10	11	18	49
Utilities (water, power)	18	17	16	38
Ports / harbours	3	6	13	66
Tunnelling	8	4	13	63

Size of projects

The size of projects covered by the sample is shown in Table 3.3.

Table 3.3
The size of projects worked on by interviewees

	Many	Some	Few	Not sure
Less than £50,000	34	13	14	28
£50,000 -£250,000	37	19	12	21
£250,000 -£1 m	39	20	10	20
More than £1 m	46	25	7	9

3.2 OBSERVATIONS FROM THE CONSULTATION

The comments in this section represent the opinions of the interviewees taken from both the open discussions and questionnaire responses. The feedback has been organised under nine hypotheses. Some observations could be categorised under several hypotheses, but to reduce repetition these have been placed into only the section to which they most strongly relate. Figures analysing the questionnaire responses are presented with each hypothesis. Summaries of the open ended discussions in all sessions are in Appendix G.

3.2.1 Hypothesis I

Hypothesis: The Construction, Design and Management Regulations (CDM) have been successful in reducing fatalities on construction projects.

All interviewees were aware of the CDM regulations and the majority had worked on many projects which are subject to them.

Most of the interviewees strongly perceive large variation in how construction companies manage health and safety. However, the statement that either small projects or small companies are less safe than large ones was thought to be a gross generalisation.

Although projects can be varied in their nature, the majority of interviewees believe a consistent approach can be taken to manage health and safety issues. If a company is familiar with the principals of CDM, and has developed these into a framework for managing construction projects, they will frequently use these systems for managing short projects. It was generally considered that no project should be considered as too small for management of health and safety to be given attention. However, there is some disagreement as many respondents later added that the size and complexity of a project has an influence on how well it is managed with big budget projects having more management focus.

The survey identifies that several factors are considered to be more important in influencing the level of safety than the size of a project. These are whether a project is spread over several locations or contained on one site, and the level of experience of the client.

The majority of respondents considered that CDM has brought about either a large benefit or some benefit in health and safety performance. The main improvement areas are felt to be:

- The division of tasks between the five main duty holders (client, designer, principal contractor, other contractors and planning supervisor) facilitates the management of health and safety;
- Improvements have been made in the understanding duty holders have of their responsibilities, accountabilities and legal obligations. This has been reinforced by the Management of Health and Safety at work Regulations 1999 which require the competent person to be named;
- Increased focus on bringing safety to the attention of site workers, with sites now running induction courses;
- Improved planning, with most interviewees strongly considering that it is possible to foresee and remove health and safety problems during the design and planning stages (before site work). Many also feel the situation on site does not change too fast for health and safety issues to be carefully managed.

Although the regulations are perceived to have brought about improvements, the discussions indicate they are unlikely on their own to bring about a change in the culture of an organisation. Areas which have been addressed by CDM but where it is considered further changes may be required include:

- Ideally Health and Safety should be an integral part of all activities. However, the introduction of Planning Supervisor is wrongly but widely thought to have focused the responsibilities in one role;
- Bureaucracy has increased with much use of standard documentation with little site specific information and this can hide the high risk areas;
- CDM requires the use of competent personnel, but methods for assuring competence, such as registration schemes, are not common;
- There is perceived to be a conflict of interest when the Designer and the Planning Supervisor are the same person which is frequently the case. The Designer has duties under CDM, and the architect has duties under contract administration which may conflict.
- Demolition and refurbishment are not adequately covered.

Conclusion: The consultation indicates the Construction, Design and Management Regulations (CDM) have probably been successful in reducing fatalities on construction projects but there are still areas where improvements can be made.

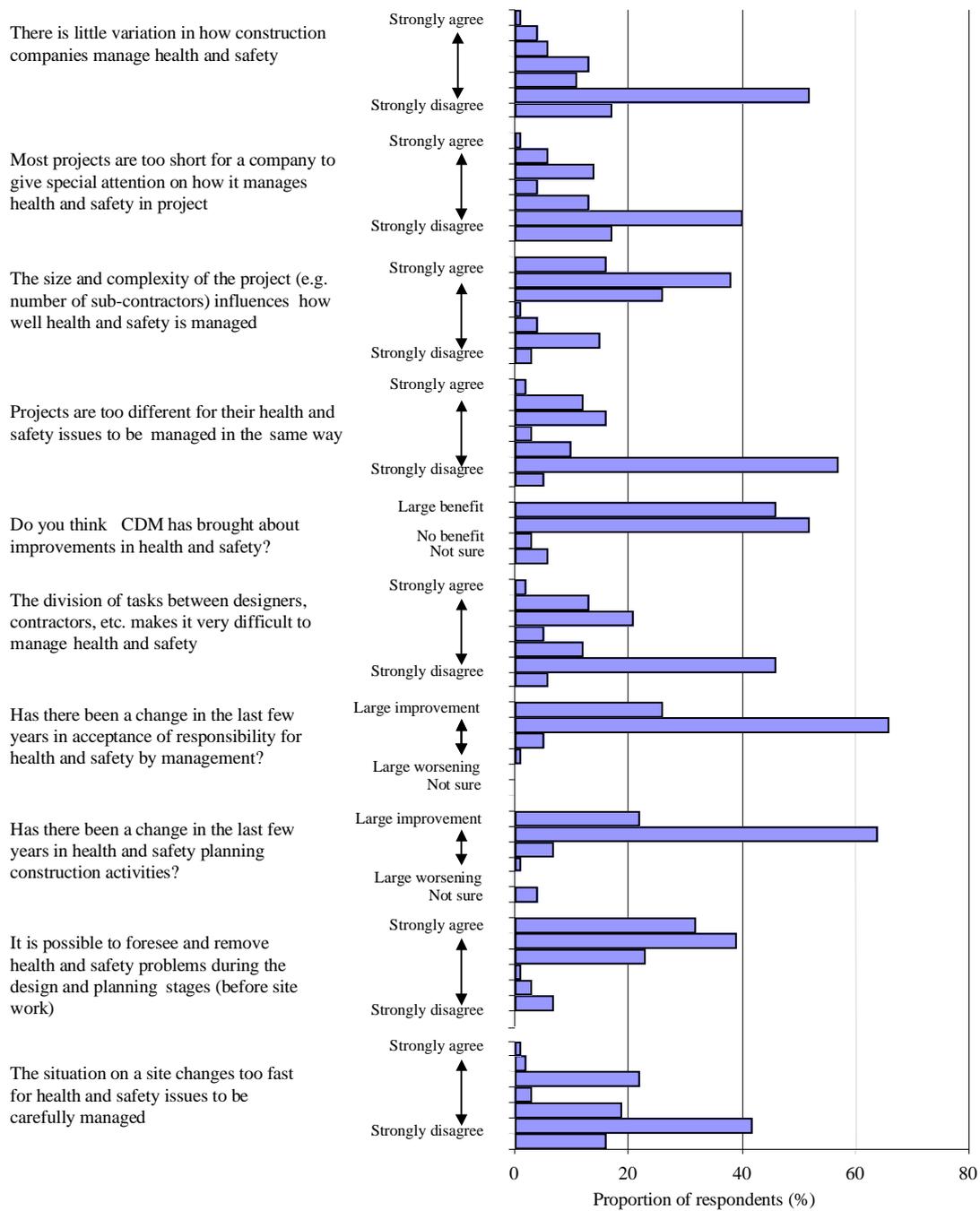


Figure 3.1
Perceptions of whether CDM has been successful in reducing fatalities

3.2.2 Hypothesis II

*Hypothesis: There has been a shift in the population of casualties from employed to self-employed.*¹

There is wide variation in opinions from the interviewees over whether there has been a change in the number of self-employed workers in recent years². The level of activity within the construction industry is reported to directly reflect the state of the economy as it goes through boom and bust periods. When demand is high there is a shortage of workers and unskilled labour-only subcontractors are used extensively and new unskilled recruits enter the industry. Whereas, when demand is low, margins are squeezed and corners are cut. During the recession many companies laid off their workforce and this resulted in an increase in start-up companies in the mid 1990s. Labour only contracts have increased in the last 10 years.

Many of the interviewees consider the self-employed to be more at risk than others and that a project with a large number of self-employed workers is more likely to have accidents.

There are several factors the interviewees consider to be specific to self-employed working that could account for the above statement. Firstly, labour only workers are often not as well trained than employed workers, as the review of training needs and provision of training is their own responsibility. In addition, as financial penalties for failure to complete a job on time or to budget will be felt severely by the self-employed they may be less averse to health and safety risks.

Projects employing a large number of self-employed are thought to be harder to manage. The workforce is non-uniform, with a wide variety of cultures, and operating to different systems and standards. There may also be a rapid turnover of workers, which harms teamworking and trust. It is reported that communication may be adversely affected when there is a high number of self-employed sub contractors. The level of understanding about what skills and competencies people have may be low, and this can result in people carrying out inappropriate tasks. In addition, there is an opportunity for misunderstanding of what is expected on site and this can lead to inefficiencies including repetition of work, or gaps in the actual work carried out leading to failures of plant, systems and procedures.

There are issues associated with outsourcing in general. It is reported the advantage of outsourcing is that it gives the outsourcing company flexibility as they may not have a full time need for the service or skills. The arrangement can bring about cost savings through competition. It also enables them to concentrate on core business activities and there is a transfer of risk to the outsource company. Prosecutions have focused on the provider of a specialist service rather than the purchasing company.

There is likely to be considerable under reporting of accidents from self-employed. Interviewees think this may be due to lack of awareness about the legal requirements. It is perceived many self-employed are skilled in their particular trade, but are not familiar with other aspects of business including health and safety requirements and the need to report under RIDDOR.

In general interviewees agree there has been an improvement in the understanding of construction health and safety risks by construction workers, which includes both employed and self-employed.

¹ The survey reports the consultees' ideas. One of the issues discussed is the lack of health and safety training and awareness, particularly amongst labour only contractors. The labour only contractors are occasionally described as 'self-employed' and this should not be taken to include skilled tradesmen and professionals.

² Statistics show the total number of workers employed in construction fell in the period between 1992 and 1994 and has been increasing since. Self-employed make up a large proportion of the workforce although the number has decreased due to a change in the definition of self-employed to exclude agency staff. These are now considered to be employed by that agency. However, whilst taking the legal role, the agency does not generally have much input in areas such as the provision of training and so for the purpose of this report they are still considered to be classified as self-employed.

Conclusion: Self-employed are perceived to have more accidents than employed workers. However, it is considered that the self-employed substantially under report accidents, and therefore if there are more self-employed there will be more accidents unreported. It is thought that in general the level of safety of workers has increased, but this is not uniform across employed and self-employed categories.

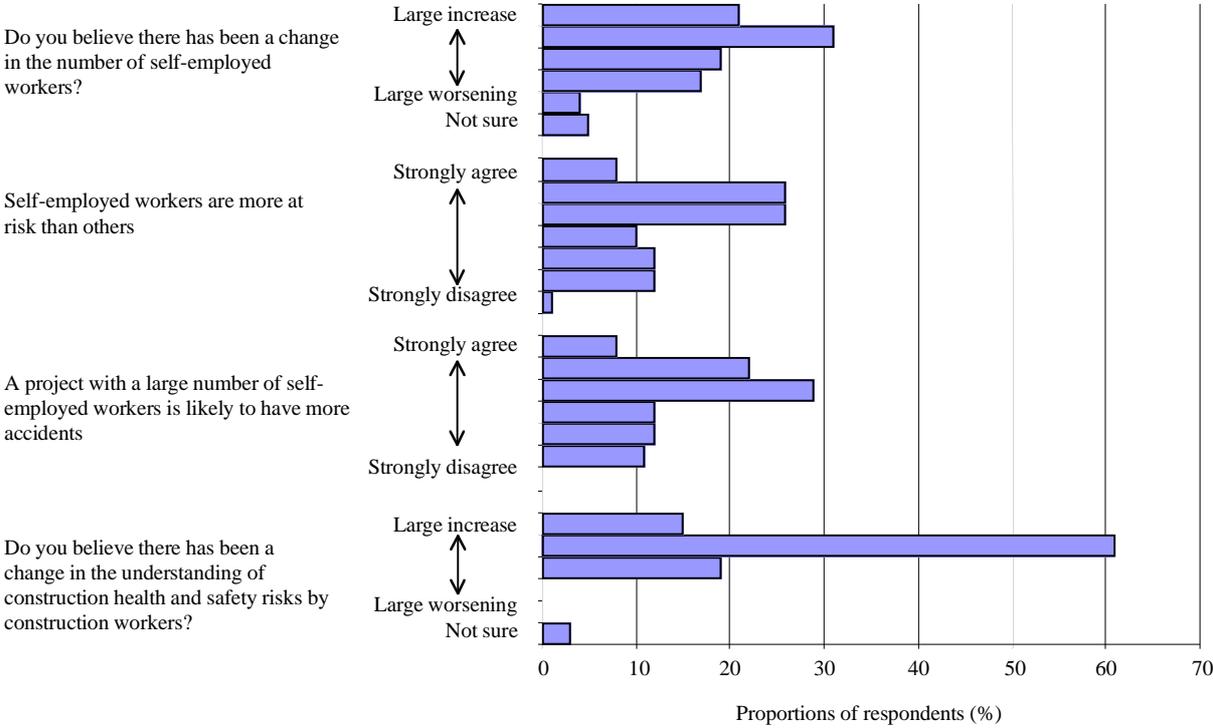


Figure 3.2
Perceptions as to whether self-employed are less safe than employed workers

3.2.3 Hypothesis III

Hypothesis: Health and safety improvements are not being implemented effectively due to organisational obstacles.

The construction industry is a complex interaction of many parties. Figure 3.3 and illustrate interviewees perceptions on the scope which different groups have to improve health and safety and the level of importance they give to it.

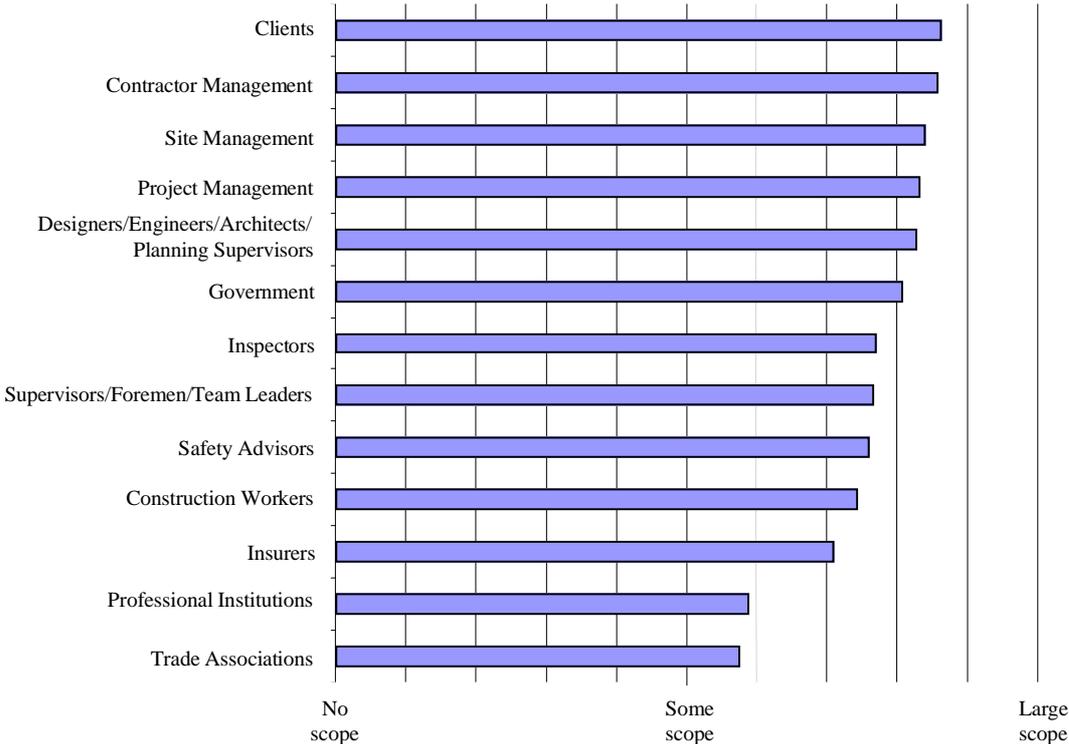


Figure 3.3
Perceptions on the amount of scope different groups have to improve health and safety

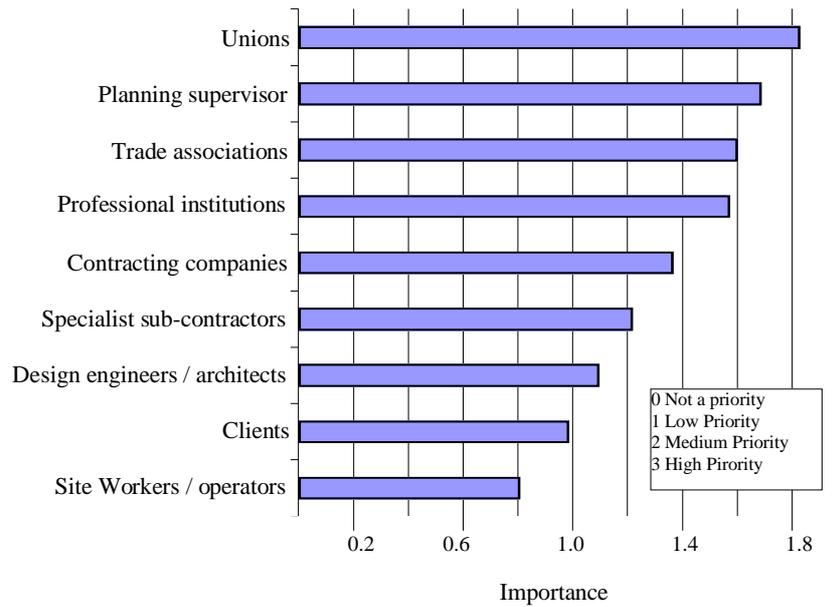


Figure 3.4
Perceptions on the level of importance given to health and safety by different groups

Continuity

The interviewees believe companies with a low turnover of workforce and those working constantly with the same set of contractors/sub contractors tend to have better health and safety performance. The questionnaire responses indicate partnering is perceived to improve construction health and safety, but the result is not strong which suggests the industry as a whole is not familiar with this way of working. Nearly all interviewees agree that the relationship between the client and lead contractor is critical to health and safety management.

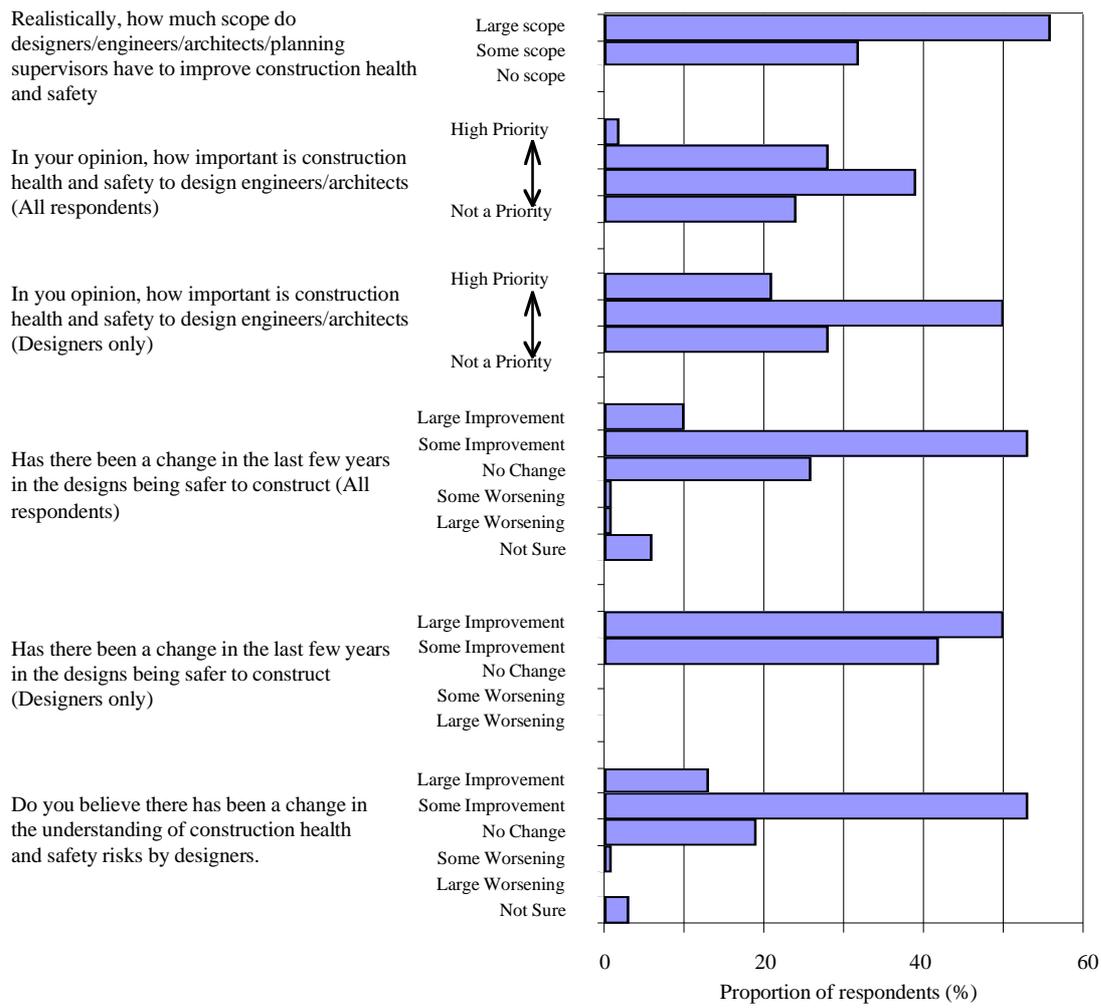


Figure 3.5
Perceptions of issues resulting from a transient workforce

Client

One of the strongest areas of agreement is the importance of the Client in setting health and safety standards for a project. Interviewees agree that clients take a wide variety of approaches to health and safety. It was commented that some clients working in highly regulated areas such as the chemical industry or the prison service set high standards and expect these to be matched by other companies in the construction chain. The perception of health and safety standards then falls through the civil engineering sector to the house building sector, with Local Authorities named frequently as a poor client due to inadequate provision of resources and setting unrealistic timescales. The perception is that most clients see health and safety as an additional cost and not their concern, believing that contractors use it as an ‘excuse’ to raise the value of a tender. Clients are thought to have poor understanding of time and cost resource issues. Novice clients are thought particularly to be unaware of their health and safety duties. Office refurbishment is reported to be a problem area as the client often has low awareness and the timescales are very short.

The perception of whether clients are showing some improvement in their understanding of health and safety risks varies widely, but the majority sense some improvement. The industry perception is that

most clients still don't appreciate their responsibilities, and consider they try to delegate them through the appointment of a Planning Supervisor, or Client Agent.

Designer

All interviewees agree that designers have considerable scope for bringing about improvements in construction health and safety.

Interviewees, including designers, agree that most designers do not give health and safety a high enough priority, and there has been little improvement recently in producing designs that are safer to construct. It is perceived that designers give a higher priority to the image of a building than its buildability. The lack of importance they give to health and safety is perceived to have been reinforced by their professional association, RIBA, not supporting CDM during its development and implementation. In addition, it is felt the training of architects and designers does not give priority to health and safety. It is reported that efforts have been made to change this with limited success.

An architect commented that it is difficult to assess a risk which he has not experienced, and there is a lack of information on the identification of hazards and quantification of risks. In addition, designers are lacking in knowledge about issues that arise over the lifetime of a building. This may be aggravated by the little time architects spend on site. One architect firm was in the process of producing standard risk assessment forms for the various stages of the construction activity which could be made project specific whilst at the same time providing information and learning.

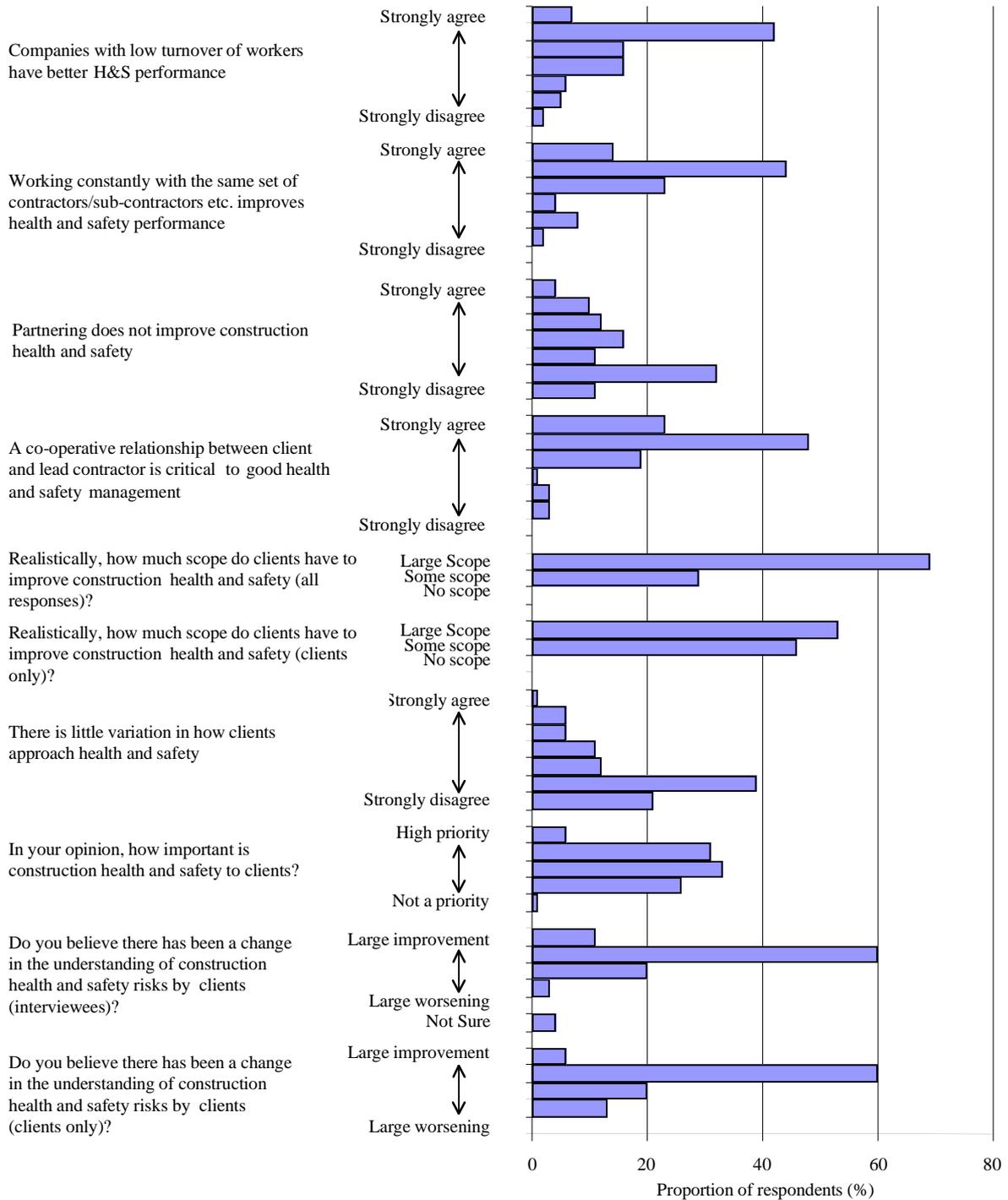


Figure 3.6
Perception of the role of Designers in the construction process

Principal Contractor

The size of the organisation and experience of a Principal Contractor is perceived to have a big influence on safety standards. The questionnaire reveals a lack of agreement about the importance of the timing of the appointment of the principal contractor.

Site Management

Interviewees agree that site management has considerable scope to for improving health and safety. However interviewees consider site management to have already shown the biggest improvement in the understanding of health and safety risks out of all the roles asked about. As a reflection of their key role, interviewees stressed the importance of continuity for site management.

Sub contractor

Interviewees think the construction industry requires a flexible workforce due to fluctuations in demand, large variety of work activities etc. In the past this has been achieved though the use of short term contract labour. This lack of continuity has led to problems including poor communications, accidents caused by lack of familiarity with the site, lack of incentive to invest in training and equipment. Often the workforce on a site consists of several layers of sub contractors and with each successive layer the responsibility for the project is diluted.

Planning Supervisor

There are mixed views as to whether Planning Supervisors improve health and safety, with a large percentage being unsure. In the interviews Planning Supervisors are criticised. Some interviewees see the Planning Supervisor role as being detrimental to the aim of making health and safety an integral part of the project rather than an add on.

Interviewees interpret the role of Planning Supervisor as being 'responsible' for health and safety although Planning Supervisors have no authority on a construction site once work has started. One designer commented on how the Planning Supervisor can become isolated, but that it is important that he should be considered as part of the design team and involved in decision making.

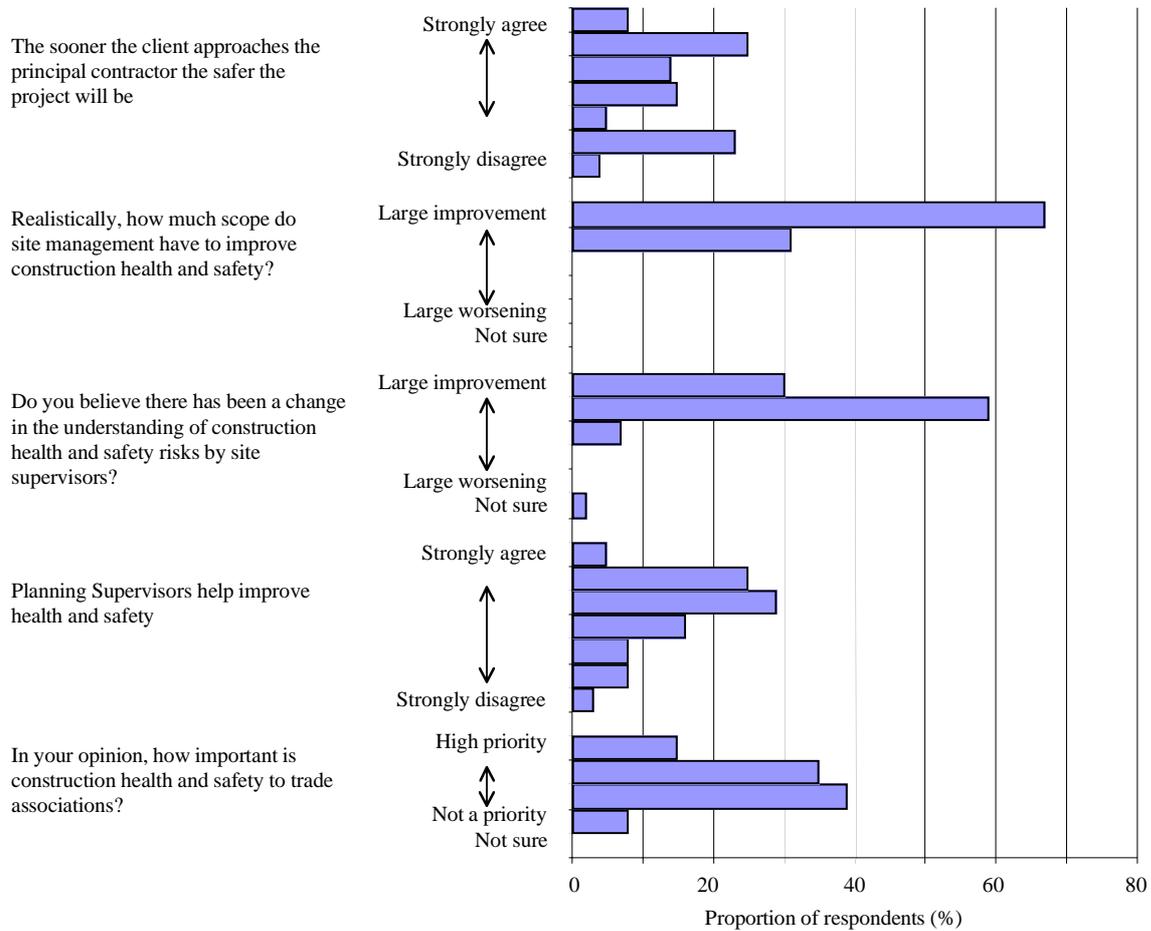


Figure 3.7
Perception of the importance of Principal Contractors, Site Management, Planning Supervisors and Other Groups

Other Groups

The interviews indicate that trade associations and professional institutions give health and safety a high priority but have only a limited influence for making improvements in health and safety standards.

Conclusion: The construction industry is complex covering a large number of players. CDM has had a positive role in helping to define the responsibilities of the different roles, however some organisational issues are still outstanding. The interaction between these is often divisive rather than supportive.

3.2.4 Hypothesis IV

Hypothesis: Health and safety improvements are not being implemented effectively due to operational obstacles

Planning

Interviewees report the CDM regulations have brought about improvements in planning through making the Health and Safety Plan a legal requirement. Interviewees agreed that improvement in planning before starting construction could bring big benefits to construction health and safety. However, certain issues were raised.

It is reported that Clients often give insufficient consideration to the disruption caused by changes to specification. Following the award of a contract some Clients expect site work to start within a very short time. This is particularly the case for refurbishment projects. This period is vital to ensure arrangements including welfare facilities are in place, and a lack of time here is a key problem in construction projects. A piece of related legislation is the Asbestos at Work Regulations which include a requirement to wait 28 days following notification before starting asbestos removal. This additional time allows for the plans to be developed fully and is reported to have brought about considerable improvement in the planning of projects where asbestos is involved.

The interviewees are united in considering that it is possible to see and remove health and safety problems during the design and planning stages (before site work). However, interviewees gave several examples which imply that even with a Health and Safety Plan, there are problems with scheduling whilst the work is being carried out. For example, several interviewees report that the Design Risk Assessment often takes place when the design is nearly complete and is unlikely to be changed. According to an architect this is bad practice but common. In addition, instances were quoted when the appointment of the Planning Supervisor is made at a late stage in the project and is therefore unable to provide adequate input into the design phase..

Procurement Strategy

The selection of a contractor is often done through competitive tendering where timescale and/or price are reported to be the most important factors. It is reported this can cause the contractor to underestimate the resources required and may lead to corners being cut during projects. Due to penalty clauses site management may be inclined not to confront these infringements, so the work gets finished.

There is uncertainty as to whether projects with severe budget pressures are unsafe, whereas there is a little more agreement that schedule pressures can cause health and safety to be overlooked. However, it is felt that even with tight budgets and timescales good management provide control and ensure a project remains safe. Interviewees strongly agree that it is rushing and taking short cuts which cause most accidents. The majority of clients agree a little that projects with severe budget pressures are unsafe.

The majority of clients agree a little that projects with severe budget-pressures will be unsafe. There may be a health and safety aspect to the tendering process, but it is generally not given a high weighting. Frequently there is no separate identification of health and safety by the clients and this reduces the business case for health and safety in the eyes of the contractor and senior management. There is disagreement as to whether the specification provided by clients is an area where improvements could increase the accuracy of the tender and the planning process.

Measures used to define competence of contractors are reactive, including a focus on accident statistics or regulator enforcement, rather than proactive measures. Supplier approval questionnaires have become common in recent years. These can be complex. For example, it was quoted that there are 23 local authorities in London, and each has a different supplier selection criteria. For a contractor to work in several local authorities he is required to make different applications, which is time consuming and inefficient.

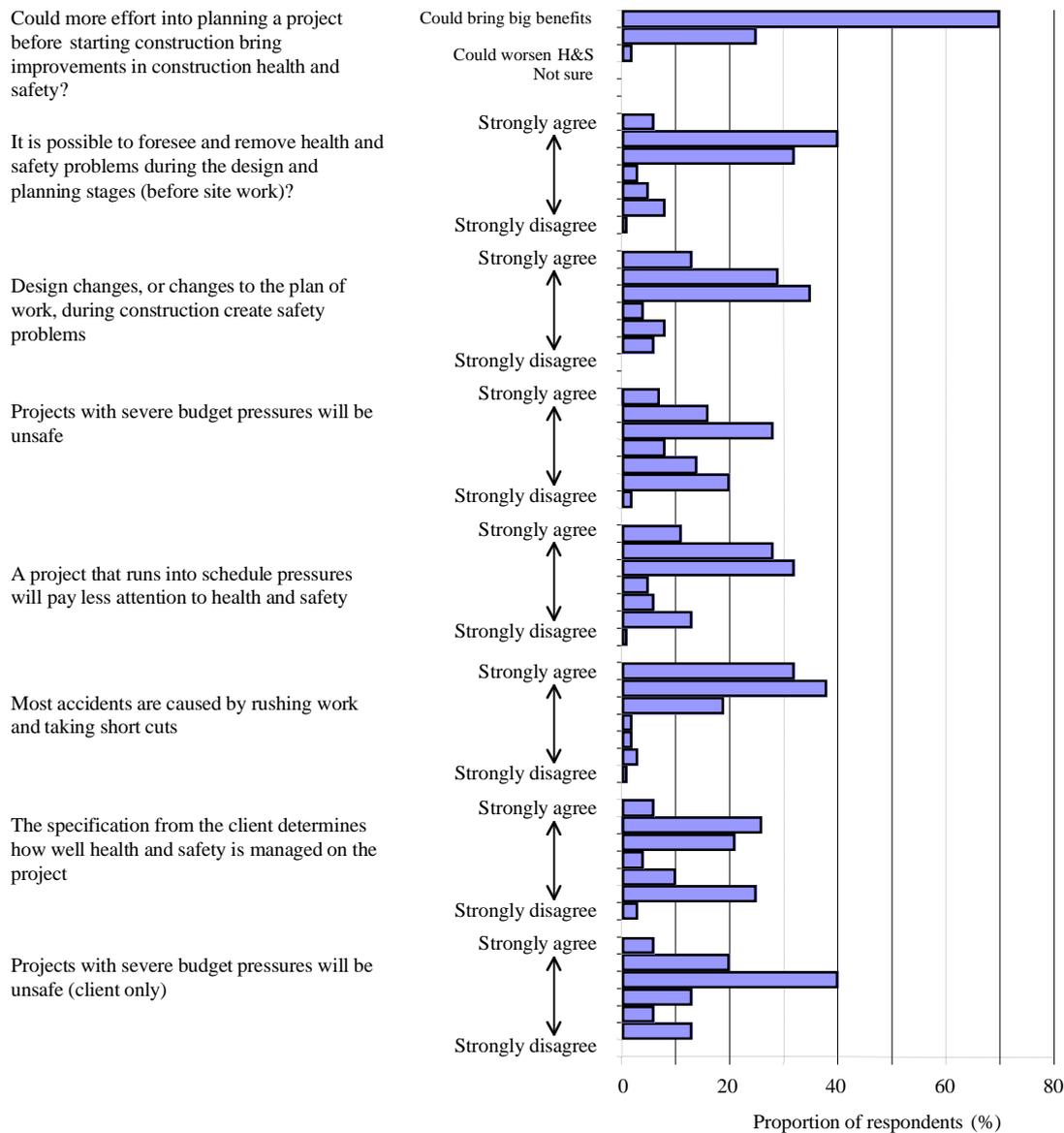


Figure 3.8
Perceptions relating to Planning and Procurement Strategy

Similarly, some clients operate passport schemes where individual contractors receive both general and specific site information and are assessed before being allowed to work on the site. This can lead to one contractor having several passports and a duplication of work.

Resource implications

It is reported that the drive to reduce timescales and costs can place considerable pressure on resources. Time pressures can lead to working excessive hours which may cause health issues, including stress. Night time working is common in projects with time constraints and it is reported that this may be combined with reduced levels of supervision and number of competent personnel on site. Timescales are getting shorter, with many jobs now being ‘fast tracked’ such that all contractors are on site at the same time, as opposed to traditionally completing civils work first and following this by M&E. Resource pressures can also lead to the sequencing of events as defined in the original plan

being altered, and this movement to a 'flexible' approach with inadequate planning and risk assessment, can lead to accidents.

Cost pressures have led to design and build contracts becoming popular, and interviewees consider that health and safety is less likely to be a priority in this type of project. Cost pressures can also lead to poor provision of services such as welfare facilities and low quality PPE, which tends to be uncomfortable. Generally poor wages are paid across the industry and overtime is a standard feature in order to supplement income. There is disagreement as to whether workers can earn more if they ignore Health and Safety rules.

There is disagreement amongst the interviewees as to whether to keep competitive, companies can't afford to invest in Health and Safety training. Due to the transient nature of the sector, companies are reluctant to spend money on training people when they are likely to take the skills to a competitor and there is the additional problem that the time required for training can be expensive when there are time penalties on a job. This is another example of short termism in the industry.

In general the interviewees believe that spending money on managing construction Health and Safety saves money in the long run. This conflicts with the messages above and may be viewed as the ideal situation which is seen in theory rather than in practice.

Lack of defining goals, monitoring performance and benchmarking

Many interviewees say there is little guidance to explain what is considered 'suitable and sufficient' and to enable them to know what is the industry standard. Trade associations are providing some advice in this area, but this is often inconsistent across different industries or geographical areas. There is no obvious company which can be seen as having 'best practice' systems in place which could be duplicated elsewhere. In addition, when evaluating its performance, there is little information against which a company can benchmark its activities.

In general, smaller companies prefer prescriptive regulations as they provide a better guide, whilst larger companies prefer the risk based approach as it enables them to focus on issues important to them. In large companies there can be a degree of internal cross comparison.

Approximately half the interviewees are aware of the Egan initiative and two thirds the Latham report. However, most interviewees are unable to comment on whether these have brought improvement.

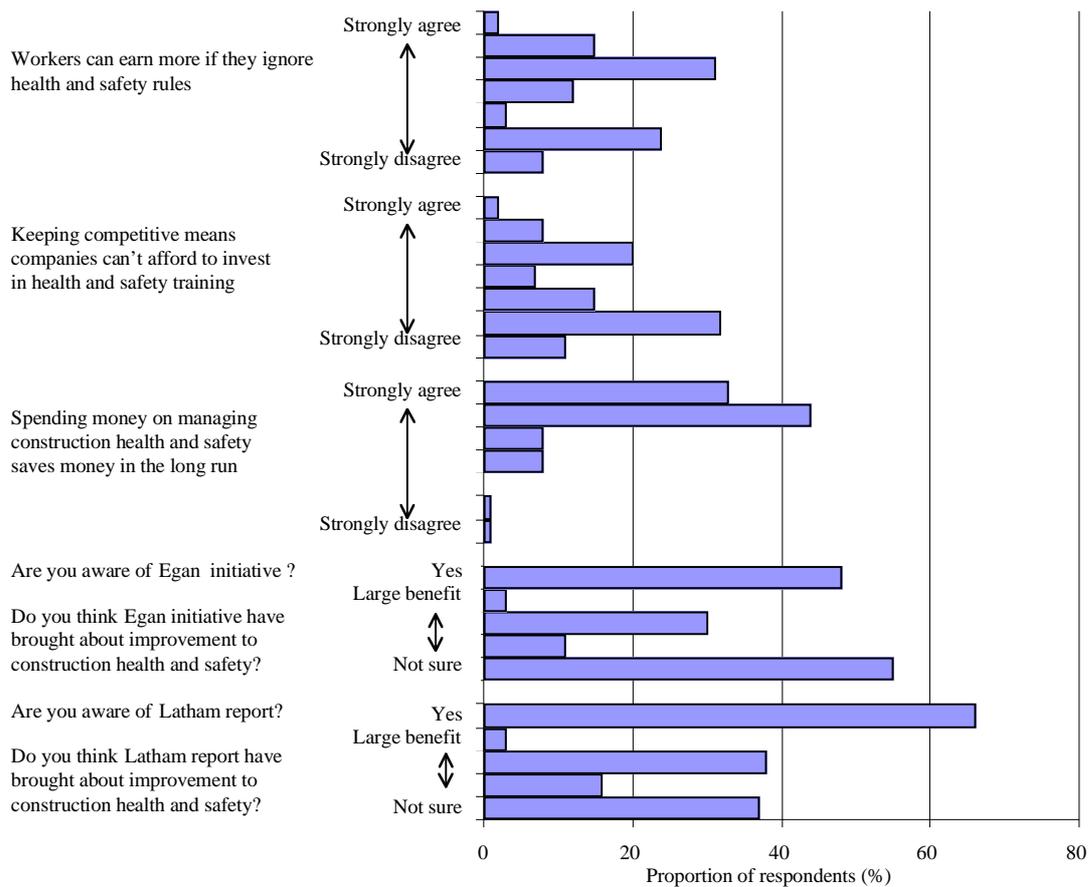


Figure 3.9
Perception of operational obstacles

Conclusion: Although there have been improvements in areas such as planning, there are still considerable operational obstacles which cause poor health and safety performance, most notably a lack of resources.

3.2.5 Hypothesis V

Hypothesis: Health and safety improvements are not being implemented effectively due to insufficient health and safety knowledge and skills.

Training

The interviewees agree in considering that the attitudes of workers to health and safety is influenced by their training, qualifications and experience. The perception is that the requirement for an experienced management team is slightly more important than that for an experienced workforce, although interviewees agree that both are important. The majority consider that managers know more about health and safety than workers, but there is some disagreement in this.

Few interviewees report refresher training to be common.

Organisational learning

The short term approach taken by companies within the construction industry mean that few projects include a review phase where learning takes place. It is reported that many companies seem to treat each job as a totally new activity rather than benefiting from prior experience.

Workforce

The interviewees have mixed views as to whether the qualifications for building trades cover health and safety sufficiently, with the majority considering that they do not. Hour long inductions at larger sites are common, but the message is often limited to basic site rules such as the wearing of PPE. A labourer may receive a similar talk at several sites but never develop an understanding of health and safety which goes beyond this. A recognised qualification which states that the labourer understands health and safety requirements is recommended by the interviewees. Health and safety in trade courses is variable. Some, such as CORGI fitters and scaffolders, are well recognised qualifications. Certain schemes have been introduced, such as the Construction Skills Certification Scheme (CSCS), which covers about 30 trades, however, this is not yet well recognised. CSCS includes a day of health and safety training, but there is no assessment.

It is considered that courses should include a practical content, with the NVQ approach being very popular. Apprenticeships are considered to meet this need well, and it is thought that their decline will cause problems.

The workforce is perceived to give health and safety the lowest priority out of all the groups considered and employee wishes do not have a big influence over health and safety. However, trade unions are considered to be the group which places the highest priority on health and safety, and have an average level of influence (see Figure 3.3 and

).

Planning Supervisor

Interviewees feel Planning Supervisors need skills in both design and health and safety, but interviewees feel many lack them. Interviewees are of the opinion there is no Professional qualification for Planning Supervisor.

Designer

Most interviewees, including designers, agree or strongly agree that professional qualifications for engineers/ designers/ architects do not prepare them to deal with health and safety issues. Designers comment that it is difficult to provide an accurate assessment of risks for which they have no experience and they would like to have more information such as an accident database showing relative risks for different trades & work activities.

There are two distinct divisions within the design sector: civil and mechanical & electrical (M&E). Health and Safety standards are considered to be higher in the M&E area.

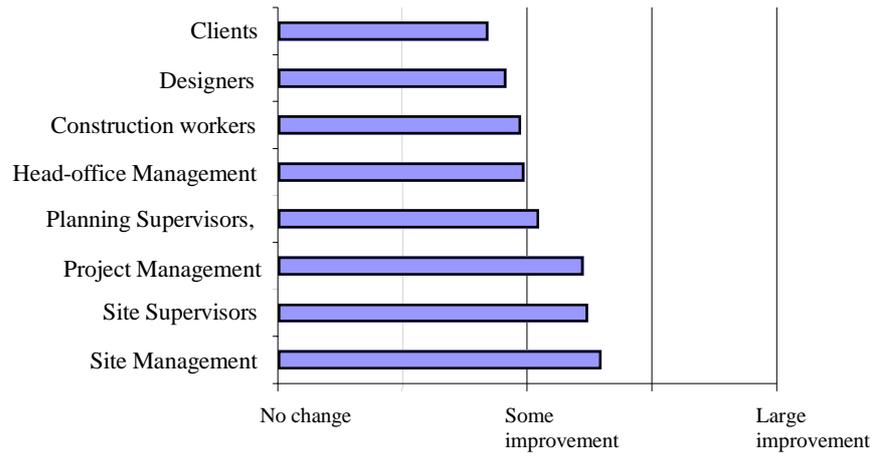


Figure 3.10
Extent of change in the understanding of health and safety risks

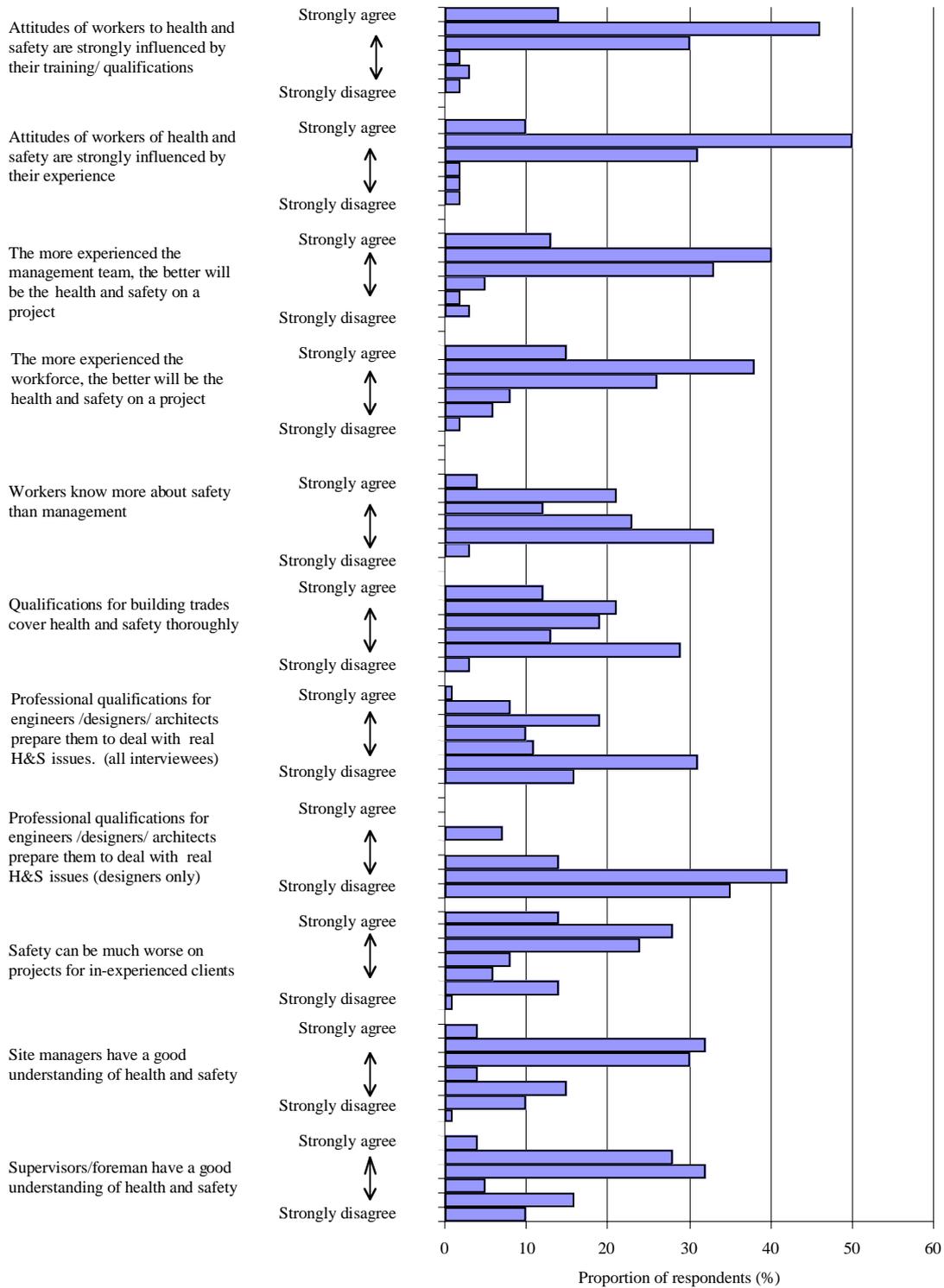


Figure 3.11
Perceptions regarding training issues

Client

The Client has a leading role in influencing the standard of health and safety on a project. The level of awareness of Clients varies greatly, with the majority having no appreciation of regulations. The majority of interviewees strongly agree or agree a little that safety can be much worse on projects for inexperienced clients and inexperienced clients often do not realise how much they can influence health and safety on projects. The market for one-off inexperienced clients is reported to be growing.

HSE inspectors

The current level of credibility of HSE inspectors is reported to be relatively low with few inspectors, few prosecutions and conflicting advice. It is considered inspectors should have both practical and commercial experience to enable them to make informed and balanced decisions.

Site Management

Interviewees are mostly in agreement that site management, supervisors and foreman are considered to have a good understanding of health and safety.

Conclusion: Considerable short falls in the knowledge held by certain groups, most notably the client, designer and worker, and this gap is not currently being met through training provision. In contrast, it is perceived that site managers and supervisors are perceived to have a better level of understanding of health and safety but can improve. The extent of refresher training to consolidate understanding is poor.

3.2.6 Hypothesis VI

Hypothesis: Standard safety technology (management procedures, equipment, safe working procedures etc.) does not meet the special needs of the construction sector, such as temporary work sites, temporary staff, changeable physical work environment, etc.

The majority of interviewees consider that the health and safety problems inherent in construction activities such as the constantly changing site, the variety of project types and the number of high risk activities such as working at height are not the main reasons for failure to improve health and safety performance. Human error is cited as the main cause of accidents. There is disagreement as to whether health and safety methods tried in other industries could be used successfully in construction.

Equipment

The provision of PPE has increased substantially over recent years and is now seen as standard. The principal areas for concern are power tools, construction plant and vehicles and live electric cables. The standard of equipment and procedures used is strongly linked to the sector in which the work takes place, with the process industry considered to require the highest standards.

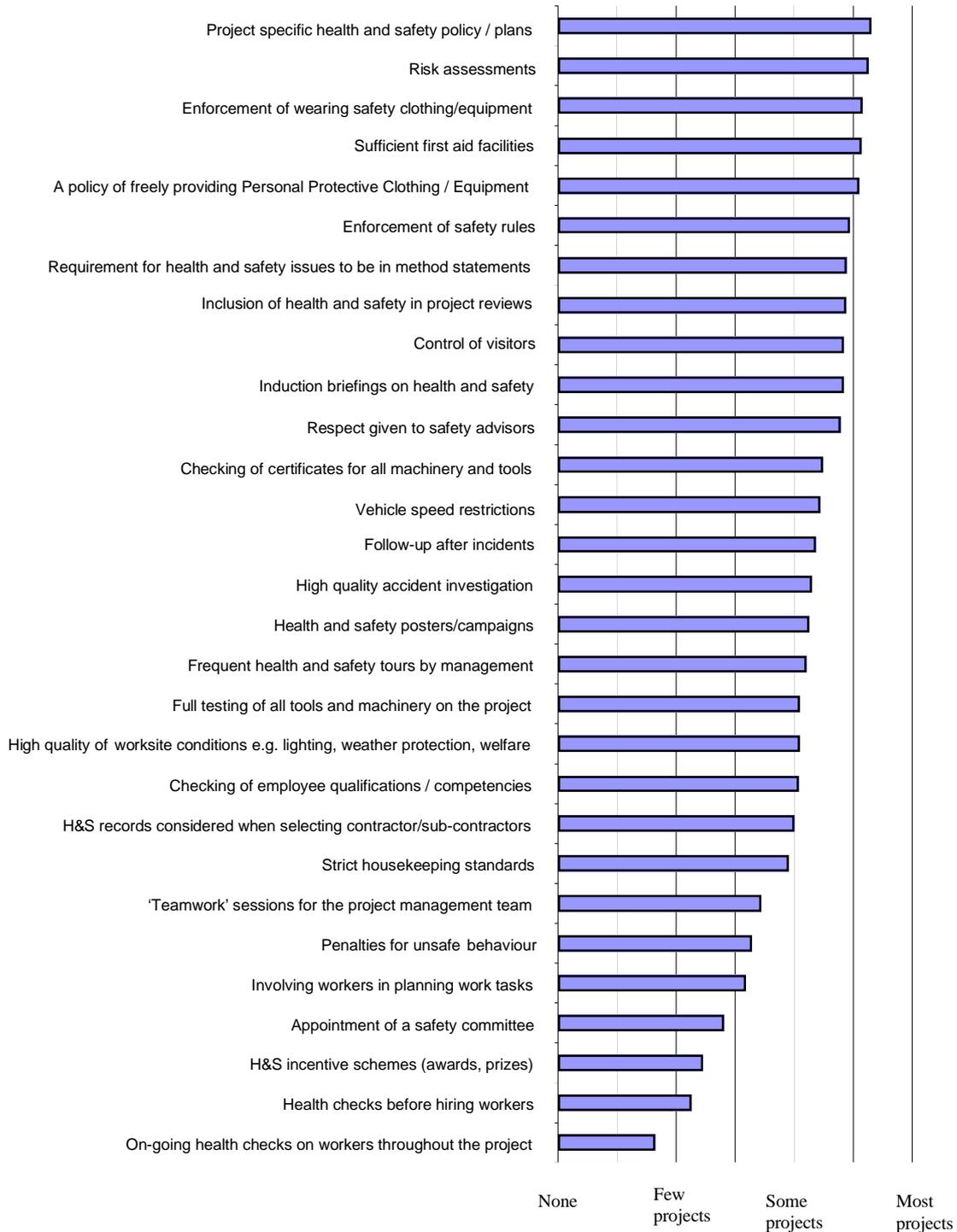


Figure 3.12
The perceived prevalence of health and safety controls on projects

Guidance

Nearly all interviewees agree there is plenty of good guidance available on how to manage both health and safety issues, with the emphasis being on the safety side. Although the information is available

there are mixed views as to whether it is followed. There is a mixed response to the guidance, with larger companies considering it to be very useful, whereas smaller companies do not read the information available, usually through time pressures.

New materials and techniques are being introduced to the construction industry. Some of these materials, such as asbestos, are now acknowledged to be hazardous and the industry is supposed to take due care. There is some uncertainty surrounding what will be the long term health hazards associated with new materials and work practices. Areas where there is perceived to be a lack of information, include the ageing workforce, effects of manual handling activities such as joint deterioration, circulatory issues facing plasterers, man made mineral fibres, and the isocyanate laminate used between metal roofing sheets. It is reported the research and development of materials with fewer adverse health risks often comes from outside the industry, including the use of water based rather than solvent paints. There is a large reliance on material suppliers from outside the construction industry to provide these improvements.

Procedures

It is reported that the introduction of CDM has led to an increase in the number of procedures and risk assessments related to construction work and they are now common on most projects. However, whilst many companies have this documentation, often their content is not communicated to and understood by the majority of site personnel. The existence of standard documentation has led to an increase in the quantity of paperwork, but may not provide the necessary focus on specific risks for that project. Interviewees were divided on whether method statements included sufficient information on how to carry out a job properly. The quality of health and safety rules is considered to have improved, although the level of their enforcement has changed little. The level of enforcement principally depends on the attitude of site management.

Many of the organisations surveyed have registration to formal systems such as ISO 9001 for quality management and ISO 14001 for environmental management. However, several companies and professional associations are against formal and externally verified accreditation for health and safety systems as it is thought that this adds bureaucracy and expense without necessarily bringing improvement to the safety on sites. An argument put forward is that construction site is continuously changing, and the position at the time of an assessment only represents a snap shot.

Welfare

Construction sites are reported to often have a poor standard of welfare facilities. This may be sustaining a culture where an acceptance of low standards is seen as the norm. This leads to poor treatment of the facilities such that standards reduce still further. One interviewee mentioned an experiment where a construction site installed superior welfare facilities for a short period and claims the standard of housekeeping on the site noticeably improved. If water and power supplies are not in place, the time required to obtain permits to provide these is relatively long and can upset the lead time into a project. It is reported in this case workers are sometimes asked to use off site facilities.

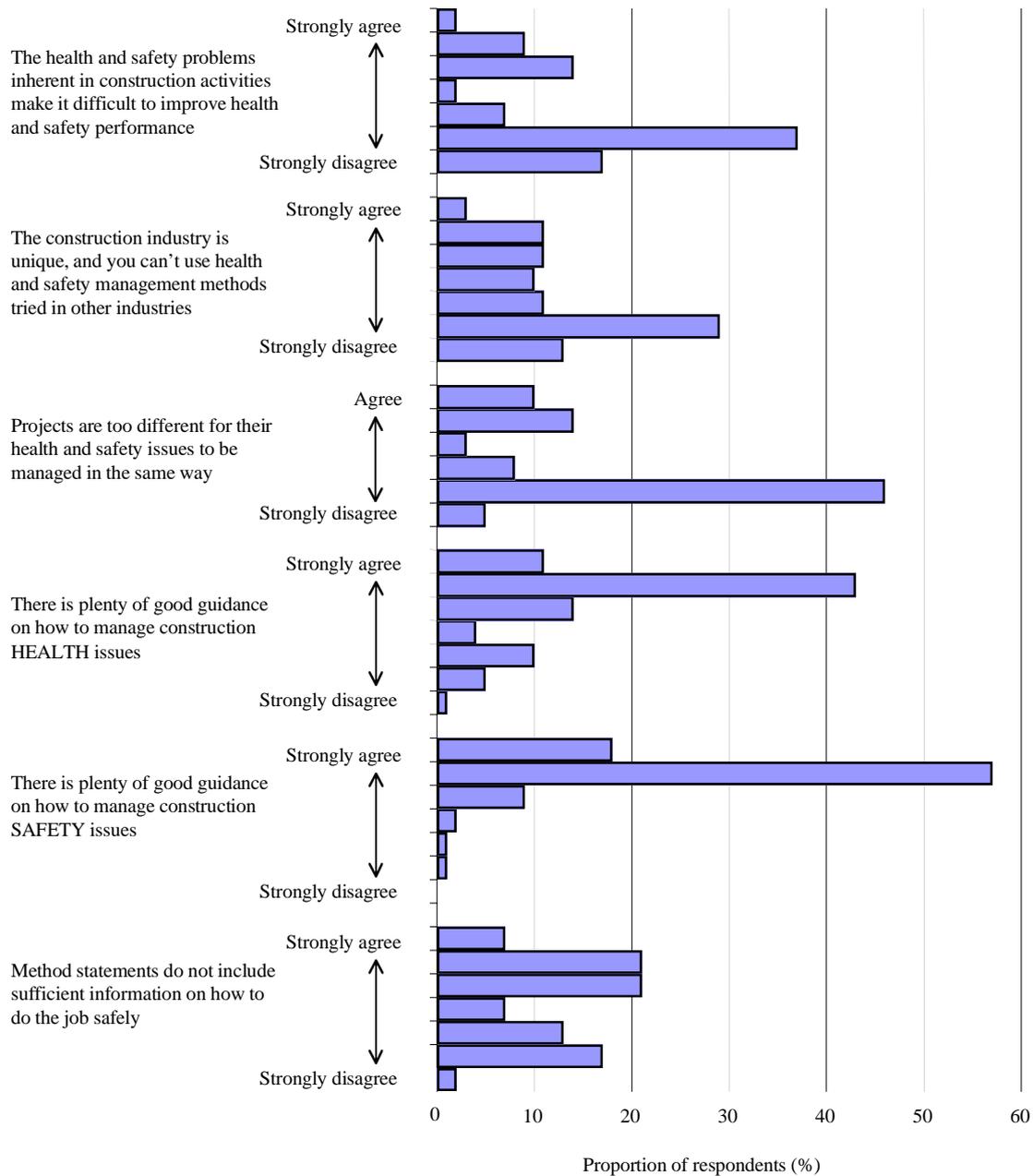


Figure 3.13
Perceptions as to whether standard safety technology meets construction industry needs

Conclusion: Although the construction industry does have certain unique characteristics, these should not be used as an excuse for poor health and safety performance. Procedural controls and other documentation has improved considerably with the introduction of CDM and good guidance is available, the major issues now surround implementation on site.

3.2.7 Hypothesis VII

Hypothesis: Insufficient focus on the “soft” aspects of safety such as safety culture.

Several interviewees describe the construction industry as an ancient industry with many of the poor health and safety practices arising because of reluctance to change. The culture of the construction sector is self-perpetuating and only challenged by outsiders. The prevailing culture is reported to vary widely according to the industry sector, with the process industry being more proactive. Poor health and safety standards are considered to be standard and tolerated.

Communication

Construction sites appear to have a ‘command mentality’ in which the workforce follow orders from site supervisors. The use of transient contract labour may result in poor communication and this is particularly an issue with the large number of immigrant workers in the South East, who may speak little English. All interviewees consider that communications improve with a core stable workforce. The number of briefings given to workers has increased over recent years and toolbox talks are now relatively standard in the industry. The importance given to these, reflected by the frequency, duration and number of attendees, depends largely on the client organisation.

Workforce Involvement

The level of workforce involvement is reported to be low and with little change to the degree of worker consultation about site practice in recent years. As many accidents are thought to be caused by human error, the development of an effective safety culture is being perceived as having increased importance. Several campaigns have been effective in promoting workforce involvement, such as the ‘working well together’ campaign. Two thirds of the interviewees are aware of this initiative and most respondents think it has either brought about some benefits, or were not sure of the effects.

Financial Incentives

The majority of interviewees agree health and safety performance is beneficial for commercial success. However, the poor health and safety performance of the industry implies that further evidence of the business benefits of good safety performance is needed. Currently the client only sees the cost of a project, and hence accepts the cheapest quotation. They rarely understand the value of a project, and the benefits which issues including improved health and safety management can bring in the medium and long term. Research has been conducted concerning the environmental costs associated with a building over its lifetime, but there is perceived to be little understanding of health and safety measures. Several initiatives including The Movement for Innovation (M⁴I) and The Construction Best Practice Programme are putting out the message that improved management can bring cost savings.

One example of a link which is not made at present is that insurance premiums bear little relation to safety management and performance. Insurance companies as well as other interviewees report that premiums tend to be based on knowledge of risks within the industry in general. This is not the case for large projects which are often covered by a specific project policy. It may be the case that poor accident performance leads to an increase in premiums, but it is reported that good performance does not lead to a reduction. Interviewees feel insurance premiums could be a financial incentive to increase the focus on health and safety. Insurance requirements are considered to have a large influence over health and safety.

The government’s “Good Health is Good Business” campaign aims to improve an understanding of the link between health and safety and commercial performance. Two thirds of the interviewees are aware of the campaign and the majority think it has either brought about some benefits or are not sure of its influence.

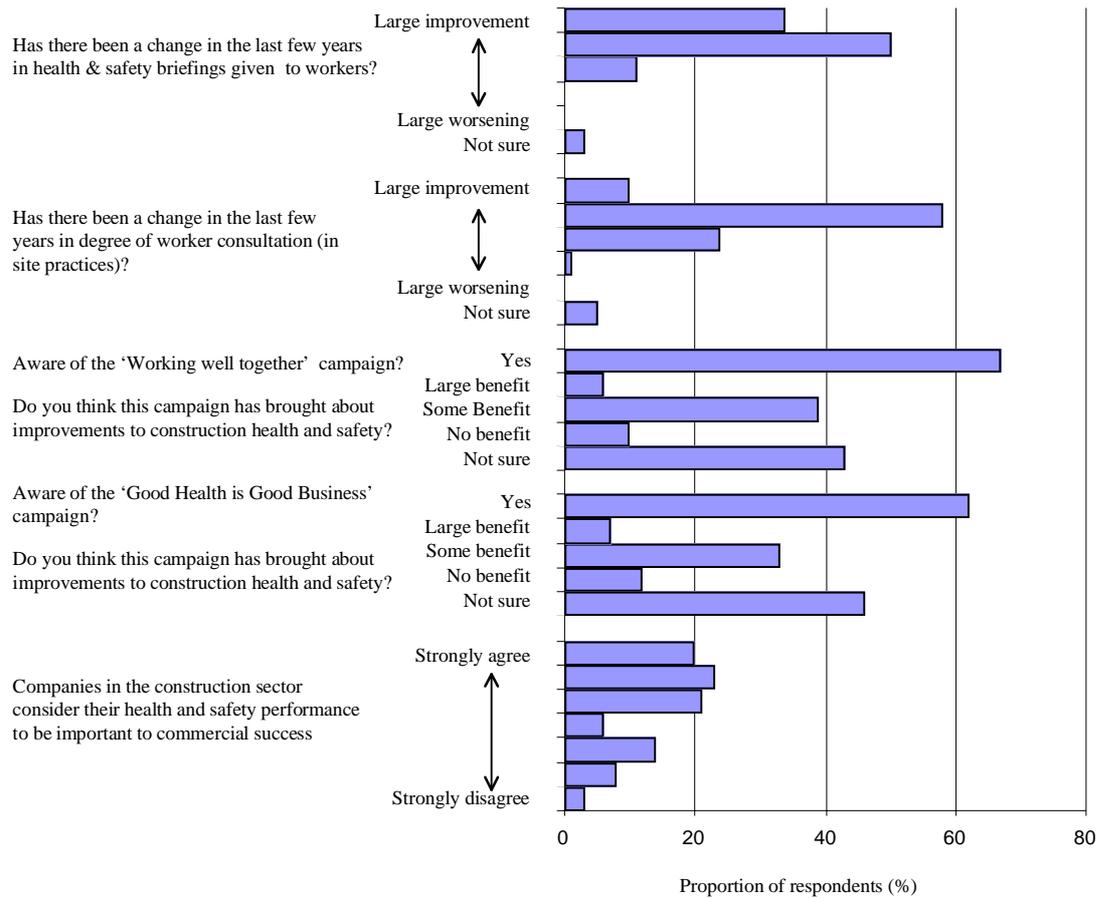


Figure 3.14
Perceptions regarding communication, workforce involvement and financial incentives of health and safety culture

External Pressures

Stakeholder pressure is often seen as a driving force for improvement to health and safety. The relative influences are shown in Figure 3.15. The external factor perceived to have the biggest influence is legal requirements. This conflicts with comments made by a large number of interviewees about companies thinking that they can disregard regulations without consequence due to the low number of HSE inspections.

Opinions about whether high profile projects are always well managed vary widely and many instances of problems on this type of project were quoted. Interestingly, reputation risk is considered to be important for prestigious projects, but it is thought that the priority is given to environmental issues rather than health and safety. The environment has been made a key issue through substantial pressure from lobby groups. Financial comparisons place a higher cost on life than environmental factors such as destruction of an area of forest, however, this financial element does not reflect public opinion. The importance of reputation has increased as big projects are scrutinised by the media.

Interviewees disagree at to whether companies are motivated by wanting to have a better safety record than their competitors as this will help in winning work and being considered as an employer of choice in times when there is a shortage of labour. This opinion is confirmed by interviewees considering the health and safety practices of competitors having the least influence over health and safety of the areas considered.

Owners and shareholders are perceived to have little influence over health and safety.

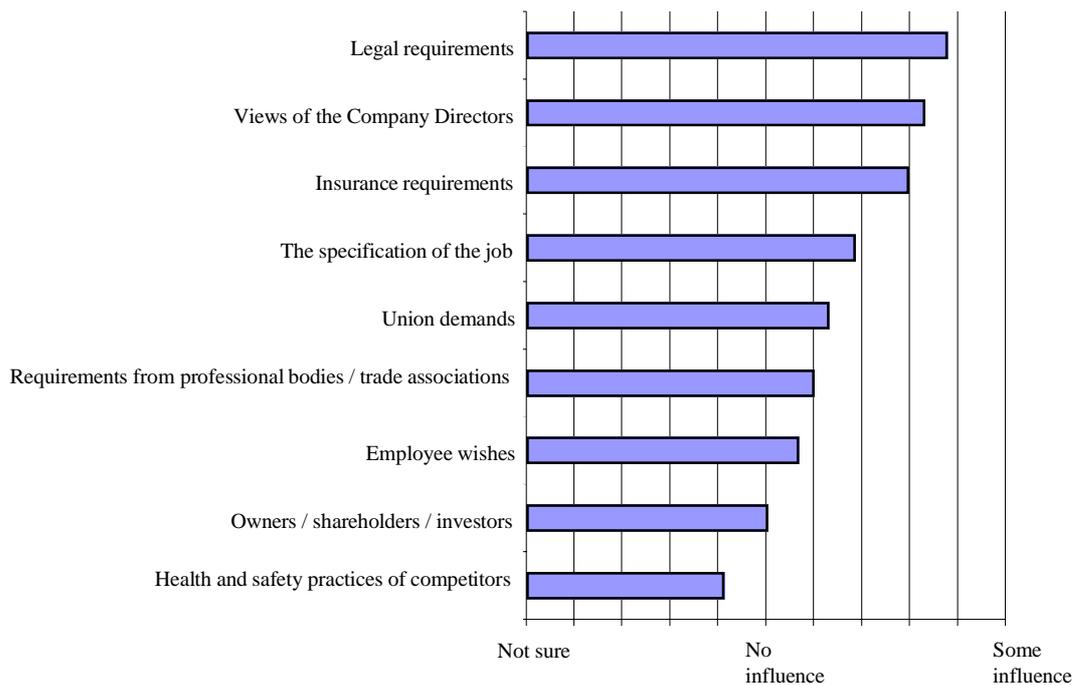


Figure 3.15

The perceived relative extent of influence which different groups have over health and safety

Senior Management Commitment and Leadership

The views of company directors are considered to be very important in influencing health and safety standards. Most interviewees feel that to bring improvements in the industry a top down type of approach is needed. Most interviewees consider that workers adapt their attitude to health and safety

on a project according to the overall attitude of site managers, and this in turn is dependent on the attitude of the senior management. In general, senior management are poor at demonstrating their commitment to health and safety and rarely visit the construction site. To improve this it is considered that health and safety should be on the agenda at all board meetings. Low levels of management commitment probably reflect the level of importance which some clients place on health and safety. The majority of interviewees feel there has been no change in the acceptance of responsibility for health and safety by management.

The interviewees do not consider there have been sufficient prosecutions under corporate manslaughter legislation for it to act as a motivator for change at director level. Small and medium companies were felt to be currently at more risk of prosecution from this legislation. The majority of interviewees perceive that if the number of prosecutions of Directors and Corporate Manslaughter charges increased then this could result in large improvements in health and safety standards as this may enforce the message that directors are responsible for the health and safety of their workforce. There is a temptation to introduce more paperwork as evidence to defend directors against prosecution.

Conclusion: the interviewees agree that an effective and proactive safety culture is essential to improve the safety record. The current position within the construction industry is there is insufficient focus on this area due mainly to the short term view commonly taken by the industry.

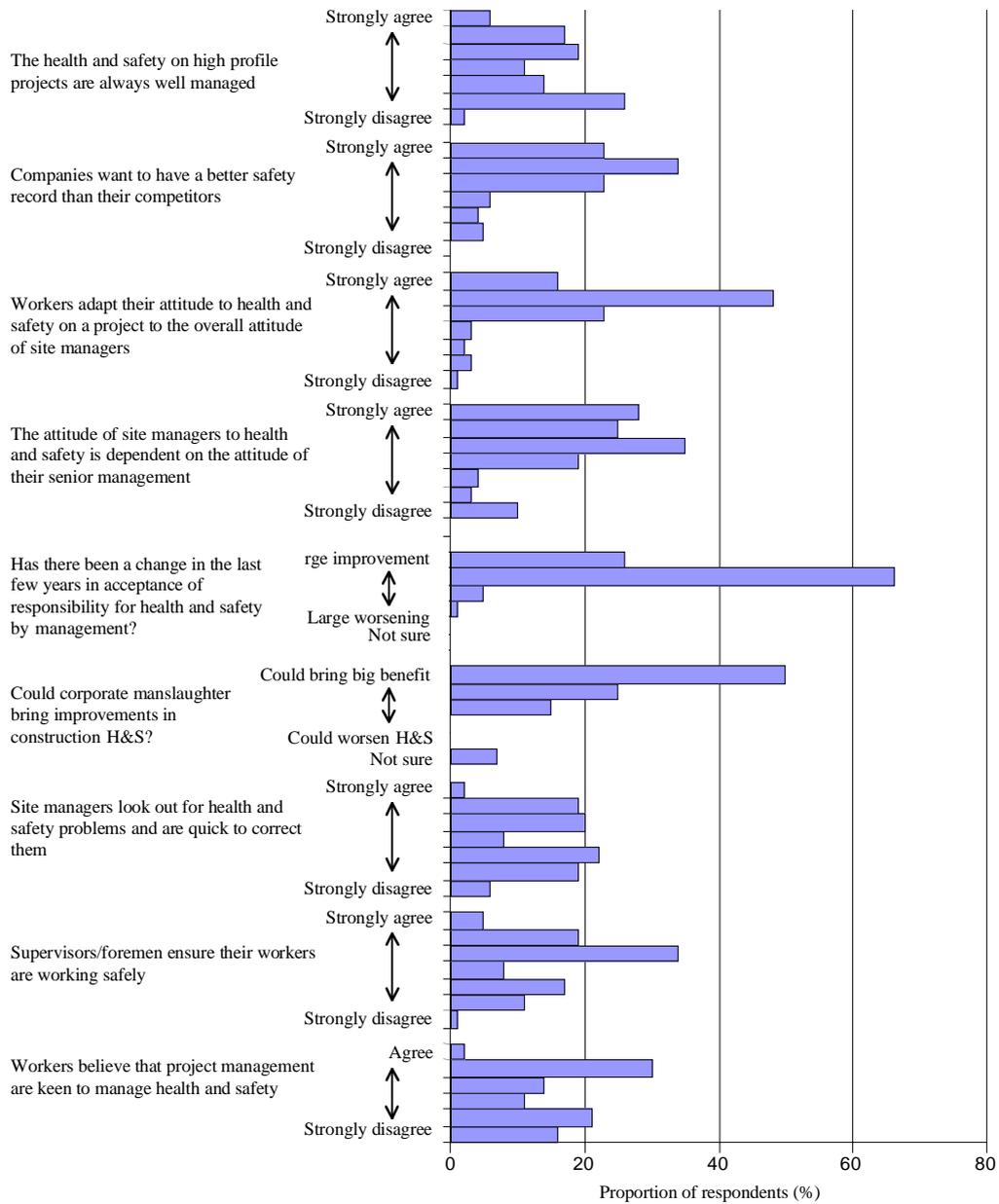


Figure 3.16
Perceptions regarding external pressures and management commitment and leadership.

3.2.8 Hypothesis VIII

Hypothesis: Attention is focused on the more obvious safety hazards, with less concern for health hazards, such as dust.

Attitudes to health from Labourers & Employers

All interviewees comment that safety issues are easier to identify as the consequences are usually immediate and so are given priority over health issues on construction sites. The interviewees are divided in their perception as to whether the construction industry cares about the long term health of its employees. It is thought that in other industries the threat of civil claims is increasing the attention employees give to health issues. In the construction industry, the transient nature of the labour force makes it difficult to link a health effect to a particular employer and hence the employer shows less concern over the possibility of prosecution. Inspectors are also thought to focus more on safety and welfare issues than health issues.

Workers are thought to lack awareness about health effects and believe health problems will never effect them. The potential to earn money now is viewed as more important than possible health problems in the future and this may lead to taking health risks. Construction workers are thought to be too tolerant of becoming ill, for example, dermatitis is considered as just an effect of handling a particular material. In addition, as they may not get paid if away from work due to illness, the workforce tend to ignore early signs of adverse health effects. Another example of when poor conditions are accepted as standard is the lack of demand for task lighting. Age is reported to be a significant factor in peoples attitude, with the younger generation being more aware of health factors due to general advertising and lifestyle.

Health Surveillance

Interviewees agreed that health checks before hiring workers are rare and ongoing health checks on workers throughout projects are less common. It is reported to be difficult to implement health management regimes for a transient workforce, and excepting statutory inspections, it is difficult to know which tests will be effective in identifying future health problems, e.g. joint problems from manual handling.

Risk Prioritisation

Interviewees were asked to rate the factors which pose a risk to health and safety, taking into account the frequency that the event occurs and the results are shown in Figure 3.17. Manual handling of heavy loads which can lead to both health and safety problems is seen to be the most frequent. Following this, safety issues are perceived to be more frequent risks than health issues. Working at height is rated as a high risk although unsafe scaffolding or fragile roofing material leading to people falling from height were considered to be relatively infrequent, and much work has been done in these areas due to the severity of the consequences.

Health factors such as lead, asbestos, chemicals and sunshine are seen as relatively infrequent risks. Health issues resulting from noise and dust are given relatively high priority, (which could be due to recent publicity) with interviewees being interested in recent civil claims by coal miners regarding emphysema from dust exposure and vibration white finger from power tools which is a recent focus of attention within HSE. A trade association noted that this project focuses on the construction phase, when risks such as fragile roofs or the presence of asbestos should be recognised and appropriately controlled. However, these factors can cause risks to health and safety throughout the lifetime of the building, and potentially the maintenance workers who are less aware of the issues are more at risk. The cleaning of sky lights is reported to be a specific job where risk assessments are frequently inadequate.

The factors which enable the construction industry to provide a flexible response to changing work loads such as night working and long shifts are not perceived to be frequently used. This indicates that

the industry considers itself to be taking a managed rather than short term reaction to time pressures in the majority of projects.

Construction work is frequently affected by adverse weather conditions. The interviewees gave these a high priority noting the effect that they can have on project timescales. Guidance on acceptable working conditions and how these can influence work rates, for example at what wind speed should working at height stop, is requested such that the client becomes more aware of these issues.

Conclusion: Currently safety is given a higher priority as it has a more visible and immediate impact. However, health issues represent considerable hazards in the construction sector and interviewees agreed that more emphasis is needed in this area.

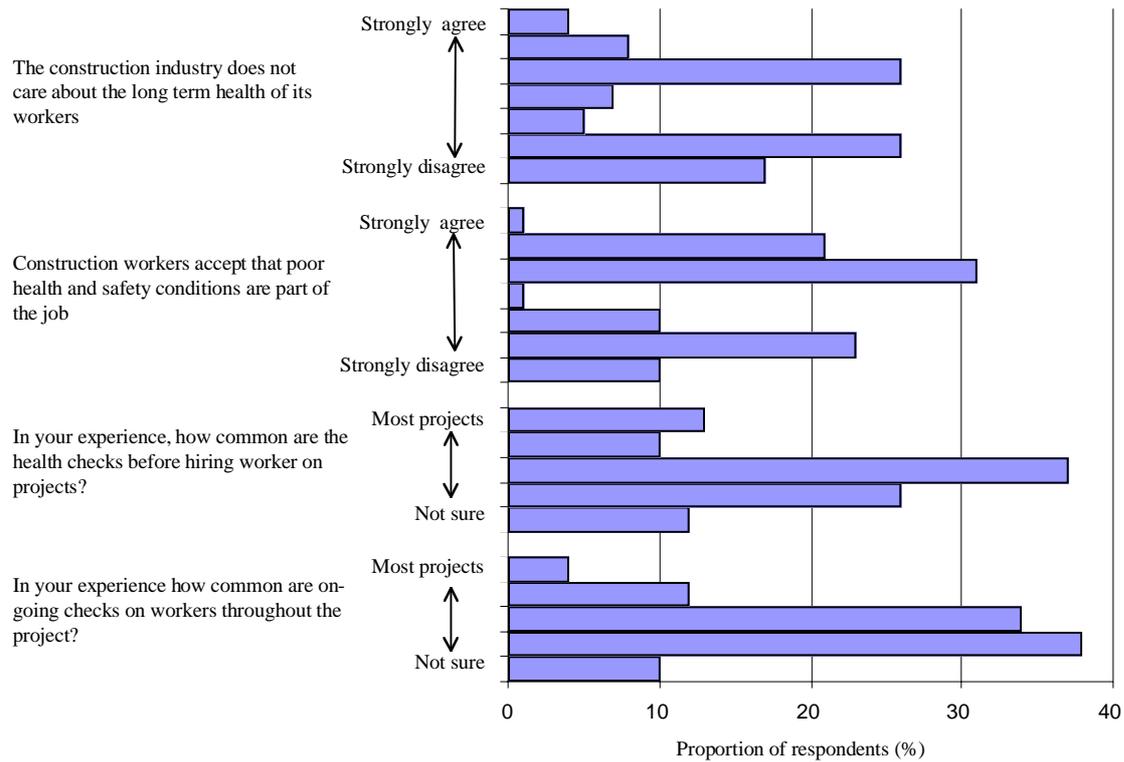


Figure 3.17
Perceptions on the importance of health issues

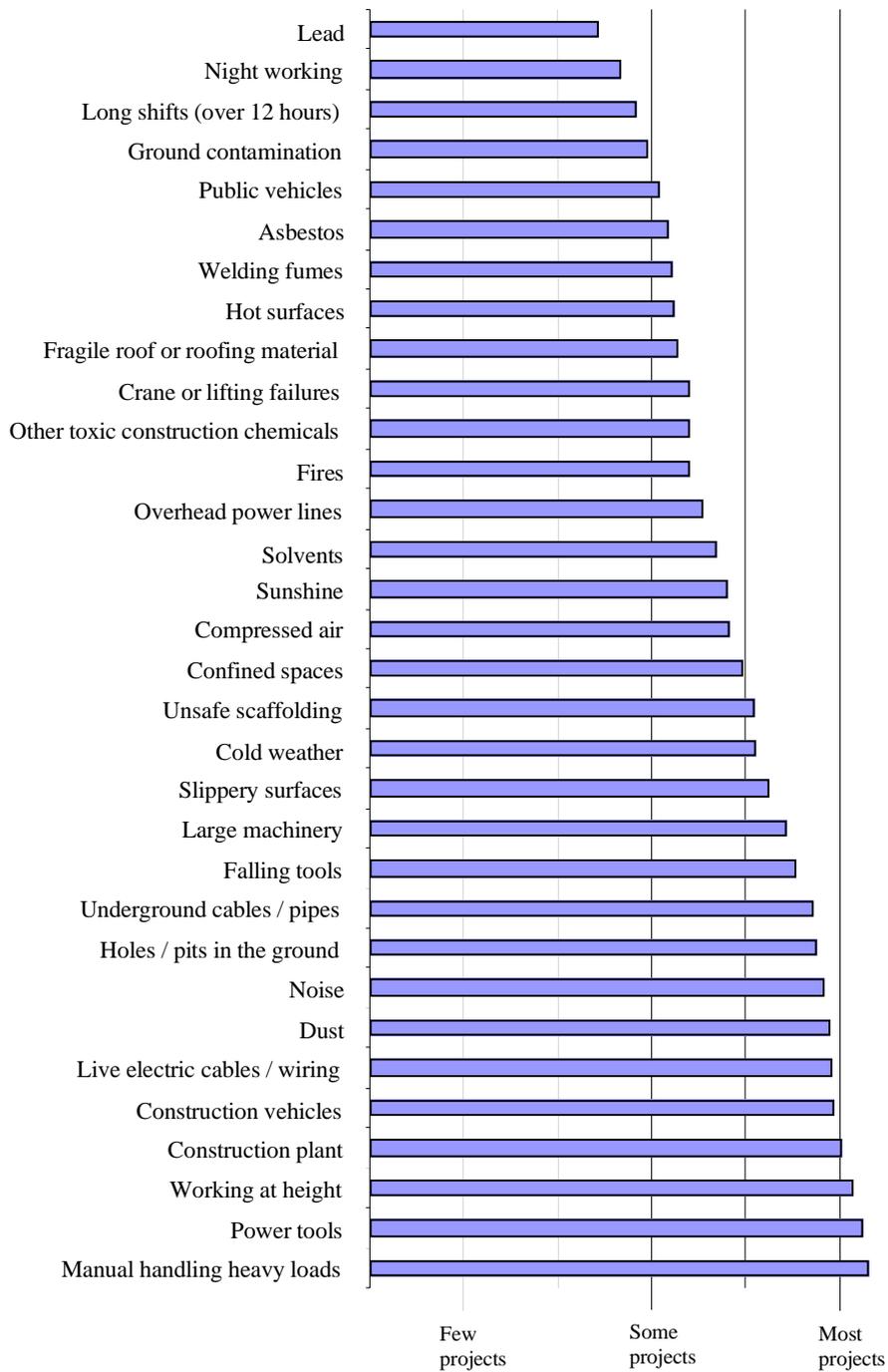


Figure 3.18
Factors posing risks to health and safety

3.2.9 Hypothesis IX

Hypothesis: Recent Health and safety regulations have not been adequately implemented and this has lead to accidents and ill health.

Most interviewees considered that changes to legislation have been the biggest driver in improving health and safety standards (see Figure 3.14) Legislation is generally considered to be adequate although more focus on specific sub-sectors would be beneficial. There is always some confusion following the introduction of regulations due to a ‘bedding in’ time and guidance often appears too late.

Complexity and understanding

The complexity of regulations causes concern with a mixed interviewee response over the ease of identifying regulations which apply to a project. The current trend to rationalisation and simplification of regulations is seen as positive. There is disagreement as to whether regulations clearly define health and safety requirements. This has been aggravated by the change from prescriptive to risk based approach, with a variety of interpretations. The construction industry falls within the scope of most regulations, and hence it is complex to understand and keep track of changes. This is particularly difficult for small companies which do not employ a specialist health and safety advisor. Industry groups provide assistance, but internal resources are needed to keep up to date which is difficult in a resource constrained industry. The introduction of several regulations, most notably CDM, has led to a considerable increase in the level of awareness of health and safety issues in the construction industry, but this has not always been followed through to bring about changes at site level.

Interviewees were asked for their comment on two specific sets of regulations CDM and the Six Pack¹. Nearly all respondents who are aware of the regulations think they have brought about either a large benefit or some benefit, with the split fairly even between these responses.

Enforcement

Many comments were made about the low number of inspections and prosecutions by HSE and hence the low probability that an organisation will be caught doing something illegal unless there is an incident to prompt inspection. A visit by an HSE inspector brings about improvements in health and safety. Enforcement policy is not perceived to be consistent across different geographical locations and this leads to confusion. In addition, fines vary widely with some large companies fined small amounts which appear negligible and interviewees consider these will do nothing to deter the recurrence of the activity, whereas small companies receiving the same fine may be put out of business. Interviewees feel that a fine equivalent to 10% of profits would act as a significant deterrent to all firms.

With a move towards self regulations, the role of the HSE inspector is changing such that he can now be approached as an advisor rather than feared as an enforcer. Some interviewees found this dual role confusing.

Conclusion: The extensive and complex nature of regulations gives rise for concern amongst interviewees and there is difficulty in interpreting some regulations. This confusion can slow their implementation and reduce their impact. In addition the current low level of enforcement visits and prosecutions is considered to be failing to provide sufficient deterrent for poor health and safety performance.

¹ The six pack set of regulations comprises The Health and Safety (Display Screen Equipment) Regulations 1992, The Management of Health and Safety at Work Regulations 1999, The Manual Handling Operations Regulations 1992, The Personal Protective Equipment at Work Regulations 1992, The Provision and Use of Work Equipment Regulations 1992, The Workplace (Health, Safety and Welfare) Regulations 1992

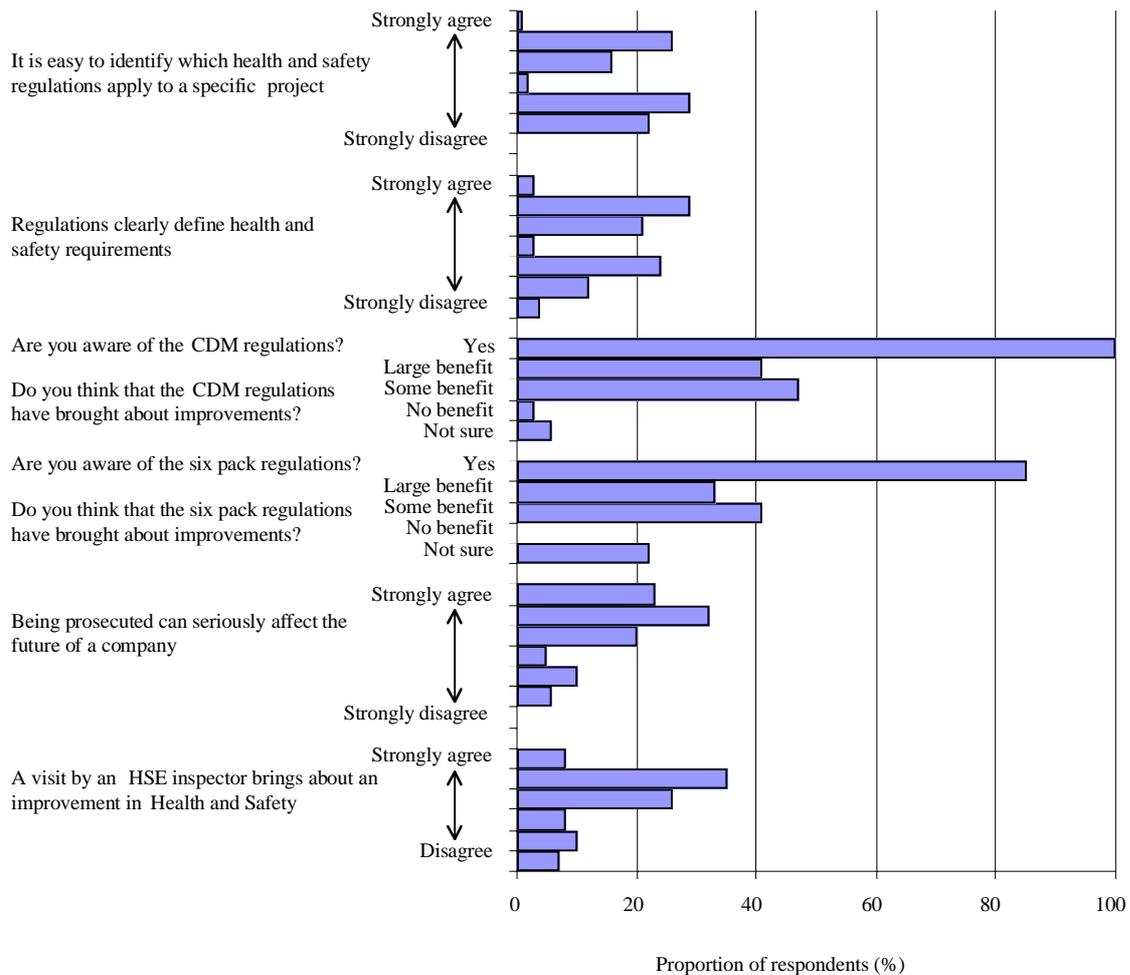


Figure 3.19
Perceptions relating to complexity, understanding and enforcement of legislation

3.3 INTERPRETATION OF THE UK CONSULTATION

3.3.1 Client influence

In many cases Clients are not making full use of their influence to improve health and safety standards.

The interviewees confirm that Clients have a key role to play in improving health and safety in the construction industry. Figure 3.3 shows that interviewees consider Clients to have the largest scope out of the groups listed to improve health and safety. Clients provide the financial resources for a project and are also responsible for a large part of the associated risk.

Some Clients, particularly those in highly regulated and safety critical industries, are extremely active in promoting health and safety. Many of these Clients consider the construction industry to be poorly performing. They are acting as drivers to bring improvement through out the industry. ACTIVE (Achieving Competitiveness Through Innovation and Value Enhancement) was launched in June 1996 with the aim of creating a world-class UK construction industry and to answer the criticisms of the construction Industry for the process and energy industries. It aims to respond to the challenge made by Egan that through the adoption of best practice principles up to 30% savings can be made on

project costs. Other benefits including improvements to culture, working practices, communications and health and safety are anticipated. A timescale of three years has been set to achieve these objectives. Through working with proactive Clients contracting companies are raising their standards. However, it is reported that they frequently return to former practices when working on different projects. The strategic issues to be addressed relate to the commitment and competence of the Client.

Lack of commitment

The interviewees perceive that although some Clients are demanding regarding safety standards, most Clients place little importance on health and safety (

) and they often do not see project safety as an issue to concern them. This lack of importance may be caused by several factors:

- The low level of prosecutions combined with insubstantial fines are perceived to bring about insufficient pressure to produce improvements in poor Clients;
- The Client may feel separated from their moral duties. It is perceived that Clients visit the construction site infrequently and so have little contact with the workforce at the 'sharp end'. They are perceived to be rarely involved in auditing and the follow up of incidents and accidents. This is less true for Clients exposed to substantial reputation risk, for which a high profile accident will reflect badly and may adversely effect their own business.
- The financial drivers to improve health and safety practices are considered to be poorly understood. There is a mixed perception amongst the interviewees that improved safety saves money. Costs related to Health and Safety controls are often not separately identified in the overall tender price. At the Contract award stage some Clients are not recognising the benefits that improved health and safety management can bring to a project. This includes consideration of the lifetime of a building from construction, occupation and maintenance through to demolition In the construction phase this could include:
 - hidden costs such as the costs of accidents which are not covered through insurance claims: substitution of personnel with associated training costs and opportunity costs related to the work they were doing previously, investigation costs, loss of motivation, personal costs to the injured party and family, damage to equipment, loss of time, potential for time penalties etc;
 - a more detailed look at the effects which decisions taken now relating to building design and materials used have over the lifetime of a building, for example, the frequency and ease of maintenance and running costs;
 - the impact on resale value of items such as a good health and safety and
 - demolition costs
- Pressure from stakeholders to improve Health and Safety is considered to be relatively low for most companies. A poor health and safety performance and especially a high profile accident will have an adverse effect on the reputation of a company and can effect the share price of a company. There is an increasing trend towards ethical investment and corporate governance which should influence larger companies. However, with the exception of high profile accidents which impact on members of the public, stakeholders are perceived to be less interested in safety issues than environmental issues.

Lack of knowledge

Clients are perceived to have a poor understanding of their legal duties, as defined by CDM. Interviewees felt that Clients understanding of health and safety has improved in recent years, but

Figure 3.10 shows that the change is the least out of the groups surveyed. One off Clients are reported to have a particularly poor understanding of construction related health and safety, and these Clients are increasing in number. Clients are thought to place a high level of reliance on other groups including Agents, Designers and Planning Supervisors, and may have the misconception that through taking advice they have eliminated their risk.

Poor awareness of site issues may mean that Clients do not appreciate issues such as:

- The effects poor standards of welfare facilities have on the morale of the workforce, and hence the standard of work and levels of wastage;
- The way in which adverse weather conditions can slow work, such as an inability to work at height when exposed to high winds;
- Difficulties arising due to the short time between award of project and starting work on site;
- The effect of a change in project specification on project planning and implementation;
- The problems in using poorly trained ‘labour only’ contractors to reduce costs;
- The effects of working excessive overtime and night shifts to meet a project deadline.

This can lead to them putting unnecessary pressure on the project requirements.

3.3.2 Health risk awareness and management

Overall, health risks are not given sufficient priority.

The statistical analysis suggests a high occurrence of occupational ill health within the construction industry. HSE consultees consider that the level of under reporting of accidents is decreasing, possibly due to increased awareness of regulations such as CDM. There is even thought to be some duplication of reporting (by both principal and sub contractors.) In comparing HSE statistics and social trends data, HSE estimate that around 40% of accidents are reported. Levels of reporting of health issues are considered to be lower, and the self-employed are cited as being particularly poor at reporting. A comparison Figure 3.18 shows the most common health risks are perceived to be due to manual handling, dust, noise and adverse weather.

However, most interviewees agree that safety issues are given priority over health issues. Indeed, Figure 3.17 shows the interviewees have mixed views about whether the industry cares about the long term health of its workers, with large numbers both agreeing and disagreeing with the statement. Reasons for the lack of importance placed on health issues include:

- Symptoms of ill health may take several years to develop, where as safety effects are usually immediate;
- The causes of ill health can be several and varied, and may have taken place outside the work environment, where as safety causes are usually easy to identify;
- The transient nature of the workforce makes it difficult to link ill health to a specific employer or project. There is currently no easy method of tracking a construction worker through different employers. (The concept of a personalised health card recording the results of health screening which could be carried with workers was not popular, as it was thought that this would discourage future employers.);
- Workers themselves do not consider health risks to be significant. Figure 3.17 shows the interviewees have polarised views relating to the perception that workers accept poor health and safety conditions to be part of the job. There appears to be a general apathy.

The interviewees consider that there is plenty of good guidance on how to manage a variety of construction health issues. Several recent HSE campaigns, including Good Health is Good Business, promote the importance of health issues. A positive finding from the consultation is that publicity campaigns regarding asbestos appear to have been successful in raising people's awareness of this hazard. The problem is rather that companies feel they have insufficient resources to implement the large number of recommendations made on other health issues.

Interviewees perceive that there has been a change in lifestyle, with young people becoming more aware of health issues through non-work-related drivers such as sports, advertising and other promotions of healthy living. This is influencing the culture on construction sites such that the 'macho' image relating to risk is thought to be reducing.

The employment trend is reported to be towards increased multiskilling. This is anticipated to have a positive impact on occupational ill health as it is likely to result in a decrease in exposure times.

Figure 3.17 shows that the perception is that health checks before hiring workers are not common, and on-going health checks throughout the project are even less so with 'few' and 'none' being the most common responses in both cases. A reactive approach to occupational ill health risk reduction requires identification of the effects of exposure at an early stage through monitoring and health surveillance. Remedial actions can then be taken to remove or control exposures. Reasons commonly quoted for the poor levels of health surveillance, outside statutory inspections, include a poor understanding of which type of monitoring will be the most effective, for example how should the early stages of musculoskeletal diseases be identified. There are also issues regarding confidentiality of medical records.

There is anticipated to be a strong link between the level of ill health, particularly dermatitis, and welfare conditions on site. It is reported that conditions on site are frequently of a low standard. These poor conditions are reported to be accepted by the workforce, and seen as normal. Contributory factors discussed include the short lead time between award of contract and the start of site work. If sites do not have water and electricity supplies permits are required prior to their installation. The problems with short timescales are reported to have been reduced in some projects with asbestos. The Control of Asbestos at Work regulations require a period of 28 days between notification to HSE and the start of site work, and this is reported to have had a positive impact on the level of planning in related projects. Welfare provision is seen as an area where it is relatively easy to cut costs. In addition, it is perceived that workers treat the facilities poorly, and hence conditions deteriorate still further. Further investigation into links between working conditions and poor quality of work including wastage could provide a financial incentive to improve welfare conditions.

Figure 3.8 shows that most interviewees agreed or agreed a little that less attention will be paid to health and safety on projects which run into schedule pressures. Time pressures on construction projects can lead to increased risk due to excessive overtime and night working. Increased pressure on individuals may also lead to high levels of stress. Figure 3.18 implies that night working and long hours were not considered to occur frequently. However, this disagrees with the discussion sessions where it was reported that contractors are frequently put under pressure to reduce timescales and meet tight deadlines with the threat of penalty clauses. The interviewees consider that time pressures could be reduced through improved planning and management. In addition, longer hours are worked during boom periods. The statistics reported in section 2 of this report consider accidents and ill health related to the number of personnel employed in the industry. A useful further study could relate these statistics to number of hours worked or turnover of the industry.

Detailed guidance is reported to be available for the health risks of materials such as asbestos and lead and the risks appear to be well understood. However, there is widespread concern that other materials might be found to cause ill health. Two materials mentioned during the sessions are the isocyanate core of roofing sheets and Man-made Mineral Fibres (MMF). Investigations of potential ill health effects for materials are perceived to be led by trade associations or the manufacturer. Designers are responsible for specifying materials and it is necessary that they can make an informed choice.

3.3.3 Managing health and safety culture - workforce involvement

Current practices within the construction industry mean that it is struggling to create an effective safety culture.

It is essential to have an effective safety culture in order to bring about improvements in health and safety. In several areas it is perceived that the construction sector would rate low against best practice:

- The culture on construction sites appears to be ‘command mentality’ with an autocratic management style in which communication is one way and the workforce follow orders from the site supervisors. The level of consultation with workers regarding how the work could be carried out more effectively is low;
- Currently a culture of confrontation rather than co-operation is perceived to predominate between the different groups on the project team. Companies are reported to take an antagonistic approach, and blame each other if incidents occur;
- There is reported to be little participation from the workforce in safety aspects such as hazard identification, development of safe systems of work etc. (Figure 3.13). Some interviewees comment that this results in employees feeling ‘undervalued’ and the workforce aspires to recognition;
- Currently there is reported to be little trust between workforce and management.

Obstacles to the development of an empowered workforce include:

- There is a skills shortage amongst the workforce, with labour only contractors being at the lowest skill level. Workforce involvement needs people who understand health and safety principles, are familiar with the work requirements, and the company’s objectives so that they can work towards these;
- The transient nature of the workforce does not give sufficient time to allow trust between the workforce and their managers and peers to build. Workforce participation needs an open environment in which people can offer ideas, including when something has gone badly, without the possibility of blame;
- Construction has historically had an autocratic management style. Workforce involvement requires a ‘listening’ approach recognising that workers at the sharp end have a good understanding of the issues. Problem solving should be carried out by the management and the workforce together;
- Communications up, down and across construction projects are reported to be poor - Workforce participation needs feedback about initiatives and recognition of effort and successes;
- A short term approach predominates.

In some industries, particularly those with strong drives to improve health and safety performance, the problems of lack of continuity and short termism have been resolved through forming partnerships or framework agreements. These enable close working relationships to be built. For example, a contractor company may become integrated in the Client’s organisational structure and use the Client’s systems. All members of the partnership are seen to benefit from the arrangement. The objective is to build a trusting relationship and improve communication with the contractor anticipated to develop a better understanding of the Client’s requirements and feedback on performance. The Egan report supports partnering and states that ‘the industry must replace competitive tendering with long term relationships based on clear measurement of performance and sustained improvements in quality and efficiency’. Figure 3.5 shows a mixed perception as to whether partnering improves construction health and safety. From the consultation it appears that the Client gains from partnering, as contractors become familiar with their site, work practices, and there are associated cost savings.

Some contractors were more cynical and see measures such as ‘open book accounting’ as another way of reducing the contract price.

Several HSE campaigns have targeted safety culture, including the ‘Working Well Together’ campaign. Figure 3.13 shows that nearly 70% of the interviewees have heard of this campaign, but very few knew of any benefits that it had brought.

3.3.4 Management ownership and commitment

Most of the interviewees consider that changes to bring about sustainable improvement to health and safety should be driven by the senior management in a ‘top down’ approach. It is therefore essential that the senior management are committed to improvement and are visible in this. This attitude is supported by Figure 3.16 which shows workers are perceived to adapt their attitude to follow site managers, who in turn follow the senior management. The role of the senior managers is seen to be in acting as leaders to set the company values and key strategies. This includes defining the company culture including acceptable behaviour regarding health and safety. Site managers have an important role to play in interpreting and implementing this policy to ensure the desired outcomes are achieved including enforcement of site rules. Figure 3.15 shows a range of views as to whether the workers believe that the project management are keen to manage healthy and safety. This spread of results may be because the management are not visible in their commitment.

Figure 3.1 shows that over the last few years most respondents think there has been either some or large improvement in the acceptance of responsibility for health and safety by management. There has been a change towards the perception that safety is line management responsibility rather than that just that of the safety manager. It was felt that defining responsibilities is one of the benefits of CDM. However, there are conflicting views. Although CDM has improved the definition of responsibility, it is reported the issues of accountability are as yet far from resolved. The complex inter-relationship between the different organisations is currently best represented by a ‘blame’ culture, rather than a co-operative working environment, which shows a lack of ownership of the issues.

It is perceived that senior management do not fully exploit their potential to improve H&S. One reason cited for the lack of commitment is the poor understanding of links between good health and safety performance and business performance. The need for financial efficiencies is the main driver for change on construction sites. There is a mixed perception that improved safety saves money. One area where the link is not currently being made is through insurance where premiums tend to be based on knowledge of risks within the industry in general rather than the safety performance of a specific company. Some interviewees held cynical views that poor accident performance leads to an increase in premiums, but good performance does not lead to a reduction. The premium is linked to the size of the contract and a company’s ability to negotiate.

Senior managers are also considered to have a poor understanding of risks to the business associated with poor H&S performance. The regulatory framework, although considered to be comprehensive, is thought to be complex and difficult to interpret. This can have the effect of delaying implementation, and reducing the impact of the regulations. If managers do not understand the requirements fully, then they may be less committed to implementation.

In addition, it is reported that senior management do not consider the risk of prosecution to be high. The number of regulatory visits carried out is perceived to be very low and so the likelihood of an inspector finding a non compliance, and this leading to a successful prosecution is seen as acceptable in some cases. It was commented that most visits from HSE follow accidents. This, combined with the perceived low level of current fines, is reducing the deterrent of prosecution. Many interviewees consider increased prosecution of directors, under corporate manslaughter, would lead to improvements in health and safety.

The construction industry appears to be risk averse, with little interest in innovation. It hinders new approaches to resolving problems encountered on construction sites, including those associated with H&S.

3.3.5 Safety skills

Shortfalls in skills and in the development of skills is seen across professional and trade workers across the industry.

The consultation points to a shortage of safety skills within the construction industry. Contractors with scarce skills, such as scaffolders, can earn a premium salary. Poor standards in H&S skills seem endemic across the industry, from Designers to labourers. The criticism covers the provision of training, the maintenance of skills through refresher training and the assessment of competence.

There is a current trend towards multiskilling as this increases flexibility, and was viewed positively by the interviewees.

Site managers are perceived to have a good understanding of health and safety, as shown in Figure 3.10. This is very positive, as the site manager will in many cases define the safety standards on site, as they are responsible for enforcing the site rules. Figure 3.10 shows that site management and supervisors are also thought to have shown the biggest improvement in understanding of health and safety risks in recent years, from the roles surveyed. However, it is also perceived they have large scope for improvement (Figure 3.7).

As duty holders under the CDM regulations **Designers** have responsibility for designing to avoid risks to health and safety by tackling these risks at source, or, if this is not possible, reducing or controlling those risks. They are also responsible for identifying and assessing residual hazards and risks associated with the construction process. Interviewees agree the greatest opportunities for risk reductions are likely to be found in the earliest stages of projects. However the interviewees consider Designers lack the knowledge and experience to exploit this to the full. Figure 3.10 shows that all interviewees consider that the professional qualifications for engineers, Designers and architects do not prepare them to deal with real H&S issues. When asking only Designers and Architects the same question the response is even stronger that current qualifications inadequately cover health and safety. Extensive training is given through university and to gain professional qualifications, but the courses have little if any health and safety content. The perception from the majority of interviewees is that many Designers consider problems encountered will be resolved on site.

Figure 3.10 shows disagreement amongst the interviewees as to whether qualifications for **building trades** cover H&S thoroughly. This mixed response is reported to be due to the variety of qualifications available. These are matched with a mixed bag of competence schemes. Whilst recognised qualifications, such as CORGI, are considered to be of a high standard, other trades are less well covered. The CSCS registration requires workers to attend a one day health and safety course although there is no test of understanding. The update of this nationally recognised scheme is reported to be limited. Poor understanding of competence may lead to people carrying out inappropriate tasks, particularly at the smaller end of the sector. Several interviewees commented that apprenticeships are successful at providing training through experience, and cover H&S well, but are no longer common. There is a strong reliance on 'on the job' training, which can provide good practical experience allowing the initial transfer of knowledge followed by practice and consolidation of these skills in a supervised environment. It is also a relatively cheap way of providing training. However, it may have the following problems:

- Lead to poor work practices being continued if best practice is poorly defined;
- Poor transfer of knowledge if the personnel providing training does not have good communication skills;
- The content of the training may be poorly defined such that some issues are missed;
- Lack of review and assessment process to identify misunderstandings and further training needs.

Hour long induction training before work commences on a site are common, but the message is often limited to basic site rules such as the wearing of PPE. The labourer may receive a similar talk on each

site where he works, but never develop an understanding of health and safety which goes beyond this. With the use of migrant sub contractors making the provision of extensive training difficult, the need for a method of demonstrating the level of competence prior to offering a contract is important.

Figure 3.10 shows that nearly all the interviewees agree health and safety will be better with a more experienced workforce. The reverse hypothesis would be that new workers with less experience are more at risk of injury or ill health. However, little statistical evidence from accident reporting has been found to support this argument. In contrast, one of the main reasons cited for accidents is carelessness and not following procedures. This may be due to over familiarity with the work which breeds complacency, hence workers with more experience would be at greater risk.

Why is the level of training provided so poor? Several reasons were cited by the interviewees:

- High turnover of staff, with the possibility that the employee could soon be working for a competitor, reduces the incentive to invest in training;
- Unskilled, labour only contractors often work through agencies. Although the agency acts as an employer, they are not perceived to be taking the role of training, hence, it is unlikely that these workers will gain skills;
- If the Client is perceived to give health and safety a low priority then this does not encourage contractors to invest in health and safety training.

Figure 3.10 also shows that the majority of interviewees consider health and safety to be much worse on projects for inexperienced **Clients**. As has already been discussed, the Client has a key role in defining standards. In order to make the correct decisions they need either good understanding of the construction risks or support from a competent adviser. Clients vary widely in their knowledge and experience, with one-off Clients and those for refurbishment projects cited as having the least skills, and depending on others to make safety decisions. CDM and other regulations require personnel involved in the construction project to be competent. This can be done informally through personal recommendation or more formally through assessment. In many cases the assessment/prequalification methodologies are not considered to be well developed.

At the contracting company level supplier assessment and pre-qualification through questionnaires are reported to have become common. This is time consuming for the contractor as many types of questionnaire exist. In many cases the key questions which reflect the competence of the supplier are not yet considered to be well developed, with many questionnaires focusing on reactive rather than proactive measures. The provision of information needs to be backed by a visible process where it can be verified.

3.3.6 Variation across the industry

The sector is fragmented and is not behaving as a cohesive unit.

Figure 3.1 shows that nearly all of the interviewees consider that there is large variation in how construction companies manage health and safety. The fragmented nature of the construction industry, which is dominated by small companies with 80% of organisations having less than 10 people, and extensive use of sub contractors leads to a complex supply chain.

Variation arises from:

- The variety in standards of companies that make up the sector with a few companies representing best practice whilst the rest of the sector comprises companies of varying standards, many of which consistently underachieve with regard to their safety performance;
- The difference in the Clients' understanding and expectations of safety as was discussed in section 3.3.1. Some of the more proactive Clients and contractors are putting pressure on the poor performing companies to improve;

- There is a large cultural diversity of people employed in the industry, particularly in the South East with immigrant workers. This can cause problems as they may have different expectations and standards to the local workforce and may not understand or speak English. Sites with non-English speakers have specific requirements including pictorial safety signs;
- Variation in physical capabilities of the workforce. Demographics point to an ageing workforce, and it is considered that personnel over 50 years of age are more prone to injury or ill health, and show poorer recovery;
- Variation also arises in the types of project undertaken. Figure 3.1 shows that the interviewees are in agreement that although projects differ widely their health and safety issues can be managed in a similar way. The general feeling is that with good management the complex issues arising in projects can be overcome. Of particular comment is that CDM places a large burden on small projects. Because of this borderline projects may try to stay below the CDM threshold. This is particularly reported to be the case for short projects such as refurbishment;
- Variation in demand over time. The performance of the construction industry reflects the status of confidence in the economy as a whole. The last decade has seen periods of boom and bust, leading to huge variations in demand for construction work. This instability gives rise to varying pressures of over and under resourcing. The industry aims to have maximum flexibility through multiskilling, diversification, outsourcing etc., but this may not be sufficient to relieve the pressures;
- Variability in the construction process. The necessity for health and safety plans under CDM and the role of the Planning Supervisor to ensure information is produced, collated and passed on has improved the planning phase. There have also been improvements in project planning software. However, interviewees gave several examples which imply there are frequent problems with scheduling. For example, the Design Risk Assessment often takes place when the design is nearly complete and is unlikely to be changed at this stage. In addition, instances were quoted when the appointment of the Planning Supervisor is made at a late stage in the project and is therefore unable to provide adequate input into the design phase. A more systematic approach is required when people appreciate the importance of following procedures;
- The short term approach taken by companies within the construction industry means that few projects include a review phase where learning can take place. Many companies seem to treat each job as a totally new activity rather than benefiting from prior experience. One interviewee suggests that the review could be carried out through submission to HSE of a close out form at the completion of the project. There is a lack of feedback or feed forward of information.

It is anticipated that regulations provide a standard framework in which companies operate and define minimum standards of performance. Regulation is seen by the interviewees as an effective way of bringing about change (Figure 3.14). However, three main reasons were cited as to why regulations may not be achieving the level of standardisation anticipated: Firstly there is a general feeling that enforcement levels are poor and not consistent. As the number of inspection visits is perceived to be low, non compliance is unlikely to be identified. Half the interviewees consider that a visit by a HSE inspector brings about improvements in health and safety (Figure 3.18). Secondly, there is concern regarding variability in enforcement policy shown by HSE, including the size of fines. Thirdly Figure 3.18 shows the interviewees holding widely differing views as to whether it is easy to identify which health and safety regulations apply to a specific project. Although interviewees consider there is sufficient information regarding best practice in health and safety there was a request for further feedback on what other companies are doing.

The regulatory framework is in the process of changing from a prescribed approach to a goal setting approach. Many of the interviewees, particularly from smaller companies, found this approach difficult to manage. Figure 3.18 shows that there were differing views about how clearly regulations

define health and safety requirements. There was much concern that companies may be taking differing approaches to 'as low as reasonably practicable' for risk reduction. Of particular interest was the LOLER regulations for lifting equipment which have changed from defined intervals for statutory inspections to the company defining requirements. Some companies, usually the larger ones, prefer this approach as it allows them to be flexible and carry out inspections according to need for the particular situation, rather than the same for all situations. The current moves to rationalise and simplify regulations is well received.

Software packages are becoming popular to assist in many aspects of project managers, and it may be considered that these are becoming the 'standard setters'. This is particularly true in the case of the documentation requirements for CDM.

Registered management systems provide standardisation through a consistent approach and external verification. Uptake of the quality management system (ISO 9000) and the environmental management system (ISO 14001) is quite good within the construction sector. Management systems promote the idea of a 'Management Loop' of planning, implementing, reviewing and acting which brings about continual improvement. Recent changes to the quality standard ISO 9000 emphasise the review phase more strongly and it is hoped that registered companies will benefit from this in all business areas including health and safety. There was a lack of interest amongst interviewees in a certified system for health and safety management, although integrated management systems for health, safety, quality and the environment are anticipated in the future.

Several programmes exist to develop and promote best practice activities. *The Construction Best Practice Programme* organises company visits and *The Movement For Innovation* aims to measure, quantify and disseminate experience and achievements from demonstration projects. *'Fit for the Future'* is a CBI which provides success data and promotes best practice across all market sectors. The results achieved are impressive, but few interviewees were familiar with them. Trade associations also have a role to play in promoting best practice.

3.3.7 Safety by design

The opportunities to avoid or mitigate risks at the design phase are not being exploited to the full.

The interviewees agree that most safety issues are foreseeable, and could be removed at the design stage (Figure 3.1), or through improved planning. The early stages of projects are considered to offer the greatest scope for safety improvements. Unfortunately the interviewees consider that the opportunities to design out hazards are not being exploited to the full. Figure 3.5 shows mixed perceptions regarding the extent to which designs have changed over the last few years to make them safer to construct.

Figure 3.3 shows that Designers are perceived to have considerable scope to improve health and safety. However

shows that they are not perceived to give it a priority. From the consultation, the issues are considered to be:

- Designers have only limited experience and understanding of 'buildability' issues, and other practical issues on site;
- The differences in risk levels experienced by different trades and work methods is not well understood;
- Health and safety issues over the lifetime of a building, and its relation to the lifetime cost of the building, are not understood;
- Risk assessments are often insufficient;

- Risk assessments are undertaken too late to bring about design changes, the opportunity to consult with other members of the construction team at this point is often not taken.

Issues were also raised regarding Designers commitment to improving health and safety. A common perception is that Designers consider that health and safety issues can be resolved on site.

Under CDM the Designer takes the role of providing advice and information to the Client about the risks associated with a project. The comments from both Designers and other construction companies imply that Designers themselves have only limited experience in health and safety issues (see section 3.3.5), and this questions how well these particular CDM requirements are being met.

The role of Planning Supervisor was criticised by many interviewees as they are often lacking in either design or health and safety knowledge. The role is considered to increase bureaucracy and there is a considerable amount of standard documentation issued.

Of particular concern is the conflict of interest when the Designer and Planning Supervisor are the same person. It is considered that the Planning Supervisor should be an integral part of the design team.

A partnering approach is considered to bring the site team into the project process earlier, and thus provide opportunities for discussion and understanding to be reached.

4. INTERNATIONAL SURVEY

The international survey seeks ideas that could be adopted by the UK. For practical purposes the number of countries examined is restricted to three.

The difficulties of carrying across lessons from one country to another are appreciated. Not only are there issues of whether ideas can be successfully transplanted given the complex interactions within an industry, but there is also the challenge of understanding a country's situation sufficiently to identify 'real' lessons. Nevertheless, the international survey has been undertaken to see if it throws up opportunities for the UK.

4.1 APPROACH

4.1.1 Screening interviews for country selection

Entec carried out telephone screening interviews with people with experience of the construction industry in the UK and abroad. Thirty eight people were contacted representing mainly the construction industry, trade associations, researchers and regulators. They were asked to review the emerging issues from the consultation and the statistical analysis and then answer the following questions:

- a) Has any country increased the extent to which client assume their responsibility for health and safety?
- b) Has the professional development of architects/designers in other countries been effective in increasing their awareness and capabilities in respect of safer designs?
- c) Have countries attempted to introduce competence standards or training certificates which state that a labourer is competent to carry out certain form of work and has the requisite comprehension of health and safety issues?
- d) Which countries best demonstrate the business benefits of effective health and safety? How have they promoted this message?
- e) Do any countries have strong links between insurance premiums and health and safety performance? Has such a link been effective in providing a financial incentive to improve health and safety performance?
- f) Which countries have most developed the 'partnership' approach to health and safety?
- g) Has any country managed to improve communication issues with transient workers?
- h) Have any countries encouraged its construction sector to review projects and learn, such that systems and techniques are continually improve?
- i) Are there any countries in which best practice schemes have been developed and self assessment encouraged?
- j) Is the planning of projects better in other countries, such that any out of phase work is adequately considered?
- k) Which countries are giving health issues a similar priority to safety issues?

Interviewees were also asked to supply contact details in the countries they suggested.

4.1.2 Response to the screening interviews

Of the thirty eight interviewees, many were only familiar with a small number of countries and so did not consider they had sufficient international overview to answer all questions. Most were able to talk about the good points associated with one country's activities rather than a comparison between countries.

The general impression from the screening is that, with a few exceptions, health and safety in UK's construction industry is of a higher standard than most other countries (this is supported by a comparison analysis undertaken by Eurostat and HSE, results from which are shown in Table 4.1).

Table 4.1
EU average and Great Britain 1994 rates of fatal and over 3 day injury per 100,000 workers

	EU average		Great Britain	
	Fatal	Over 3 day	Fatal	Over 3 day
Construction	14.7	9000	5.1	3400

4.1.3 Country selection

The screening interviews have been analysed to identify the countries which have made progress in resolving the issues identified by this report. The countries selected are:

- France – regarding its health surveillance, training and insurance systems;
- Sweden – regarding its accident statistics, the importance of the building end user, and the difference in culture which promotes management commitment and workforce involvement;
- USA – regarding the role of Workers Compensation insurance, the number of civil claims, and the partnership approach between the regulator and industry, and the various members of the supply chain.

4.1.4 Survey method

Telephone interviews were held with representatives from the selected countries. These investigated their reasons for pursuing alternative strategies, their design and perceived impact on behaviour.

4.2 FRANCE

Accident statistics for France suggest that it has a slightly worse performance than Great Britain in the construction sector, but the size of the difference may be overstated. French statistics arise from compensation claims.

The role of the regulator and the advisor has been split, with

- the National Agency for the Improvement of Working Conditions taking the role of the adviser;
- the Regional Sickness Insurance Funds (Caisses Regionales d'Assurance Maladie (CRAMs)) giving recommendations to reduce accidents and ill health; and

- the Ministry of Labour enforcing legislation.

A professional association of inspectors exists (the Association of Villerme) which is independent of the inspectorate. French inspectors have a large involvement with industrial relations and may be regarded more as 'labour administrators'. Their role covers: health and safety conditions at work, and a wide range of industrial relations activities including conciliation and arbitration in disputes. Inspectors are seen more as consultants or as industry's own prevention force rather than as a prosecutor. They also cover occupational health and safety of employees, and monitoring of working time. The inspectorate has a national headquarters but operates with autonomous regions.

4.2.1 Consultees

The consultees cover both large and small contractors.

4.2.2 Health awareness and management

The consultees consider that members of the French workforce do not take sufficient regard of health issues. The level of understanding about health issues is increasing, due to societal awareness, and this may slowly be influencing the way in which people act at work. High profile issues such as asbestos are considered to have brought about a change in the way that management consider health issues. The requirement to document risk assessment has also focused management's awareness of their responsibilities. The strategy taken to improve health management is considered to be one of improving management systems and risk analysis rather than through increasing legislative requirements.

It is reported that there is a legal requirement under the Labour Code for all employees to have the option of a medical examination at least once a year. Employers have to provide access to occupational health services. Part of the duties of an Occupational Doctor is to observe working conditions in order to identify health risks. Monitoring comprises a sight test and self assessment questionnaires. It is reported that the objective for the medical is to certify someone as fit or not fit and little analysis of the data to identify health trends for the individual takes place. This may change in the future. However, the medical can lead to a personal action plan to counter the causes of ill health.

It is reported that two types of insurance cover ill health, and both are compulsory:

- Employers pay into a scheme which will pay out if an employee becomes ill due to work activities, from which the employee will receive a pension;
- Employees pay into a personal pension scheme which will pay out if they become ill due to non work related causes, the employee will not receive a pension in this circumstance.

This arrangement can lead to confrontation between the two insurance companies, and so there is usually a considerable delay before compensation is paid.

4.2.3 Managing health and safety culture - workforce involvement

There is reported to be a legal requirement for companies employing over 50 people to have a health and safety committee which is chaired by the employer. As the construction industry is dominated by small companies and transient workers, it has separate requirements under the 'Organisation for the Prevention of Accidents in Construction and Public Works.' This is a national committee with representatives from employers and employees. One of the committees roles is the provision of training materials.

4.2.4 Management ownership and commitment

The French link some of the financial implications for improved health and safety with the Caisse Nationale, the state controlled National Accident Insurance Association. Amongst its responsibilities are carrying out research. Contributions paid by an employer can be adjusted to take account of good or bad accident performance. Performance, as defined by accident statistics, is easier to define for large organisations than for small ones. Therefore organisations with less than 20 employees pay a fixed rate per employee, whilst those with more than 300 employees pay according to accident statistics over the last 3 years, and there is a sliding scale for those organisations between. Most employers use this scheme, although there is the option to use company specific insurance in its place. If there is evidence of negligence an employer may be required to reimburse the fund for compensation paid to the injured worker. The regional sickness insurance funds also provide advice on health and safety improvements.

The threat of prosecution can also be seen as encouraging improvements to be made. The Labour code makes directors as individuals responsible for health and safety of their employees. The number of inspectors is reported to be small and they cover all work activities, i.e. are not construction specific. It is reported that the level of inspection is variable, and in some areas which were previously strongly unionised, for example the ship yards, the inspectors are not allowed to visit the site without prior written agreement. Construction activity in these areas will also not receive surprise inspections.

4.2.5 Safety skills

France has a national training college for initial and ongoing training of inspectors (Institut National du Travail).

It is common for students to spend some time in industry during their final years at school, and this allows them to get an understanding of the work.

Safety induction sessions which describe specific hazards are compulsory for all projects prior to starting work. The standard varies enormously, with sessions for small projects reported to be a quarter to one hour and those for major projects taking nearly a day (including the medical.)

Some trades have nationally recognised qualifications, and major companies often have in house competence schemes. One difference with the UK is the lack of a qualification for scaffolders. In France towers and platforms are used more frequently than scaffolding.

4.2.6 Variation across the industry

There are a large number of small construction companies in France, which leads to variation across the industry. Statistics from 1991 state that there are about 2000 construction companies in France with less than ten employees.

The current health and safety law is primarily contained in the Labour Code which covers employed, but not self-employed people, except in limited circumstances. This also increases variation.

4.2.7 Safety by Design

As in Britain, the safety implications for the construction phase are not thought to be rigorously considered at the design stage. The consultees consider more emphasis is placed on the safety implications of design if the same company undertakes both the design and build aspects of the project. Consultees thought that there was little, if any, health and safety content in architecture or engineering courses.

4.3 SWEDEN

4.3.1 Consultees

Telephone interviews were conducted with representatives from academia and the regulator.

Sweden has some of the best accident statistics for the construction industry within Europe. One interviewee considers that this may lead to complacency in some areas. During the consultation many instances were cited when Swedish safety performance has exceeded that of other nations, for example, it was reported that Danish workers had appreciably more accidents than Swedish workers during construction of the bridge between Denmark and Sweden. Analysis of why this is the case is ongoing.

4.3.2 Client Influence

Clients within Sweden are considered to rely heavily on consultants for construction related advice. In doing this many consider that they have abdicated their responsibility for health and safety, although this is not the case. This issue has been debated extensively in the technical press. There are reported to have been few, if any, prosecutions of clients. An example was given of a recent incident where a contractor was threatened with court action, but it was widely considered that fault rested with the Client.

4.3.3 Health awareness and management

Health issues are taken very seriously in Sweden, and perhaps more than safety. Ill health has become a social issue as there are high levels of asthma and allergies amongst home occupiers possibly due to poor ventilation in houses. There is a high level of compliance with the wearing of personal protective equipment, and the use of technology to reduce ill health such as anti -vibration tools. Chemicals and dust are seen as key problem areas.

Trade Unions are active in promoting health awareness, and have published much information on this subject.

4.3.4 Managing health and safety culture - workforce involvement

An attitude of zero tolerance towards accidents is reported to prevail throughout society, and has not been created by a simple 'publicity campaign' or some other policy. This contrasts strongly with the UK where many consultees consider that it is acceptable to have a certain level of risk associated with some jobs.

Swedish people are considered to have a great respect for regulations. This can often lead to the stereotype that they are overly bureaucratic.

4.3.5 Management ownership and commitment

The emphasis behind regulation policy in Sweden is reported to be towards accident prevention with the authority acting as an adviser rather than to prosecute following an incident. This has resulted in low numbers of prosecutions. There were reported to be 180 safety related prosecutions in 1998 from across all industries. Fines are reported to be at a low level, and although interviewees thought that it was possible to be sent to prison for an offence none were able to cite an occasion when this had happened such that it is considered to be at a very low level. There is some uncertainty regarding responsibility for safety with consultees considering the requirements on the contractor regarding safety are less onerous than in the UK.

Pressures within the construction industry are considered to be such that finance and timescale issues dominate senior management considerations. Environmental awareness is considered to be given

greater priority than health and safety, and environmental impact assessments are major parts of the construction process. This may have a knock on effect of improving health and safety through good housekeeping etc.

4.3.6 Safety skills

Skill levels within the workforce are considered to vary depending on the demands on the industry. It is reported that the Swedish construction market is now entering a boom phase following a relatively lean period, and this is anticipated to result in a skills shortage. Companies are considered to recognise a genuine benefit from having a skilled workforce, however there are cost implications. There is an abundance of recognised qualifications and many of the bigger contractors have their own.

4.3.7 Variation across the industry

The construction industry in Sweden is reported to be much smaller than in the UK which reduces the degree of variation.

The government is trying to promote a partnership approach, particularly on large infrastructure projects for road and rail. The Academy of Sciences has piloted projects including the road authorities. It is perceived that this approach will improve efficiencies as well as safety performance. Obstacles include:

- The small number of players within the market;
- The Swedish work style is reported to be quite bureaucratic preferring small packets of work;
- The stringent procurements regulations which are often perceived to counter a partnering approach.

The preferred approach is therefore changing towards setting performance specifications. For example, the client will specify a building temperature of 22 degrees rather than detailing which materials should be used. This approach can be supplemented by increasing the period of warrantee to 10-15 years which will ensure that the contractor gives serious consideration to the quality of materials and workmanship.

Sweden is considered to have a more prescribed approach to regulation, for example, there is less variability in building maintenance in Sweden as the procedures and schedules are defined.

There is reported to be a lower level of migrant workers in Sweden than in the UK which corresponds to the smaller size of the market. These workers have generally come from Finland or Norway and so there is less cultural diversity than in the British immigrant workforce. There is a high turnover of staff as members of the workforce move between contracting companies and this is reported to lead to low levels of company loyalty. The construction market in Sweden comprises several large contractors who represent best practice. Consultees feel there is a sizeable 'black market' of small builders who avoid taxes and may carry out poor quality work and take less notice of health and safety requirements.

4.3.8 Safety by Design

Sweden is reported to be facing similar problems to the UK regarding focusing on health and safety at the design stage. One area where Sweden differs from the UK is that house owners have shown increasing levels of health problems such as asthma, allergies, and effects from low frequency electromagnetic fields. Pressure has been placed on Designers to consider health issues surrounding the long term use of the building. This is considered a higher priority by the public (who are often ultimately the Client) than issues of health and safety in the construction of a building.

A second area of difference with the UK is that Sweden is reported to have focused on improving designers knowledge of health and safety issues through making this part of their course at both high school and university level.

4.4 USA

4.4.1 Consultees

Telephone interviews were held with representatives from OSHA and academia.

OSHA and NIOSH are government agencies with responsibilities for safety and health. OSHA is in the Department of Labor and is responsible for creating and enforcing workplace safety and health regulations. NIOSH is in the Department of health and Human Services and is a research agency. Hence NIOSH is responsible for creating new ways to prevent workplace hazards.

A July 1996 NIOSH publication states:

- 7 million people are employed in construction in the USA, representing 5% of the labour force. Of this about 1.5 million are self-employed;
- Of 636,000 construction companies, 90% employ fewer than 50 workers. Few have formal health and safety programmes;
- 1,000 construction workers are killed on the job each year, more fatal injuries than in any other industry;
- The four biggest hazards are falls from height (3,491 construction workers fell to their deaths between 1980-1989) electrocution, crushing injuries (e.g. trench cave-ins) and being struck by material or equipment.

4.4.2 Client Influence

The consultees consider that the majority of clients take little interest in health and safety on construction sites. There are a few exceptions mostly relating to the petrochemical industry where financial margins are higher.

The regulatory framework is considerably different to in the UK:

- Statute (relating to criminal prosecutions) relates only to the employer and employee, and hence the contractor would be targeted in the event of an accident.
- Civil prosecutions can only be taken against a third party, i.e. the employer can not be sued by his employee. This has resulted in a considerable and increasing number of civil claims against the client. Civil compensation tends to be at a higher level than criminal fines.

There has been no national initiative to target the client. OSHA runs 'out reach' awareness sessions, which may be attended by Clients.

4.4.3 Health awareness and management

Consultees agree that ill health is more difficult to identify and monitor than safety issues. For this reason, as in the UK, it is reported that safety is given a higher priority than health. One consultee mentions young people do not consider themselves to be at risk, and older people wish they had taken more care. The exception is with 'notorious' materials such as asbestos where there is widespread concern about ill health effects.

Consultees reported that health standards for certain hazards (including noise, radiation, chemicals, metal fumes, silica, lead, dust, asbestos, etc) are defined by statute. Health surveillance is a statutory requirement. Any exposures must also be reported. Records are kept by the employer for 40 years. In the case of migrant workers, provisions are made for the records to pass to the next employer. As might be expected, there are violations of these regulations, but the overall response is reported to be positive. The records are available to the employee.

The USA is reported to be in the process of developing an ergonomics standard to be used for health monitoring.

The majority of funding for research comes from NIOSH, who are historically interested more in health issues. Research into ill health, which uses data on the effects of exposure of a certain population, is better defined than research regarding accident statistics.

4.4.4 Managing health and safety culture - workforce involvement

A regulatory approach is reported to have been taken to improve workforce involvement in the USA. An academic reported that OSHA policy varies as the directors change between a strong enforcement approach and a more co-operative approach. The current trend is to a more co-operative approach, with a policy known as New OSHA. One of the major initiatives is to give employers a choice as to which format they would like regulation of their company to take. The choice enables OSHA to take a different regulatory approach between proactive and under performing companies. The choice is:

- A partnership between employer and regulator has been offered to companies with strong and effective health and safety programmes. These companies will receive the maximum levels of support and advice from OSHA, and minimum levels of enforcement visits. Fines can be reduced by up to 100% if a company can prove that it has an effective health and safety system. This approach will ease the adversarial relationship between an employer and the regulator. The employers and employees take responsibility for ensuring safety. It was reported that at a pilot study in Maine, OSHA inspectors could have noted employers self identified more than fourteen times as many hazards as. Nearly sixty percent of employers reduced their injury and illness rates, and at the same time the numbers of inspections and fines has decreased. It is perceived that this policy will enable more people to be reached.
- A traditional enforcement relationship between the employer and the regulator is available for firms who do not implement strong and effective health and safety programmes. OSHA will devote greater enforcement resources to these firms.

A sliding scale exists between these extremes.

OSHA is reported to actively promote workforce participation. It understands workers have a good awareness of hazards to which they are exposed, and have innovative ideas about how these can be reduced. However, it is reported that a command mentality still predominates on construction sites in the USA.

Partnerships between different organisations working on a construction project are strongly encouraged.

The number of workers represented by Trade Unions has fallen from about 80% 30 years ago to approximately 20% today. This has resulted in there being no collective body representing workers, and hence made the role of the employer more important.

4.4.5 Management ownership and commitment

Management commitment is said to vary widely across the construction industry in the USA. Three areas were cited to try to improve ownership of safety issues: a regulatory approach, provision of clear financial incentives and targeting the reputation of poorly performing companies.

Prosecution of management

The regulatory framework for multi-employer work sites in the USA is reported to make everyone accountable who could reasonably be expected to be so. For example, in the case of faulty scaffold both the scaffold erector and the employer who allowed his workers to use the unsafe scaffolding will be prosecuted. This is reported to have reduced the 'its not my problem' attitude.

The consultees consider individuals can and are prosecuted for health and safety breaches. The charge is known as 'Criminal wilful violation', and carries a considerable burden of proof. For a first offence the maximum fine is \$70,000 and up to 6 months in prison. Penalties are stiffer for subsequent offences. An example of a successful prosecution is the steel erection company LeMaster which tried to change the accident scene and give false testimony resulting in several individuals being convicted. This type of prosecution can take place at a state or municipality level.

Financial incentive

NIOSH figures show that 15% of workers' compensation costs are spent on construction injuries. Owners and employers pay workers compensation insurance. This type of insurance limits the employees ability to sue his employer. The premium depends on the safety performance of an organisation and as the sums of money are considerable it provides a financial incentive to improve Health and Safety.

The Workers Compensation premiums are calculated using two parameters: the 'Manual' rate varies by State and the profession of the worker, and the 'Company' rate which contains a 'modifier' to adjust the premium to a company's performance over the last three years. One consultee considers the modifier to be biased towards larger companies. There is reported to be loopholes within the Workers Compensation scheme. In some states, for example Florida, employers can exempt themselves leaving their employees without cover.

Reputation

One consultee reports that the loss of reputation following adverse publicity from a major accident has seriously effected some companies. This provides additional pressure to ensure such accidents do not occur.

4.4.6 Safety skills

It is reported that there is a skills shortage for construction workers in the USA. However, the benefits of a well trained workforce are recognised. The 'Organised Labour' or Trade Unions have therefore taken the initiative to provide training, in both job related skills and occupational safety and health. The transient nature of the workforce discourages employers from investing in training. It is reported that larger companies with more stable workforce offer better quality training.

It is reported that there are two nationally recognised health and safety courses for construction workers, of 10 hour and 30 hour duration. The trainee receives a card to prove he has taken the training. Several Trade Organisations (for example the mechanical contractors and the masonry employers) run their own programmes.

It was reported that the biggest driver to improve safety skills amongst the workforce is the National Centre for Construction Education and Research which was started about 5 years ago. It is predicted that a quarter of a million unskilled workers need to be trained each year to keep skill levels across the industry constant, due to people leaving the industry. The Centre offers a standard programme which is recorded on a national register. The employer generally pays for this training through a scheme where they put aside an amount (such as 5 cents) towards training costs for each hour worked.

4.4.7 Variation across the industry

Migrant workers are a common feature in the American construction industry. In addition to immigrants from South of the American borders, workers from Europe and the former communist states are also common. Language barriers represent a big problem. The cultural diversity also means workers have different expectations, and many are reported to be surprised at the extent to which employers consider health and safety.

The consultees report a large variation in safety standards between companies working within the construction sector. A variable approach is taken to enforcement of proactive and poorly performing companies. Government policy in trying to improve the performance of the whole industry has been to target the poorly performing companies. Mentoring schemes are promoted in which a proactive company gives advice to a less well performing company.

To reduce variation OSHA targets the most poorly performing companies with enforcement visits. As part of the focused approach OSHA inspectors carry out targeted inspections. When they arrive on a site they look for evidence of performance in target areas including fall from height, electrocution etc. If these are well controlled then the inspectors leave the site, whereas if there are unresolved issues in the target areas the inspector will conduct a deeper review.

4.4.8 Safety by Design

Consultees consider that designers in the USA show little interest in health and safety. No national efforts are being undertaken to change this. The regulatory framework does not impose a duty on designers to give regard to health and safety. Health and safety is covered to a small extent in building codes. Any efforts for improvement are reported to be voluntary, and hence only taken by a few organisations.

It is considered that architects pay more attention to health and safety where the same company carries out the design and build as they feel responsibility for their own workers.

The advice from some attorneys is reported to be that designers should not address health and safety issues, because if they do they may become liable.

Designers and architects receive extensive training, but there is reported to be minimal health and safety content. Some schools are trying to increase this but these changes are currently at a low level (pilot projects).

The code of ethics for architects (AIA) is reported to say that architects should be concerned about the health and safety of those using the completed facility. No mention is made of the construction phase. This is compared with the code of ethics for the National Society of Engineers which refers to safety of the general public and is considered by some to include the workforce during the construction phase. It is considered that engineers consider health and safety during construction to a greater extent than architects.

4.5 CONCLUSIONS FROM THE INTERNATIONAL SURVEY

The three countries surveyed are familiar with the health and safety issues found in the UK. There are differences in emphasis, but the themes are similar, in particular: client effectiveness, health risk awareness, safety skills, design for safety, and management commitment. Topics not of importance to the UK have not been raised.

The comparison of accident statistics shows the UK to be no worse than other countries. This observation alone suggests it is unlikely that proven approaches, of a fundamental nature, are to be found overseas. However, whilst recognising that approaches employed elsewhere cannot be easily

transplanted and may not lead to improvements due to the complex interrelationship of factors, the survey has thrown up some practices that may offer benefits to the UK:

- Mentoring schemes in which proactive companies are linked to less well performing companies (USA);
- Industry wide scheme for workers to undergo an annual medical examination (France);
- Inspection of sites by occupational physicians (France);
- Health surveillance records of employees (and moving with the employee) to be kept for 40 years (USA);
- The use of health and safety specific insurance schemes, with premiums adjusted to historical performance (France and USA);
- Inspectors focusing on high hazard site activities (USA);
- Inspectors targeting poorly performing companies (USA);

The signals in the international survey about reputation risks merit mention. The growing importance given to reputation appears to be motivating companies to improve safety. This is mentioned to be the case in USA directly and in Sweden indirectly. Although the prime focus in Sweden is environmental performance, safety improvements can be derived from better housekeeping.

5. OPPORTUNITIES FOR CONSTRUCTION HEALTH AND SAFETY

This section sets out opportunities that are perceived to be open for improving health and safety in the UK construction industry. The focus is on macro opportunities that could lead to significant improvements. They are presented under seven headings:

- Client influence
- Health risk awareness and management
- Managing health and safety culture
- Management ownership and commitment
- Safety skills
- Variation in the industry
- Safety by design

5.1 CLIENT INFLUENCE

The findings from UK consultation and international survey emphasise that Clients have significant influence over construction health and safety, but are not using this influence to the full. Therefore, opportunities lie in assisting and encouraging Clients to use their influence effectively. However, an alternative strategy is to reduce the sensitivity of construction health and safety to Client influence.

5.1.1 Improving Client effectiveness

If it is believed Clients have the ability to exercise beneficial influence over health and safety, then raising their skills will bring benefits.

The industry feels many Clients are ignorant of their role and are detached from their projects. Therefore, there are opportunities to:

- Further integrate Clients into the construction project process. For example, Clients could be required to approve all sub-contractors involved on their projects;
- Promote good practice to Clients, such as:
 - 'model' project briefs that cover health and safety;
 - selection processes that give due weight to health and safety management;
- Encourage the formation of independent Client support groups, with expertise on health and safety to whom clients, particularly novice clients, could turn to.

An indirect approach could be followed - use others to alter Client behaviour. At the outset of a project, whether committed or not to carrying through to construction, the majority of clients will engage a designer. Typically, these two parties will work through feasibility and concept stages, before the designer embarks on detailed design. The decisions taken in these early stages will have a considerable bearing on the health and safety of the later construction phase (and future maintenance phase). Furthermore, the Clients' appreciation and approach to construction health and safety is likely to be moulded by the designer's advice, especially if the Client is inexperienced. Given the concerns

expressed during the UK consultation about Designers, the feasibility in the short term of using them to influence Client attitudes is debatable, but it remains an option.

5.1.2 Desensitising construction from Client influence

Taking steps to reduce the sensitivity of construction projects to the influence of the Client would be a significant change for the sector. However, weaning the sector off its reliance on Client expertise and ethics would be beneficial. Why is the interaction between the other duty holders in the project not sufficient to ensure a positive attitude toward health and safety? It was commented in the UK consultation that the importance given to safety briefings depends largely on the client organisation (section 3.2.7). Why should this be the case? An answer could be a lack of independence in the health and safety function. Creating independence could bring benefits.

In view of the high risks observed in the sector, it is logical for the sector to give due weight to the health and safety management principles applied in other high risk environments. In particular the importance of an independent health and safety function. Several factors such as the rarity of small and medium contracting companies having an independent H&S function, and the occasions when a design organisation also acts as planning supervisor, suggest that the industry is dependent on the Client being the 'independent' reviewer. However, it is likely that many clients, especially novice clients, don't have the capability to fulfil this role.

Therefore, an approach to reducing the sensitivity of construction projects to the influence of the Client involves adjusting the roles and responsibilities within the regulations, with particular attention given to the degree of independence in the health and safety function.

5.2 HEALTH RISK AWARENESS AND MANAGEMENT

The conclusion from this study is that the awareness of health risks is generally below safety risks and the management of occupational health is weak. Even in regard to asbestos risks, the anecdotes from the consultation suggest that workers' understanding is variable.

It is likely that ongoing changes in social attitudes toward health will increase pressure gradually for improvement and make the sector more receptive to considering occupational health issues. There is therefore an opportunity to take advantage of the underlying cultural shift.

The gradual ageing of the workforce is a challenge for the sector. The fact that older workers are more prone to injury and ill health could itself create interest in improving health management. On the other hand, without new blood coming into the workforce, the scope for changing attitudes can reduce.

5.2.1 Understanding of health risks

There is scope for increasing the understanding of the causes and prevalence of ill health and using the increased understanding to:

- Encourage health risks to be avoided / minimised during the design stage, particularly in regard to choice of materials and in the identification of existing hazards (e.g. in demolition and refurbishment projects);
- Encouraging the development and uptake of alternative materials;
- Raising awareness of the causes of ill health among workers;
- Developing early-warning tests for symptoms of occupational ill health.

5.2.2 Health monitoring programmes

The nature of the industry, with a mobile workforce, does not encourage employers to implement health monitoring programmes. However, in certain sub-sectors such as rail, health monitoring is practised at an industry wide level and periodic tests are obligatory. The international survey also suggests industry wide health surveillance is a realistic goal (as in USA and France).

The experience of these schemes could support the case for them to be adopted by the industry or specific higher risk sub-sectors.

The benefits of having an occupational health practitioner inspect sites, as in France, could be considered. Its value hinges on whether a health practitioner can alert to hazards that lesser trained inspectors might miss.

5.3 MANAGING HEALTH AND SAFETY CULTURE

It is apparent from the UK consultation the sector has scope for improving how it engenders and sustains its safety culture. A picture is painted of an industry that is command driven with minimal engagement of its workforce to solve its health and safety problems. The extent to which the construction industry could adopt and adapt the principles of safety culture management followed by other sectors merits consideration. The comments indicate it has some way to go to exhaust the basic methods and techniques. Consequently there are opportunities to encourage the development of safety culture, particularly through promotion of good practice.

5.3.1 Site management

As well as general promotion, a specific target is site management. Site managers (and supervisors) are seen as key in enabling projects to achieve health and safety standards aimed for by their duty holders. They are considered to strongly influence health and safety practices on sites and have significant control over whether precautions put in place during the design and planning stages are carried through or compromised. Site workers are thought to adapt their attitude to health and safety to the attitudes of site managers. Therefore, if projects are to aim for high health and safety standards, site managers must appreciate these intentions, understand the reasons for design and planning decisions and support them.

Theories of organisational behaviour strongly suggest that actively involving site managers in the decision making process would increase their commitment to the goals of the project and reduce the likelihood of them violating planned risk controls.

Although it is claimed site managers have come a long way, interviewees also felt they have plenty of room for improvement. If the industry is to grasp the opportunities that safety culture offers it needs to develop the skills of its site managers and provide them with necessary tools. Consequently, there is an opportunity to assist the industry in doing this.

5.4 MANAGEMENT OWNERSHIP AND COMMITMENT

Key to getting management to put more effort into health and safety is to further convince them of the importance of health and safety performance to the future prosperity of their company.

Either there must be commercial advantages in good standards of health and safety or there are to be commercial disadvantages from poor performance. There are opportunities down both routes. These include:

- Encourage clients to place greater value on health and safety, and assist them in developing the means to select good performers;

- Convince management of the business case for health and safety;
- Impose greater penalties for poor health and safety performance;
- Increase the likelihood of poor performance being penalised.

A signal picked up in the UK consultation and international survey is that companies are increasingly concerned with protecting their reputations. Although it appears that at present health and safety performance is not seen by many construction companies to be a reputation hazard that ranks with the likes of environmental stewardship, reputation management is in its infancy. If the case can be made for health and safety performance being treated as a core reputation hazard and cemented into the emerging reputation management frameworks, benefits are likely to accrue as reputation management grows in popularity.

5.5 SAFETY SKILLS

To increase safety skills, opportunities lie in the area of training and competence standards.

5.5.1 Training

The message from the consultation process is that professional and trade qualifications vary in the extent to which they teach safety skills and understanding. Continued lobbying for health and safety to be given due attention within syllabi is therefore justified.

The option of spotlighting courses that are considered to tackle safety adequately is also available, perhaps in the form of accreditation schemes.

The consultation highlights a lack of continuous training. To some extent the slow rate of change in construction technology explains the lack of refresher training. Other than competence schemes that require periodic revalidation, there is no obvious route to encouraging refresher training.

5.5.2 Regulation of competence

The growing number of self-regulated competence schemes is to be encouraged. Consideration should be given to assist these schemes in overcoming operational difficulties, such as concerns small contractors have over the cost of joining many schemes.

If self-regulated schemes are claiming an effect on safety performance, there is an opportunity to substantiate these claims, draw out the lessons from them and encourage their wider uptake.

In view of the high risk levels of some trades, an option for consideration is legislative formal regulation for 'safety critical construction work'. Duty holders could be required to define minimum competence standards, and to have in place systems to assure these are met.

5.6 VARIATION IN THE INDUSTRY

It is likely that the variation seen in the industry is due in part to inconsistencies in the awareness and understanding of good health and safety practice. This points to weak or incomplete feedback which in turn hinders the scope for learning. Therefore there are opportunities to:

- Encourage the sharing of lessons learnt and best practice;
- Create feedback mechanisms and provide feedback.

5.6.1 Encourage learning

In respect to the first of these, there is an opportunity to tap into the increasingly popular management technique of 'Benchmarking'. The attraction of Benchmarking is that it allows companies to gauge the quality of their systems and compare their performance against others within and outside their industry. It is becoming a standard management technique and is a useful tool for continual improvement.

However, the uptake by larger organisations is greater than in small and medium enterprises. It is currently perceived that benchmarking material is of a format suited to large companies. Hence there is an opportunity to produce tools suited to the small end of the sector and tools tailored to a specific role, such as Planning Supervisor.

5.6.2 Feedback

The second opportunity is to create feedback mechanisms that will, over time, reduce the variability in the industry.

Mechanisms at the project level

It has been suggested that projects subject to CDM regulations not only submit a notification form but also a close-out form. The close-out process could ensure all participants in the project were made aware of the health and safety outcomes.

A perhaps more valuable mechanism at the project level is the investigation of incidents. It is not only the quality of incident analysis that could be improved but the process as a whole. For example, is their scope for altering the process to prevent incidents from being pushed onto sub-contractors as was said to occur by UK interviewees?

Industry level feedback

There is scope to create industry wide feedback, by:

- Pursuing more prosecutions which would have the effect of clarifying aspects of the regulations and defining benchmarks;
- Increasing the dissemination of construction health and safety information to the industry. This could include the analysis of health and safety data in formats appropriate to sub-sections of the industry, such as to designers.

5.7 SAFETY BY DESIGN

That there are opportunities to increase safety by design is evident from the analysis of the health and safety data, which shows consistent patterns of risk levels across trades. If the opinions of the interviewees are correct, there is reason to believe that risks can be reduced through improved design.

Two lines of approach are considered to be open:

- Increase the risk analysis skills of those involved in design risk assessments;
- Improving risk assessment techniques.

In terms of the first, the health and safety content in the training and development of design professionals is known to have scope for improvement. An alternative approach is to involve other disciplines at the design stage, in particular site managers, supervisors or site workers. Either site representatives could be involved during the assessment or a consultation process could be implemented, requiring site representatives to comment on the assessment prior to the design being 'frozen'. It appears this form of involvement is taking place in certain kinds of project but its

feasibility for all types of project is questionable. However, in the absence of a site representative, an independent risk reviewer with the necessary competence could be involved.

From the few comments made by interviewees on risk assessment techniques it is possible there is scope for improvement. Further investigation is required.

6. REFERENCES

Centre for Occupational Health, University of Manchester, *Occupational Physicians Reporting Activity*, Communication from Centre for Occupational Health, University of Manchester, 1999

CITB (a), *Construction Employment and Training Forecast*, CITB, 1997, Norfolk

CITB (b), *Construction Employment and Training Forecast 1999 - 2003*, CITB, 1999, Norfolk

DETR, *Labour Market Trends*, DETR, 1999, London

Egan Initiative, *Rethinking Construction*, the report of the Construction Task Force to the Deputy Prime Minister, John Prescott, on the scope for improving the quality and efficiency of UK construction, 1998

Eurostat & HSE, *Workplace injury: Comparison of Great Britain with Europe and the USA*, Communication from HSE, 2000

HSE, *Number of fatal injuries to workers in the construction sector as reported to FOD for 1992/93 - 1995/96*, Communication from HSE, 1999

HSE, *Number of non fatal (major and minor) injuries to employees in construction FOD and LAs for 1992/93 - 1995/96*, Communication from HSE, 1999

HSE, *Number of fatal and non fatal injuries in the construction sector to workers as reported to HSE's FOD, CHID (excluding pipelines and explosives) and NSD (conventional safety only) and LA's for 1996/7 - 1998/99*, Communication from HSE, 1999

Latham Report, *Constructing the Team*, Joint review of Procurement and Contractual Arrangements in the United Kingdom Construction Industry, 1994

ONS, *Housing and Construction Statistic*, ONS, 1999, London

RoSPA, *The Overall Picture*, Occupational Safety and Health Bulletin, November 1999, p3-5

Appendix A

Information used to translate the codes for the HSE injury data (1993 - 1998)

8 Pages

Occupation / Trade Codes for the reporting of Injury to HSE (Communication from HSE, December 1999)

Non-fatal Code	Fatal Code	Occupation / Trade
28	-	General Farm Worker
36	-	Tree Surgeon
37	-	Stable Hand
38	-	Landscape Gardener
72	-	Diver
86	-	Surveyor
89	-	Other Peretetics
98	98	Unknown

FOD Information Coding Manual (OCCUPATIONAL CODING DICTIONARY)

(see Section 2, Appendix 1, pages 112 - 115)

2nd Edition, 1991

OCCUPATION	CODE	OCCUPATION	CODE	OCCUPATION	CODE
A		Blast furnace keeper	64	Chemist	99
Administrator	63	Bleacher	64	Chimney sweep	89
Agent	99	Boiler attendant/operator	64	Civil engineering labourer	61
Agricultural Contractor	40	Bottler	64	Cleaner	92
Ambulance driver	75	Bricklayer	11	Clerk	63
Ambulance man/woman	75	Buffer	64	Clerical Officer	63
Analyst	99	Builder	29	Coastguard	75
Arboricultural worker	01	Building labourer	61	Collector	63
Archeologist	99	Burner	13	Communications engineer	44
Artist	99	C		Computer operator	63
Asbestos Operative/stripper	29	Cabinet maker	12	Concrete worker	64
Asphalter	18	Cable joiner	43	Concreter	18
Assembler/line worker	64	Cable maker	64	Constable	75
Assistant	99	Canteen assistant	91	Controller	99
Attendant - operator	64	Cap maker	64	Cook	91
Attendant - car park	97	Capstan lathe operator	64	Coremaker	64
Attendant - other	99	Carder	64	Corrugator operator	64
Autoelectrician	14	Caretaker	90	Counter hand/assistant	91
B		Carpenter	12	Cowman	07
Bagger	64	Carrier	61	Crane driver	30
Bailiff	63	Carter	61	Crop sprayer	09
Baker	64	Caster	64	Cutter	64
Banksman	88	Cattleman	07	D	
Structural steel erection/fixer	25	Cellerman	91	Dairy hand	64
Barber	97	Chainmaker	64	Data/preparation processor	63
Bar staff	91	Chainman	61	Decorator	17
Beater	64	Chambermaid	92	Delivery man	71
Benchhand	61	Chargehand	63	Demolition worker	13
Bender	64	Chargenurse	52	Dentist	51
Binder	64	Checker	64	Designer	99
Blacksmith	64	Chef	91	Die setter	64
District nurse	52	Finisher	64	Guard	97
Diver	72	Fireman	74	Guillotine operator	64
Docker	61	First hand	64	H	

OCCUPATION	CODE	OCCUPATION	CODE	OCCUPATION	CODE
Doctor	51	Fitter - electrical, electronic, engineering	42	Hairdresser	97
Domestic	92	- telephone	44	Hand press operator	64
Double backer operator	64	- otherwise	62	Handyman	61
Drawer	64	Forecourt attendant	96	Health visitor	79
Dresser	64	Foreman/woman (any)	63	Heater	64
Driller	64	Forester	01	Heating and ventilation fitter	21
Driver	30	Forestry worker	01	Helper	61
Driver operator	30	Forgeman	64	Herdsman	07
Driving instructor	73	Fork lift truck driver	30	Homehelp	79
Drop stamper	64	Foundation worker	16	Horticultural worker	02
Dumper driver	30	Fruit picker	05	Hospital porter	94
Dustman	77	Furnaceman	64	Houseman	92
Dyer	64	G		I	
E		Ganger	63	Inspector - supervisory	63
Electrical/electronic electrical engineering fitter	42	Gardner	02	- statutory	99
Electrical jointer	43	Gas fitter	21	- otherwise	64
Electrician	14	Gas maker	64	Installer	62
Electricity board linesman	41	General labourer	61	Instructor	99
Engineer	99	General practitioner	51	Insulator	29
Engraver	64	Gilder	64	Ironer	97
Erector	99	Glass worker	64	Iron worker	61
Examiner	64	Glazier	15	J	
Explosives engineer/operator	29	Glove machinist	64	Joiner	12
F		Grader	64	Jointer	12
Fairground operator	93	Gravure machine assistant	64	K	
Farm manager	63	Greaser	62	Keeper - school	90
Farm worker	61	Grinder	64	Keeper - book	63
Fettler	64	Groundsman	02	Keeper - animal	93
Filler	64	Ground worker	16	Keeper - other	99
L		Merchant	96	Petrol pump attendant	96
Laboratory technician	35	Messenger	71	Pavoir	18
Labourer	61	Metallurgist	99	Picker	64
Lathe operator	64	Meter reader	76	Pickler	64
Launderer	97	Milkman	71	Piece worker	64
Layer	99	Miller	64	Piggerman	03

OCCUPATION	CODE	OCCUPATION	CODE	OCCUPATION	CODE
Leader	63	Mill hand /man/operative/worker	61	Pigman	03
Leading hand	64	Minder	64	Piling hand	19
Leather worker	64	Model maker	64	Pipe fitter	21
Lecturer	31	Moulder	64	Pipe joiner	16
Leisure centre staff	93	N		Pipe layer	16
Librarian	99	Navy	61	Plant hire operator	30
Lifeboatman	75	Nurse	52	Plant operator	64
Lifeguard	75	Nurse administrator	63	Plasterer	20
Linesman	41	Nurseryman	02	Plater	64
Lithographer	64	O		Plumber	21
Loader	61	Onsetter (Quarries)	57	Police - constable	75
Lorry driver	30	Operator - vehicle	30	- driver	30
M		- other	64	- man/woman/officer	75
Machine operator/setter	64	Orderly	92	- sergeant and above	63
Machinist	64	Outside broadcast	44	Polisher	64
Mains layer	16	Overhead linesman	41	P O linesman	41
Maintenance engineer/fitter/hand/man operative etc	62	Overlooker	62	Pool attendant	93
Maker	64	Overseer	63	Porter	94
Manager	63	P		Postman/woman	71
Marker	64	Packer	64	Post master/mistress	63
Master	63	Painter and decorator	17	Potman	97
Mate	61	Paint worker	64	Potter	64
Matron	63	Paper worker	64	Poultry hand/man worker	04
Mechanic	62	Park attendant/ranger	09	Power linesman	41
Mechanical Engineer (Quarries)	84	Patrolman	97	Power presser	64
Medical Technician	54	Patternmaker	64	Presser	64
Press operator	64	Security officer	97	Stone mason	82
Press setter	64	Seedsman	02	Storekeeper	61
Printer	64	Services layer	16	Stripper	29
Prison officer/warden	95	Setter	64	Superintendent	63
Production fitter - electrical etc	42	Sewing machinist	64	Supervisor	63
- otherwise	62	Shearer	64	Surveyor	86
Production line worker	64	Sheeter	23	Swimming pool staff	93
Q		Shelf filler	96	T	
Quarryman	81	Shop manager	63	Tanker driver	30
R		Shotfirer	83	Tar sprayer	18

OCCUPATION	CODE	OCCUPATION	CODE	OCCUPATION	CODE
Radiographer	54	Signalman	85	Teacher	31
Radio mechanic	44	Site agent	99	Technician (not laboratory)	99
Red leader	64	Slater	23	Teemer	64
Refuse collector	77	Slinger	61	Telecom engineer	44
Reinforcement fixer	29	Smelter	64	Telephone fitter	44
Repairer	62	Smith	64	Tester	64
Representative	78	Social worker	79	Tiler	23
Researcher	99	Sorter	64	Tile setter	11
Rigger	62	Spinner	64	Tile worker	64
Road man	18	Sports centre staff	93	Timberman	29
Road sweeper	89	Sports instructor	93	Tin plater	64
Roller (man)	64	Sports man/woman	93	Tool maker	64
Rofer / roofing worker	23	Sprayer	64	Topman	13
Roundsman	78	Stacker truck driver	30	Tracer	63
S		Stager	22	Tractor driver	08
Sales/woman/assistant	78	Steel bender/fixer	25	Traffic warden	89
-travelling	78	Steel erector	24	Trainer	64
-otherwise	96	Steepler jack/peter	26	Trimmer	64
Sawyer	64	Stevedore	61	Truck driver	30
Scaffolder	22	Steward	97	Tube maker	64
Schoolkeeper	90	Stitcher	64	Tunneller	29
School teacher	31	Stock(s) man	07	Turner	64
Secretary	63	Stone cleaner	29	TV mechanic	44
Typesetter	64	W		Welder	27
Typist	63	Waiter/waitress	91	Welfare worker	79
U		Waiter/waitress	91	Winder	64
Unskilled worker	61	Warder	95	Winding Engineman	87
V		Ward orderly	92	Window cleaner	80
Van salesman	78	Warehouseman	61	Wirer	64
Vehicle	62	Washer	64	Woodworking machinist	64
Veneer cutter	64	Watchman	97	Worker	99
Ventilating fitter	21	Waterman	61	Y	
Vet	99	Weaver	64	Yard(s) manworker	61

NATURE OF INJURY	CODE	INCLUDES	EXCLUDES
Amputation (involving permanent loss of part or whole of digit etc).	02	Injuries where joint or bone is completely severed	Loss of tooth or nail-code 13
Burns	09	Burns form: electric heating appliances, electricity, flame, hot or cold object, external chemical burns (including rash, skin or tissue inflammation resulting from contact with chemicals and skin absorption by phenol), welders eye flash.	Friction burns - code 13. Internal chemical burns - code 10. Sunburn - code OK
Concussion and internal injuries	06	Internal damage without fracture to skull, chest, pelvis, abdomen etc; disc lesion; hernia	Injuries to limbs
Contusions - injuries (e.g. by blow) which do not break the skin surface - and crushings.	08	Bruises, contusions and crushings associated with superficial injuries (including damage to eye)	
Dislocation	05		
Fracture	04	Fracture with dislocation; chipped or cracked bone; hairline fracture; suspected fracture.	
Gassings	10	See Poisonings and gassings	
Laceration and open wounds	07	Wounds resulting in severed tendon, nerve, blood vessels (including damage to eye), cuts requiring stitches.	Cuts not requiring stitches - Code 13
Loss of sight to of eye	03		
Asphyxiations Poisonings and gassings	10	Oxygen - deficiency, Acute ill health effects of the ingestion, absorption inhalation of toxic corrosive or caustic substances and asphyxiation by gases, smoke, fumes etc.	External chemical burns and skin absorption by phenol - code 09
Sprains and strains	11	Back pain, torn ligaments	

IF NOT INCLUDED ABOVE USE THE FOLLOWING CODES

NATURE OF INJURY	CODE	INCLUDES	EXCLUDES
Other injury caused by contact with electricity	15	Loss of consciousness, shock etc.	Burns (Code 09)
Superficial injuries	13	Abrasions; scratches; blisters; bites of non venomous insects; foreign body in eye causing superficial injury; cuts not requiring stitches; puncture wounds; loss of tooth and nail; grazes	
Injuries of more than one of the above types	14	Only to be used where two or more injuries of different natures are sustained and no injury is obviously more than another.	
Natural causes	16	Heart attack	
Other known	OK	Only to be used when the injury can be identified but is not included in another category. Includes traumatic shock.	
Other unknown	XX	Only to be used when no information is available to identify the nature of the injury.	

Appendix B

Non building trades - HSE injury data (1993 - 1996)

1 Page

This appendix presents the trades that were not considered for the purposes of this study (i.e. Non Building Trades and Trade Not Specified).

Trade	Trade	Trade
Not Specified	Emergency services	Poultry worker
Academic staff	Forestry / arboricultural worker	Professional staff
Administration staff	General Farm Worker	Refuse collection
Agricultural contractor	Horticultural worker	Stable Hand
Catering staff	Lab technician	Surveyor
Cleaner	Landscape Gardener	Tree Surgeon
Diver	Manual production personnel	Window cleaner
Electricity linesman	Other Peripatetics	

Appendix C

Non building trades - HSE injury data (1996 - 1999)

2 Pages

This appendix presents the trades that were not considered for the purposes of this study (i.e. Non Building Trades and Trade Not Specified).

Trade	Trade	Trade
Unknown	Catering Assist	General Managers
Not Specified	Catering/Travel	Goods Driver
Admin Business	Childcare	Hair/Beauty
Admin Law	Cleaners	Horticulture
Admin/Government	Coal Mine Labour	Hospital Porter
Administration	Cooks/Chefs	Hotel Managers
Ag Mach Driver	Customs/Excise	Hotel Porter
Ambulance	Dental	Housekeepers
Armed Forces	Despatch Clerks	Laboratory Test
Assembly/Line	Docks	Law
Assist Nurses	Doctor/Medics	Librarians
Baker	Door-To-Door	Literary Media
Bakery	Draft/Qty Survey	Medical Support
Brewery	Engineer/Technol	Metal Coating
Bus/Coach Driver	Environmental	Metal Furnace
Business	Estate Managers	Metal Machine Op
Buyer/Broker	Farm Worker	Metal Machining
Cabinet Makers	Fire	Metal Plate Work
Car Park Attend	Fishmonger	Mine/Quarry
Car/Cab Driver	Forestry	Mining
Care Assist	Foundry Labour	Moulders
Caretakers	Gardener	Natural Science
Electric/Generat	Engine/Elec	Numerical Clerks
Nurses	Petro/Chemical	Secretary/Typist
Office Machinery	Plastics	Security
Office/Managers	Police	Service/Pipes
Officers	Post/Message	Sheet Metal Work
Other Administers	Printers	Smiths/Forge
Other Agriculture	Printing	Social Support

Trade	Trade	Trade
Other Associate	Product/Managers	Special/Managers
Other Food Drink	Rail Track	Sport
Other Health	Reception/Teleph	Stacker
Other Machining	Records Clerks	Surveyor/Planner
Other Metal	Refuse	Teaching
Other Personal	Road Sweeper	Tech/Wholesale
Other Proc Op	Roller	Textile
Other Professional	Routine Manufact	Textile Worker
Other Public	Routine Metal	Transport Inspec
Other Routine Op	Sales Assist	Trans/Managers
Other Sales	Scientific/Elec	Travel
Other Scientific	Scientific/Eng	Vehicle Finisher
Other Service Manage	Scientific/Lab	Vehicle Trades
Other Service	Scrap Metal	Waiter/Bar
Other Clerical	Screen/Crush	Ward Assistant
Packers	Seafarers	Water/Sewage
Other misc	Scientific/Build	Window Cleaner
Paper/Wood	Glass/Ceramics	

Appendix D

Number of operatives within the construction industry by profession

2 Pages

Number of Operatives within the Construction Industry by Trade

Trade	1995			1997			Ratio between Employees : Self- employed
	Total (CITB)	Employees (DETR)	Self- employed (= Total - Employees)	Total (CITB)	Employees (DETR)	Self- employed (= Total - Employees)	
Carpenters and Joiners	169,125	8,900	160,225	186,800	11,300	175,500	6:94
Painters	82,500	16,400	66,100	83,000	20,300	62,700	22:78
Plasterers	37,125	3,800	33,325	41,500	4,100	37,400	10:90
Roofers	42,625	8,700	33,925	44,600	10,400	34,200	22:78
Floorers	23,375	4,300	19,075	20,300	5,200	15,100	22:78
Glazier	13,750	10,600	3,150	8,100	7,800	300	87:13
Scaffolders	17,875	10,100	7,775	17,600	10,100	7,500	57:43
Plant operatives	57,750	11,000	46,750	40,600	9,900	30,700	22:78
Electricians	143,000	43,000	100,000	128,500	54,400	74,100	36:64
Plumbers	125,125	33,800	91,325	102,800	37,400	65,400	32:68
Bricklayers	97,625	14,196**	83,429	110,700	15,708**	94,992	14:86
General* Operatives	140,250	19,604**	120,646	145,919	21,692**	124,227	14:86
Structural steel erections	15,125	No data	No data	13,500	No data	No data	No data
Maintenance workers	No data	No data	No data	23,000	No data	No data	No data
Other Building Operatives	34,375	33,500	-	32,802	43,400	-	-
Managerial, Clerical, Professional	328,625	33,500	-	329,400	49,100	-	-
Non Construction / Proprietary Operatives	27,500	-	-	27,000	-	-	-
General Builders	-	97,000	-	-	109,900	-	-

* Includes non-construction operatives

** DETR employee statistics were supplied combined figure; assumed a pro-rata split between Bricklayers and General Operatives as per CITB total number of operatives.

Appendix E

Statistical analysis figures

29 Pages

Appendix F

UK consultation questionnaire

13 Pages

Construction Health and Safety

This is a confidential questionnaire about your opinions of health and safety in the UK construction sector. Please use your experience of working in the UK to answer the questions and please answer as many as you can.

About you

How many years have you worked in construction in the UK? less than 1 year 1-5 5-10 More than 10 years

What type of jobs have you had in construction in the UK?	Present (tick one)	Previously (tick all relevant)
Labourer	<input type="checkbox"/>	<input type="checkbox"/>
Trade worker	<input type="checkbox"/>	<input type="checkbox"/>
Supervisor / Foreman / Team leader	<input type="checkbox"/>	<input type="checkbox"/>
Safety advisor	<input type="checkbox"/>	<input type="checkbox"/>
Site management	<input type="checkbox"/>	<input type="checkbox"/>
Project management	<input type="checkbox"/>	<input type="checkbox"/>
Head-office management	<input type="checkbox"/>	<input type="checkbox"/>
Design / Consulting Engineer	<input type="checkbox"/>	<input type="checkbox"/>
Contracts management	<input type="checkbox"/>	<input type="checkbox"/>
Architect	<input type="checkbox"/>	<input type="checkbox"/>
Surveyor	<input type="checkbox"/>	<input type="checkbox"/>
Client	<input type="checkbox"/>	<input type="checkbox"/>
Facilities management	<input type="checkbox"/>	<input type="checkbox"/>
other	<input type="checkbox"/>	<input type="checkbox"/>

Do you work in a trade? No Yes, please tick one below

- | | | |
|--|---|--|
| <input type="checkbox"/> Asbestos worker | <input type="checkbox"/> Ground worker | <input type="checkbox"/> Plumber, pipe fitter |
| <input type="checkbox"/> Bricklayer | <input type="checkbox"/> Labourer | <input type="checkbox"/> Roofer, slater |
| <input type="checkbox"/> Carpenter/joiner | <input type="checkbox"/> Maintenance personnel | <input type="checkbox"/> Scaffolder |
| <input type="checkbox"/> Communications engineer | <input type="checkbox"/> Miner, tunnelling | <input type="checkbox"/> Steel erector |
| <input type="checkbox"/> Demolition worker | <input type="checkbox"/> Painter, decorator | <input type="checkbox"/> Structural steel erection, bar bender |
| <input type="checkbox"/> Drivers | <input type="checkbox"/> Paviour, roadman | <input type="checkbox"/> Steeplejack |
| <input type="checkbox"/> Electrician | <input type="checkbox"/> Piling hand | <input type="checkbox"/> Welder |
| <input type="checkbox"/> Floorer | <input type="checkbox"/> Plant operators, fitters | <input type="checkbox"/> Other |
| <input type="checkbox"/> Glazier | <input type="checkbox"/> Plasterer | |

What type of construction have you been involved in?	many	some	few	none
Private residential refurbishments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Housing re-developments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New housing developments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Office buildings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other commercial buildings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decommissioning / demolition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Building maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transport infrastructure (roads, railway)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chemical plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities (water, power)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ports / harbours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tunnelling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Have you worked on projects subject to the CDM regulations? many some few none not sure

		Total value of project (not just your input)			Not sure
		many	some	few	
What size of projects have you worked on?	less than £50,000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	£50,000 -£250,000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	£250,000 -£1m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	more than £1m	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What is your company? (please tick the closest match)	<input type="checkbox"/> A client	<input type="checkbox"/> General sub-contractor
	<input type="checkbox"/> Design / Consulting Engineer	<input type="checkbox"/> Labour only sub-contractor
	<input type="checkbox"/> Architect practice	<input type="checkbox"/> Specialist sub-contractor
	<input type="checkbox"/> Surveyors	<input type="checkbox"/> Self-employed
	<input type="checkbox"/> Project management company	<input type="checkbox"/> other
	<input type="checkbox"/> Contracting company
	

Have you received training in construction health and safety? None Some Extensive

As a result of your construction work, have you ever:	Suffered an injury or ill health that required a stay in hospital	<input type="checkbox"/> No	<input type="checkbox"/> Yes
	Suffered an injury or ill health that required time off work	<input type="checkbox"/> No	<input type="checkbox"/> Yes
	Suffered a minor injury recorded in the site accident book	<input type="checkbox"/> No	<input type="checkbox"/> Yes
	Witnessed a severe or fatal accident	<input type="checkbox"/> No	<input type="checkbox"/> Yes
	Been involved where the HSE has taken an enforcement action or safety prosecution	<input type="checkbox"/> No	<input type="checkbox"/> Yes

Your views on the construction sector

In your opinion, how much importance does each of the following give to construction health and safety?

	high priority	medium priority	low priority	not a priority	Not sure
Clients	<input type="checkbox"/>				
Design engineers / architects	<input type="checkbox"/>				
Contracting companies	<input type="checkbox"/>				
Specialist sub-contractors	<input type="checkbox"/>				
Principal planning supervisor	<input type="checkbox"/>				
Site Workers / operators	<input type="checkbox"/>				
Unions	<input type="checkbox"/>				
Trade associations	<input type="checkbox"/>				
Professional institutions	<input type="checkbox"/>				

Which of the following influence a company's approach to health and safety?

	Strong influence	Some influence	No influence	Not sure
The specification of the job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legal requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health and safety practices of competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Requirements from professional bodies or trade associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Views of the Company Directors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Union demands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employee wishes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insurance requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Owners / shareholders / investors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How strongly do you agree or disagree with these statements?

1. The construction sector believes its safety performance is satisfactory	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	6. Qualifications for building trades cover health and safety thoroughly	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
2. The health and safety problems inherent in construction activities make it difficult to improve health and safety performance	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	7. There are too many laws and regulations controlling construction health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
3. There is plenty of good guidance on how to manage construction HEALTH issues	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	8. Regulations clearly define health and safety requirements	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
4. There is plenty of good guidance on how to manage construction SAFETY issues	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	9. It is easy to identify which health and safety regulations apply to a specific project	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
5. Professional qualifications for engineers/designers/architects prepare them to deal with real health and safety issues	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	10. Companies in the construction sector consider their health and safety performance to be important to commercial success	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree

11. Companies want to have a better safety record than their competitors	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	22. Most projects are too short for a company to give special attention to how it manages health and safety in a project	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
12. Being prosecuted can seriously affect the future of a company	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	23. The sooner the client appoints the principal contractor the safer the project will be	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
13. Health and safety is more important to small firms than large firms	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	24. Working constantly with the same set of contractors/sub-contractors etc. improves health and safety performance	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
14. Small and medium firms do not have health and safety expertise	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	25. Projects are too different for their health and safety issues to be managed in the same way	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
15. The costs of managing health and safety are too great for small and medium sized companies	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	26. Designers (consulting engineers / architects) have nothing to gain from there being fewer construction accidents	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
16. There is little variation in how construction companies manage health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	27. The cost of improving health and safety performance exceeds the benefits to be gained	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
17. There is little variation in how clients approach health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	28. The division of tasks between designers, contractors, etc. makes it very difficult to manage health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
18. Companies do not prevent health and safety incidents because they rely on insurance policies to cover health and safety claims	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	29. The construction industry is unique, and you can't use health and safety management methods tried in other industries	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
19. Companies with low turnover of workers have better health and safety performance	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	30. Spending money on managing construction health and safety saves money in the long run	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
20. When construction work is scarce, health and safety is cut back like other costs, so as to keep competitive	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	31. 'Partnering' does not improve construction health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
21. Keeping competitive means companies can't afford to invest in health and safety training	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree		

Your views on construction projects

32. The specification from the client determines how well health and safety is managed on the project	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	42. A project with a large number of self-employed workers is likely to have more accidents	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
33. A co-operative relationship between client and lead contractor is critical to good health and safety management	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	43. The more experienced the management team, the better will be the health and safety on a project	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
34. The size and complexity of the project (e.g. number of sub-contractors) influences how well health and safety is managed	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	44. The more experienced the workforce, the better will be the health and safety on a project	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
35. The health and safety on high profile projects are always well managed	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	45. Planning Supervisors help improve health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
36. Method statements do not include sufficient information on how to do the job safely	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	46. It is possible to foresee and remove health and safety problems during the design and planning stages (before site work)	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
37. Accidents occur when there are too many people working on a site at one time	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	47. It is possible to foresee the health and safety hazards to workers from the construction drawings and schedule of work	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
38. It is difficult to manage safety if there are too many changes to the plan of work	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	48. Designers leave it to others to find safe ways of constructing their designs	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
39. Projects with severe budget pressures will be unsafe	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	49. Design changes, or changes to the plan of work, during construction create safety problems	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
40. A project that runs into schedule pressures will pay less attention to health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	50. All health and safety problems that occur during construction can be resolved on site	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
41. A visit by an HSE inspector brings about an improvement in Health and Safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	51. The situation on a site changes too fast for health and safety issues to be carefully managed	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree

52. Site managers look out for health and safety problems and are quick to correct them	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	63. What is considered safe in one project might not be considered safe in another similar project	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
53. The attitude of site managers to health and safety is dependent on the attitude of their senior management	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	64. It takes an accident to occur on a project before health and safety is taken seriously	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
54. Supervisors/foremen ensure their workers are working safely	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	65. The only reason for writing health and safety rules and manuals is to satisfy legislation	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
55. Safety advisors are the only people who raise health and safety issues	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	66. Safety can be much worse on projects for in-experienced clients	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
56. Workers know more about safety than management	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	67. Construction workers accept that poor health and safety conditions are part of the job	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
57. Sub-contractors do not follow site safety procedures	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	68. Workers can earn more if they ignore health and safety rules	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
58. Self-employed workers are more at risk than others	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	69. Attitudes of workers to health and safety are strongly influenced by their training/qualifications	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
59. Unions improve health and safety on projects	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	70. Attitudes of workers to health and safety are strongly influenced by their experience	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
60. Site managers have a good understanding of health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	71. Workers adapt their attitude to health and safety on a project to the overall attitude of site managers	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
61. Supervisors / foremen have a good understanding of health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	72. Workers believe that project management are keen to manage health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
62. Client representatives have a good understanding of health and safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree	73. The construction industry does not care about the long term health of its workers	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree

74. Inexperienced clients don't realise how much they can influence the health and safety on their projects	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
75. A happy project is a safe project, while infighting in the team threatens safety	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree
76. Most accidents are caused by rushing work and taking short cuts	<input type="checkbox"/> strongly agree <input type="checkbox"/> agree <input type="checkbox"/> agree a little <input type="checkbox"/> unsure <input type="checkbox"/> disagree a little <input type="checkbox"/> disagree <input type="checkbox"/> strongly disagree

Your experience of health and safety issues in projects

On how many projects do the following pose significant risks to health and safety?

	most projects	some projects	few projects	none	not sure
Noise	<input type="checkbox"/>				
Dust	<input type="checkbox"/>				
Working at height	<input type="checkbox"/>				
Live electric cables / wiring	<input type="checkbox"/>				
Power tools	<input type="checkbox"/>				
Compressed air	<input type="checkbox"/>				
Large machinery	<input type="checkbox"/>				
Falling tools	<input type="checkbox"/>				
Hot surfaces	<input type="checkbox"/>				
Unsafe scaffolding	<input type="checkbox"/>				
Slippery surfaces	<input type="checkbox"/>				
Fires	<input type="checkbox"/>				
Fragile roof or roofing material	<input type="checkbox"/>				
Construction plant	<input type="checkbox"/>				
Construction vehicles	<input type="checkbox"/>				
Public vehicles	<input type="checkbox"/>				
Holes / pits in the ground	<input type="checkbox"/>				
Underground cables / pipes	<input type="checkbox"/>				
Overhead power lines	<input type="checkbox"/>				
Confined spaces	<input type="checkbox"/>				
Manual handling heavy loads	<input type="checkbox"/>				
Asbestos	<input type="checkbox"/>				
Solvents	<input type="checkbox"/>				
Lead	<input type="checkbox"/>				
Welding fumes	<input type="checkbox"/>				
Other toxic construction chemicals	<input type="checkbox"/>				
Sunshine	<input type="checkbox"/>				
Ground contamination	<input type="checkbox"/>				
Crane or lifting failures	<input type="checkbox"/>				
Cold weather	<input type="checkbox"/>				
Night working	<input type="checkbox"/>				
Long shifts (over 12 hours)	<input type="checkbox"/>				

In your experience, how common are the following on projects:

	Most projects	Some projects	Few projects	None	Not sure
Project specific health and safety policy / plans	<input type="checkbox"/>				
A policy of freely providing Personal Protective Clothing / Equipment	<input type="checkbox"/>				
Induction briefings on health and safety	<input type="checkbox"/>				
Frequent health and safety tours by management	<input type="checkbox"/>				
Risk assessments	<input type="checkbox"/>				
Inclusion of health and safety in project reviews	<input type="checkbox"/>				
Enforcement of safety rules	<input type="checkbox"/>				
Enforcement of wearing safety clothing/equipment	<input type="checkbox"/>				
Respect given to safety advisors	<input type="checkbox"/>				
health and safety incentive schemes (awards, prizes)	<input type="checkbox"/>				
Strict housekeeping standards	<input type="checkbox"/>				
Penalties for unsafe behaviour	<input type="checkbox"/>				
High quality accident investigation	<input type="checkbox"/>				
Follow-up after incidents	<input type="checkbox"/>				
health and safety records considered when selecting contractor/sub-contractors	<input type="checkbox"/>				
Checking of employee qualifications / competencies	<input type="checkbox"/>				
Health and safety posters/campaigns	<input type="checkbox"/>				
High quality of worksite conditions e.g. lighting, weather protection, welfare	<input type="checkbox"/>				
Involving workers in planning work tasks	<input type="checkbox"/>				
Appointment of a safety committee	<input type="checkbox"/>				
Sufficient first aid facilities	<input type="checkbox"/>				
Checking of certificates for all machinery and tools	<input type="checkbox"/>				
Full testing of all tools and machinery on the project	<input type="checkbox"/>				
Requirement for health and safety issues to be in method statements	<input type="checkbox"/>				
Vehicle speed restrictions	<input type="checkbox"/>				
Control of visitors	<input type="checkbox"/>				
'Teamwork' sessions for the project management team	<input type="checkbox"/>				
Health checks before hiring workers	<input type="checkbox"/>				
On-going health checks on workers throughout the project	<input type="checkbox"/>				

Your views on recent changes in the construction sector

Has there been a change in the last few years in any of the following:

	Large improvement	Some improvement	No change	Some worsening	Large worsening	Not sure
Level of co-ordination on health and safety issues within projects	<input type="checkbox"/>					
Acceptance of responsibility for health and safety by management	<input type="checkbox"/>					
Degree of worker consultation (in site practices)	<input type="checkbox"/>					
Designs being safer to construct	<input type="checkbox"/>					
Health and safety in planning construction activities	<input type="checkbox"/>					
Quality of health and safety rules	<input type="checkbox"/>					
Enforcement of health and safety rules	<input type="checkbox"/>					
Provision of personal protective equipment	<input type="checkbox"/>					
Health & safety briefings given to workers	<input type="checkbox"/>					
Reporting of accidents	<input type="checkbox"/>					
The health and safety well-being of construction workers	<input type="checkbox"/>					

Do you believe there has been a change in the understanding of construction health and safety risks by:

	Large improvement	Some improvement	No change	Some worsening	Large worsening	Not sure
Clients	<input type="checkbox"/>					
Designers,	<input type="checkbox"/>					
Planning Supervisors,	<input type="checkbox"/>					
Head-Office Management	<input type="checkbox"/>					
Project Management	<input type="checkbox"/>					
Site Management	<input type="checkbox"/>					
Site Supervisors	<input type="checkbox"/>					
Construction workers	<input type="checkbox"/>					

Do you believe there has been a change in the following:

	Large increase	Some increase	No change	Some decrease	Large decrease	Not sure
Number of fatal or major accidents	<input type="checkbox"/>					
Proportion of project costs allocated to health and safety	<input type="checkbox"/>					
Health and safety regulations	<input type="checkbox"/>					
Number of self-employed workers	<input type="checkbox"/>					
Site visits by HSE inspectors	<input type="checkbox"/>					

Are you aware of the following, and if you are, do you think they have brought about improvements to construction health and safety

	Aware of?		Large benefit	Some benefit	No benefit	Not sure
Egan initiative	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Latham report	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CDM regulations	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Six pack	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
'Good Health is Good Business' campaign	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
'Working well together' campaign	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What could improve construction health and safety?

Could any of the following bring improvements in construction health and safety?

	could bring <u>big</u> benefits	could bring <u>some</u> benefits	no change	could <u>worsen</u> health and safety	Not sure
Increasing the priority of health and safety in the construction sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less use of sub-contractors on projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increasing health and safety knowledge amongst designers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developing safer construction methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More use of partnering/alliancing arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More effort into planning a project before starting construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More time during construction to assess health and safety issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More health and safety in training courses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greater penalties on unsafe behaviour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clearer regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prosecution of Directors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accreditation systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corporate Manslaughter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Realistically, how much scope do the following have to improve construction health and safety?

	Large scope	Some scope	No scope	Not sure
Government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contractor Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Designers/Engineers/Architects/ Planning Supervisors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Site Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Advisors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supervisors/Foremen/Team Leaders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction Workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional Institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trade Associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insurers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix G

Summaries of the UK consultation sessions

50 Pages

Session 1: Mixed session

Construction Sector

- The motivation of a construction company's top management is important. The company of one of the session participants had gone through a significant change in the last eighteen months due to a new CEO.
- The industry is storing up health problems for tomorrow. Not enough attention is being given to health
- Small contractors differ from large contractors in terms of their awareness and confidence in H&S management. Small companies go to consultants and there is a great variation in the quality of advice given. Small companies could do more for themselves but lack confidence.
- There is a feeling that whatever you do to manage H&S, you would still get done for something if you were investigated.
- Interpretation of varies legislation varies. Take risk assessment as an example, there is no standard format or means of comparing what you are doing to a reference point.
- HSE are not providing a benchmark for H&S management. In the case of risk assessment, when you ask for advice they give you the standard answer that 'it needs to be suitable and sufficient' which isn't much help.
- In large companies there can be a degree of internal cross comparison. The interviewee doesn't know whether any are making efforts to compare themselves with others.
- The HSE are not fulfilling the regulator role expected of them. Nobody wants a visit from the HSE, but you can assume they're not going to appear. Visits are very rare and they usually only come when there is a fatality. If you try to call them out because of someone's unsafe work they either don't come or if they do there is chance they investigate something else. Their current favourite is welfare, so when they were recently alerted to unsafe work by an asbestos contractor they instead chased the Principal Contractor for the standard of toilets. This kind of experience undermines them.
- Fines from HSE are pitifully small.
- Incident statistics are being manipulated. Project bonus schemes can be linked to lost time incidents. Sub-contractors are told to carry the incident, so the statistic doesn't appear on the company's records. A record of zero incidents should be the first sign a company isn't telling the truth. Honest companies are unfairly penalised if Clients uses their accident rate for tender evaluation.

Project Issues

- Financial size of projects doesn't define whether it is safe.
- Jobs on single sites, however big, are easier to control than jobs spread around several sites which are much more difficult to supervise.
- Paperwork is the same for a small job as for a large one. There will be no difference in the thickness of the H&S file.

- Competence of site management is key for improvement.
- CDM is poorly drafted. Take demolition, if this is thought to be a dangerous aspect of work, why is demolition by four workman under 30 days outside of CDM?
- For local authority work companies are required to have at least 20% of their workforce from the area.
- The Principal Contractor does not have the authority to stop work. Only the Client (or their contract administrator) and the Principal Contractor can stop site work.
- One benefit of CDM is that procedures are written down.

Changes

- Image is increasing in importance to construction companies. Some companies, like house builders, don't want to have incidents as it could hit their sales.
- The recession resulted in many one man bands and small outfits who as a rule are weak on H&S.
- The number of foreign labourers has increased. They are cheaper. You find whole gangs of Eastern Europeans or Africans, perhaps with only one English speaker. On one job there were 28 workers, with only one from the UK. This situation is more apparent in the London area. They are particularly prevalent on decorating jobs.
- Welfare is improving.
- The workforce is becoming more knowledgeable.

Ways Forward

- Providing a reference standard or defining good practice would be beneficial.
- HSE should be more active.
- Prosecuting the top management would get things moving.
- There are mixed views as to whether insurers could influence H&S. Perhaps they could decline cover if H&S management was unsatisfactory, but insurance is a competitive industry itself and would companies act in unison?
- Contractor selection processes, particularly in the public sector, are dominated by price (even though it is intended to seek best value). What if H&S were given greater weight?
- What if the reporting of incidents were changed to remove the scope for manipulating statistics? Perhaps an independent reporting route through the health service would counter this?
- Perhaps workers could be encouraged to talk directly to HSE when reporting incidents.
- Partnering, in which relationships are over a longer term, may create the environment for better H&S.

Session 2 : Refurbishment contractor

Construction Sector

- Trade Unions are no longer common.
- Clients are suspicious of safety as a money making extra.
- Many Clients are inexperienced.
- Most (sub) contractors have similar, standardised procedures

- Asbestos is rare. The last time they removed some was four years ago, and the practice now is to seal and leave it.
- Main typical safety issues are heights/stairs/steps/dropped objects.
- The industry is heavily contractorised.

Project Issues

- Overcrowding is not an issue as it is inefficient to have too many people on the site, so companies don't do it.
- Site management / middle management has greatest influence over H&S. This interviewee once did a CITB course, which he found boring at the time but has proved to be invaluable to him. Site management have to respond to pressures from senior management, and you know they turn a blind eye on occasion in order to get the job done.
- Hazards on projects would be totally different if you were to ask these questions to large contractors.

Changes

- CDM has brought about change

Ways Forward

- Further education of site management is needed as they have a key role.
- Changing regulations would increase emphasis on H&S.
- The interviewee didn't like the corporate manslaughter route to bring improvements as the directors (or whoever) will probably find some way around it.

Session 3 : Refurbishment contractor

Construction Sector

- Awareness of Clients is an issue as the great majority have no appreciation of regulations. Bigger Clients have greater awareness.
- When raising Clients awareness, they are sceptical considering that H&S is being used as a means of increasing the cost or margin on a project.
- The contractor has upgraded their Client briefing pack to make H&S responsibilities explicit. They have found it helpful to pass on the HSE guidance notes to Clients.
- Often Clients ask them to recommend Planning Supervisors.
- Sectors are not the same, but regulations and guidance treat them so. Office refurbishment is not a dangerous sector and Clients are daunted by regulations which seem more apt to bigger projects
- The industry isn't proactive in improving H&S for example, the introduction of healthier materials is often from outside, such as paint from a manufacturer with the health risk.
- There has been an increase in awareness of CDM/H&S over the last year or so. Smaller companies still have to learn and they do this when they work for bigger Clients (who understand CDM). Companies in the middle end up educating both Clients and sub-contractors.
- Some companies don't care if the Client doesn't appoint a Planning Supervisor. If the contractor has informed the Client they have fulfilled their duty. He the contractor can avoid writing method statements.

- H&S regulations are not such a big deal when we get into them but seem daunting at first.
- H&S is the butt of the industry's jokes. Whenever we get together we always moan about it and it has become some kind of group behaviour thing.
- The attitude of a company Director has a big impact on the behaviour of the company.
- In smaller companies, the man who sets them up has building skills but not administration skills (often even literacy skills) so all these regulations/files/etc are beyond him. He has seen method statement for moving boarding say 'will carry it up the stairs'.

Project Issues

- Sometimes only a very short time period is allowed from winning a contract, this is far too short for the preparation required.

Changes

- CDM has been biggest source of change.

Ways Forward

- More education of Clients is required and as construction companies are not trusted enough external assistance is needed.
- Better targeted regulations/guidance for sub-sectors within the construction sector.
- Corporate manslaughter is possibly not good as Directors probably don't know the boundaries of their responsibilities. They need education.
- Newsletters giving up-to-date information on H&S matters would be helpful. Smaller companies can't do this themselves. In the absence of proper information people tend to make things up.

Session 4 : Small architect

Construction Sector

- The construction industry is an ancient industry and many poor health and safety practices arise because of the 'this is the way it has always been done' attitude. An example of this is the lack of wearing appropriate PPE on site. Attitudes are difficult and slow to change. The attitude in the USA is totally different where the wearing of hard hats is as standard practice.
- Managers often do not correct unsafe acts or conditions due to the pressure to get work completed to budget.
- Managers and Clients are more concerned about safety issues than health issues as accidents have immediate consequences, and improvements in this area are often top down.
- Construction workers are more concerned about health issues and improvements in this area are usually bottom up. Workers are more likely to take safety risks than health risks.
- The architect/Designer has no responsibility in the contract or under CDM for site safety, which can be frustrating. If unsafe acts or conditions are seen, they are reported to the Planning Supervisor, and often insufficient action is taken to resolve the issue. The example given in this area is ladders which are frequently not tied to scaffolding.

Project Issues

- In bigger projects the Client often nominates an independent safety advisor, and the increased level of inspection leads to improved safety standards. This change is often only superficial.

Changes

- Awareness of health and safety issues by management has increased considerably, but improvements are not being followed through onto site.
- The industry is inundated with regulations about which there is lots of guidance from a variety of industry groups etc. but there is no statutory guide. Regulations are difficult to keep track of.

Ways Forward

- Penalties for unsafe behaviour need to be more stringently enforced by site management.
- More enforcement through inspection by regulators or the Client is required.
- More easily understood guidance on regulations is required.
- An accident database, similar to the system used by pilots, which includes details about accident causes would be a great help. This should give a clear indication of trends.

Session 5 : Mixed group

Construction Sector

- Individuals within the sector might acknowledge that it has a poor health and safety record, but this is not admitted in public or expressed at corporate / sector levels.
- There is too much tolerance of poor health and safety standards. The industry should adopt a 'zero tolerance' attitude, e.g. demanding PPE to be worn. However, the shortage of labour at present weakens the employers hand in respect of enforcing standards as workers know that they are unlikely to be sacked. A zero tolerance approach would only work if it were enforced industry wide.
- Construction workers are too tolerant of becoming ill. For example, you find them with skin problems and they just treat it as something you get when you handle the particular material. Another example is the lack of demand for task lighting, where you find them straining to see what they're doing but accepting this is way it goes.
- Smaller companies are having to address their H&S if they want to tender for the big jobs where H&S standards are tougher.
- The 'preferred subcontractor' practices operated by larger contractors have a significant bearing on the H&S standards of smaller contractors. If the selection criteria vets H&S management and performance, improvement is stimulated. Once selected as a preferred subcontractor, there can be a willingness on the part of the large contractor to assist them, bringing them into their training and giving advice. However, some 'preferred subcontractor' practices are focused on financial performance, hence they are preferred because they are cheap, not because they are safe.
- There is very large variation across the sector, such as the attitudes of large contractors.
- There is a feeling that the culture of the construction sector is self-perpetuating and its ways of working are only challenged by outsiders, in particular by strong willed Clients.
- Smaller contractors, especially the one-man band, can buy software to print standard procedures and whatever at the touch of a button. This undermines the philosophy of H&S management.

Project Issues

- The Principal Contractor dictates the H&S culture of a project. If they are poor on H&S there is little sub-contractors can do to recover the situation.

- Site management have a critical role to play in the safety of a project. Their personality is a key factor.
- In terms of safety, site management have greater independence from their management than on financial performance.
- The type of project has a significant bearing on the style of H&S management. Refurbishments have very short lead times, so very little planning. In comparison civil engineering projects will have been planned extensively. Building projects come somewhere in between.
- Controls on being fit for work are limited. Although there is drug abuse procedures (including testing) the general medical condition may never be asked about. An example was someone with arthritis which hampered their movement (and safety).

Changes

- CDM has made a difference (for the enforcers). It is easier to establish who is responsible and find documentation.
- In terms of the workers on site, it is striking how many have never heard of CDM.

Ways Forward

- Is there scope for insurers to relate premiums to quality of management systems? A cynical view is that the costs would just be passed on to Clients - although there would appear to be advantage in improving H&S to gain competitive advantage by reducing insurance costs, bids often vary greatly (even to the extent of 100% at times). Nevertheless, there may be scope to increase the influence of insurers.
- Greater enforcement? having prosecutions to refer to is helpful.
- Clients don't realise how much power they have and how they could make a difference.

Session 6 : Facilities management

Construction Sector

- The Clients for a facilities management role are the office users and they have little interest in H&S, this can be seen when groups design their own floor layout and do not take into account factors such as the width of gangways. Items such as workstations are standardised.
- Planning supervisors have limited use, but the paperwork which they generate can be used as mitigation for civil claims.

Project Issues

- Large, high risk projects are better managed than small, low risk projects.
- Facilities management projects are many in number and short duration and hence there is insufficient time to fully implement procedures. Many are borderline CDM, and in this case it is preferred not to meet the CDM requirements.
- When selecting a contractor the price and programme take precedence and H&S is considered only when all other factors are equal.
- Many issues which arise less frequently, for example confined spaces and fragile roofs, have high risks.

Changes

- Legislation has changed from being prescriptive to risk based and this makes it more difficult to interpret. Few companies carry out effective risk assessments and use these to determine, for example, the frequency of test for lifting gear.
- There has been so much focus on CDM that now companies neglect other legislation such as COSHH.
- There are increases in civil claims and this is driving requirements to improve documentation for use mitigating evidence. This does not necessarily improve H&S.

Ways Forward

- CDM works satisfactorily, but the bureaucracy should be reduced.
- Planning supervisors should have more site experience.
- Methods to define companies' competence should be defined, together with guidance on how to check on this for example, references and health and safety policies rather than accident statistics.
- For maximum effectiveness prosecutions should target individuals rather than the company. The name and shame strategy should be increased.
- Management commitment is essential as all improvements should be top down.
- More inspections from HSE are required to improve standards.
- Insurance companies do not ask about health and safety performance when setting premiums, and they have the option to drive improvements in this area which is not currently being exploited. However, enforcement should not be driven by insurance companies.
- The perception in the UK is that we fully implement EU legislation, Whereas other members do not, resulting in additional costs.

Session 7 : Trade association

Construction Sector

- There is a big difference in the standard of safety between construction in the petrochemicals/chemicals sector (good) through heavy civils and manufacturing to house building (very poor). As anyone can hire a skip and tools there is a lot of DIY with untrained people and this is very high risk.
- In large companies the management may be aware of H&S issues, but they do not pass on the understanding to the workforce.
- The role of Planning Supervisor is usually taken by architects or QS who don't understand fully the H&S issues and see it as a money making role.
- The Association of Planning Supervisor (APS) is run by the architects and is therefore not independent.

Project Issues

- CDM has made H&S into a trade (that of Planning Supervisor) rather than integrating it into all activities. In this way those with the key roles can delegate responsibilities and not get involved.
- The specification from the Client to the Designer gives details of the finished building that they require, the contract conditions include H&S and site rules (see question 32 which should read contract conditions).

Changes

- Legislation has changed from being prescriptive to based on risk assessments. This has meant that the amount of legislation has decreased. This approach may add confusion and enable people to be less vigilant. There is no common form for risk assessments which makes a project difficult to manage when there are many contractors (and many different formats).
- The new legislation refers to 'reasonably practicable' which could be taken to mean that if small budget projects will not support the costs of effective controls, e.g. scaffolding, these do not need to be supplied.
- Enforcement by HSE is weak, and there are too few inspectors and prosecutions.
- In the Regina vs Howe Case a small engineering company received a fine which could have put it out of business. Following this the recommendation was made that fines of 10% of profits should be levelled per offence. As this figure is much larger for big companies it may increase their respect for the regulator.
- There are lots of safety guidance, but this is often conflicting. For example, the BEC guide recommends that risk assessments should be included in the safety file, whereas the ACOP says that it should not. Guidance can also be obtained through helplines (one is run by NHBC).
- The UK insurance industry is like a lottery in that if you have a claim then it is assumed that the premium will rise, but this is not always the case. Companies do not consider insurance costs when deciding H&S investment, but instead focus on the cost of implementation.
- Statistics have shown that partnering can improve H&S standards and reduce costs, particularly for Planning Supervisor where much documentation is standard. Certain companies are using open book accounting. It is difficult for new companies to get into framework agreements.

Ways Forward

- Planning supervisor needs skills in construction and H&S, this should be seen as a team role rather than an individual.
- Architecture courses should include a H&S component. H&S training in the trades is variable, with corgi fitters and scaffolders being well trained and having recognised qualifications, Whereas others such as bricklayers do not.
- The level of competence required for CDM should be defined.
- Health and safety should be seen as an integrated part of all activities.
- The role of Planning Supervisor should be removed, and these responsibilities given to the lead Designer.
- Projects should not be managed on a separate basis, but within the framework of an effective management system.

Session 8 : Client

Construction Sector

- Inexperienced Clients are a big problem (not us), as the Clients try to offload responsibility for H&S onto the Planning Supervisor or the contractor.
- It is usual that the person involved in winning the work has good H&S knowledge but is not the one who will be delivering it. Often work is sub contracted to labour only companies, and as the supply chain gets longer then responsibility is diluted.
- The construction industry does not consider occupational health issue, with levels of health surveillance poor.

- There are many small companies with 80% of people within the industry working in companies of less than 10 people. There is a general lack of training of self-employed.
- Construction is a roller coaster type of industry where demand goes from very high, when lots of labour only workers are use, to very low when margins are low and corners are cut.
- The quality and other generic documentation produced by the contractor is usually very good, but often the awareness of these documents by the people who carry out the job is low.
- Penalty clauses for poor safety performance are not used, they are considering the inclusion of clauses for the late provision of the information needed for the health and safety plan.
- Labour only contractors are a big problem as agencies do not train them.

Project Issues

- Our site is working at maximum capacity at all times and there is no possibility to close a section whilst construction work takes place, it is not like working on a Greenfield site.
- The level of safety performance is proportional to the size of the project and the size/experience/ ability to pay of the Client.
- Continuity of personnel is important to improving safety – we use a framework agreement for contractors and Planning Supervisors such that they have some security. 25,000 construction workers passed through our site in one year, of which 50% stay only 6 months, for 50% it is their first time working at our site, and 50% live more than 25 miles away and so can be considered as migrant.
- As the project progresses and timescales and costs become tight then out of sequence working might occur including working at nights with less supervision and this can cause safety problems. Proper planning and sequencing is vital to safe project management.

Changes

- CDM regulations have brought about many improvements.
- Awareness of health issues within society in general has increased, and particularly amongst younger people. The number of civil claims is increasing.

Ways Forward

- Strong leadership is required to bring improvements. Site tours by directors and senior management give a demonstration of commitment and ensure that the management are aware of conditions on site.
- Framework partnerships should be entered into with key contract suppliers. This should then be extended to second tier suppliers.
- Corporate manslaughter charges against directors should be enforced more rapidly, as in the USA.
- Health and safety statistics reported by the HSE should focus on success as well as failure.
- Improved benchmarking to evaluate best practice is needed, and this best practice should then be shared throughout the sector. There is currently a lack of learning within the industry, and companies are “reinventing the wheel” each time.

Session 9 : Large Contractor

Construction Sector

- The Client is often lacking in knowledge and relies heavily on the contractor.

- The Client considers he can delegate his health and safety responsibility to role of Planning Supervisor.
- Competitive tendering leads to reducing timescales and discounting to win the project, and may not leave sufficient margin for the project to be completed. Jobs are nearly always awarded on price.
- The Client is not prepared to pay additional money to cover H&S requirements.
- As the numbers of HSE inspectors has fallen there is less monitoring, and inspections seem to only follow near fatalities.
- The policy currently in operation appears to be one of self policing. This is not always effective if management/ Client commitment is low.
- There is uncertainty about the response to occupational health issues, and there is little health surveillance or pre-employment screening.
- Accidents are caused by people not doing what they have been told, following weak supervision and poor safety culture.

Project Issues

- Pressures due to timescales and resources cause corners to be cut. Often there is sufficient time to prepare a good tender, but once this has been won the Client wants the project to start immediately and there is little time for planning and organisation.

Changes

- Many accidents are not recorded as they are not on the RIDDOR list. This list has changed little and focuses on the range of accidents which happened 20 years ago. Only the diseases section has been extended.
- CDM generates lots of paperwork, and makes people ask questions, but when the project starts there is no real difference in how it is managed.

Ways Forward

- Involvement of the management and the Client should be increased
- There are lots of emphasis on statistics which leads to a reactive rather than proactive approach – hence an accident database would not be of benefit.
- The Client should be made accountable for H&S.

Session 10 : Large contractor

Construction Sector

- Clients select contractors based on price and timescales.
- Planning Supervisors are often very poor. The role is complex and requires both H&S and construction experience. It is often taken by architects or surveyors who have construction knowledge but little H&S experience. Planning Supervisor is seen as a ‘money making’ role. They generate lots of standard paperwork rather than focusing on issues which are important for the particular project. This leads to increased paper for no benefit.
- The construction industry is unique as there is no fixed site and the “factory” changes shape on a daily basis.
- There is a high turnover of itinerant workers, and this leads to a reluctance from employers to provide good training. If an employer is only given 6-8 weeks to change behaviour he usually doesn’t bother.

- The construction industry takes its lead from the Client.
- Health is not seen as a big issue as it is often chronic effects and the high turnover of employees means that it is difficult to designate responsibility. Many effects are seen as acceptable or normal, and if a worker gets dermatitis he tends to leave the industry.
- There is a disbelief that health problems will happen to a given individual.
- Companies do not rely on insurance to cover the cost of accidents as when claims increase the premium increases.

Project Issues

- CDM is often seen as a paper exercise.
- The commitment given to H&S requirements by a Client varies widely, and is not dependent on the size of the Client or the project. Often ex public industries (such as BAA and LUL) take H&S more seriously.
- The management of small companies often does not understand what a dramatic effect an accident or prosecution could have on their business.

Changes

- Some Clients use H&S as a basis for supplier approval, but do they understand how to measure good H&S performance. This is often done on a basis of accident statistics and enforcement notices rather than how a company learns and improves.
- H&S is increasingly seen as a line management responsibility.

Ways Forward

- The role of Planning Supervisor should be disbanded and these responsibilities given to lead Designers or project managers.
- Planning supervisors should prioritise issues rather than using standard documentation to cover all issues.
- Strong leadership which demonstrates commitment to H&S is required. To make an impact the Chief Executive should visit the site.
- The Client should audit the construction site on a regular basis.
- Improved training is required for all site personnel and management. Training for designers, architects and engineers should include H&S aspects. In addition the assessment of design submissions for degrees or chartership should include safety in addition to technical requirements. NVQs do not cover H&S in sufficient detail.
- Training approvers such as NEBOSH and IOSH should be more flexible and not see the provision of courses as a money making activity. This company runs a 5 day H&S course which used to be recognised by IOSH, but they are removing recognition for political reasons, and the course has not changed. Infighting between IOSH and BSC regarding training courses should be removed.
- Clients should take responsibility for H&S and be prosecuted to increase their focus. Currently companies do not believe that they will ever get caught and so they can get away with poor H&S performance.
- H&S should be integrated into the parts of the project e.g. the design, rather than seen as an added extra.

Session 11: Medium contractor

Construction Sector

- One-off Clients are considered to be a problem.
- Client specifications are an area this contractor felt could be greatly improved to give the tendering contractors a firm indication of what health and safety standards were being expected and therefore encourage a level playing field. Welfare facilities were quoted as an example.
- This contractor felt that timescales imposed by the Client where design changes were affected were also a problem.
- Contractors were generally leading the way in compliance to legislation and in particular to CDM.
- This Contractor felt a stronger emphasis towards safety than health issues was prevalent. Health issues were beginning to become more evident but the changes is a slow process. Initiatives and press publicity concerning asbestos were highlighting health issues.

Project Issues

- The contractor felt that the Client and Designers generally had a long way to go in order to comply with their duties under CDM and that this needed to be improved.
- Timescales were identified as a major concern in that once the Client had made the official appointment, the Principal Contractor was expected and pressured into commencing site work at the earliest time. This expectation from the Client was felt to be unrealistic in terms of the spirit of the CDM Regulations.

Changes

- The Contractor comments that they believe major improvements have been made over the past decade, but last 3 years shown only a slow improvement – possibly as a result of the reduction in construction activities.
- Contractor felt that Designers needed to be more involved at a site level in order to understand construction related problems.
- A more positive/proactive input is required from Clients.
- The need for a culture change was indicated i.e. away from the ‘macho’ type image that exists within the construction industry.
- The Client needs to consider safety standards rather than appointing on the cheapest price when awarding contracts. This will only take place for them if the culture of the client changes and their knowledge of health and safety issues is raised.

Ways Forward

- The training of engineers, graduates, etc at college/university was highlighted as a major concern as health and safety issues are not being addressed adequately.
- Registration schemes for Designers and Planning Supervisors were suggested as a means to assess competence in undertaking their duties under CDM.
- Contractors felt that pro-active enforcement action by the HSE would force compliance by Clients etc.

Session 12: Medium contractor

Construction Sector

- It was considered that health issues are not as high on the agenda as safety issues however, there have been recent changes.
- It was strongly felt that since privatisation utility companies (Clients) are not providing the level of information required and that they are avoiding their legal duties.
- The contractor believed that there is a lot of legislation and small companies find it hard to understand what is required to comply.
- Insurance companies are 'driver' in forcing companies to comply with legislation and have systems in place (in order to reduce premiums).

Project Issues

- In the contractors opinion Clients have very little knowledge of CDM.
- The contractor heavily criticised Local Authorities with their own in-house appointed teams of Planning Supervisors and Designers, who, in their opinion are not suitably trained or competent to undertake the roles. Information provided within pre-tender health and safety plans produced by local authority Planning Supervisors are poor. Contractors generally have to prompt for certain levels of information.
- There is a massive difference between how health and safety is managed on projects and this is largely due to the site manager.

Changes

- CDM Regulations have brought about a change within the industry.

Ways Forward

- A great improvement is required from the utility companies. (Clients).
- 'High profile' prosecutions of senior management and stiffer penalties would bring a greater improvement across the industry.

Session 13: Large contractor

Construction Sector

- Contractor stated it was a marketing advantage to have a good health and safety 'track' record.
- On their projects, safety was not compromised as a result of cutbacks – declined to speak for industry in general.
- Smaller companies were viewed to be struggling to get to grips with the changes in legislation generally as the cost implications are a burden to them.
- There is a skills shortage in specialist areas within the construction industry.
- Improvements in health and safety are predominantly being driven by the introduction of new legislation.

Project Issues

- Clients knowledge of CDM and other legal obligations is poor. Designers undertake design risk assessments when design, is completed and not on an on-going basis.
- There are massive differences between projects regarding health and safety management; this is dependant upon management teams/styles and the inherent risks associated with the project.

- From experience there is good co-operation on past projects from all parties.

Changes

- Health issues were beginning to ‘take off’ throughout the industry; references were made to payouts by British Coal following civil prosecutions which had been widely publicised in the media.
- A change of attitude has been brought about in their company. With prescriptive legislation site management would consider how to comply with various regulations. Now efforts can be concentrated on the specific project issues.
- The contractor stated improvements are being made within the industry, but felt that it is taking a long time to get the message through.

Ways Forward

- Clients need to allow more time during the tender stages to allow companies to plan and assess the work properly. More time is also required between award of contract and start of the construction phase.
- A reduction in working hours throughout the industry would improve health and safety.

Session 14: Specialist contractor

Construction Sector

- It was stated that it was necessary to have and demonstrate a good health and safety record due to competence checks and pre-qualification questionnaires. This has increased since the introduction of CDM Regulations with checks being undertaken by both Clients and Principal Contractors.
- It was strongly felt that when the project was under pressure then health and safety standards reduced.
- This contractor stated safety needed to be managed by a top down approach.
- Safety on site still seems to be reactive rather than proactive.
- In many instances specialist trades and small sub-contracting teams had not received any formal health and safety training.
- It was stated that it is easy to demonstrate competence to Clients etc. on paper, but when individuals came to site there were contrary findings.
- There are good HSE publications available but the cost is prohibitive to smaller contractors.
- Bonus schemes and piece work affect health and safety standards on site.

Project Issues

- This contractor stated that partnering arrangements resulted in a much higher standard of health and safety.
- It was highlighted that sub-contract awards are let at many level making management difficult.
- Design and build contracts do not allow for health and safety to be planned effectively.
- Designers have not improved since the introduction of CDM.

Changes

- Industry is starting to get to do medical surveillance, but this needs to be driven by legislation, and cost is a major factor.

- Litigation is generally driving health issues.

Ways Forward

- It was felt that Designers and architects needed to have further training – especially with regard to ‘on site’ issues. The general feeling was that Designers and architects did not consider the construction phase of the project at all.
- Clients were targeted as being the main drivers to improve health and safety in industry. Clients ‘want the job doing quickly and for the cheapest price’.
- Major culture change is required throughout the industry. Operatives are only there to make money, they do not consider health and safety their responsibility.
- Project Management and Planning Supervisors should have meaningful training and not training where its a case of 2bums on seats2.
- The massive gap in the competency of Designers needs to be addressed.
- Client influences must be improved.

Session 15: Client

Construction Sector

- Clients can have the biggest influence on health and safety matters.
- Greater awareness is needed between construction operatives. Enforcing the wearing of hard hats is still the biggest problem, especially when working in public areas.
- The local authority is not as advanced as the private sector regarding compliance with legislation.

Project Issues

- Designers are reluctant to change a design to reduce hazards/risks once the design is complete. The Design Risk Assessment is carried out after rather than before design.

Changes

- Believed there are a lot of ‘grey’ areas within new legislation, “everyone has their own interpretation”.
- CDM has helped to focus the mind on managing construction issues.
- CDM has generated a lot of generic assessments, agendas, questionnaires, etc. on which organisations rely heavily.
- The HSE are more approachable when seeking advice now.

Ways Forward

- Clients and Designers still have a long way to go and once they are ‘up-to-speed’ improvements will follow.

Session 16: Project management

Construction Sector

- Safety advisers are not the only people who raise health and safety issues. The 6 pack brought about by emphasis on training has made a big difference to site managers etc. This has also increased the level of awareness amongst operatives who undergo induction’s/toolbox talks.

- There is more awareness of safety issues than health issues which are more difficult to detect and monitor.
- There will always be an element of risk within the construction industry especially when excavating.
- Having well trained staff and a good health and safety record is a commercial advantage.
- The level of information on the market is good. However, difficulties occur when legislation/ACOP's have to be cross-referenced e.g. PUWER & LOLER.

Project Issues

- Accidents are caused by rushing - the more time allowed to plan, the safer the project will be. Clients need to allow more time from award to site commencement, contractors also need to put their planners and health and safety advisers together earlier and for longer at pre-commencement.
- Clients feel appointing reputable Designers and Planning Supervisor's protects them, but it's the one-off Clients who cause a problem, as they do not understand the industry.
- Partnering can bring benefits because the person who has to construct has a closer relationship with the Designer.

Changes

- There has been a notable difference over the past 10 years regarding health and safety.

Ways Forward

- On projects of more than a million pounds, there should be a statutory period of a month between contract award and commencement on site.
- More direct employees instead of sub-letting work out.
- More practical experience and a higher level of training for graduate Designers/engineers.
- Clients can have the biggest influence on future improvements but they need more education/training.

Session 17: Small contractor

Construction Sector

- This Site Manager made reference to the vast differences from his mining background to when he joined the construction industry 11 years ago. Construction failed to match the high standards of very detailed and prescriptive procedures adopted within the mining industry. This could also be influenced by a strong union presence. Higher standards of training were also provided, including a 4 day induction process.
- It was stated that there has been some dramatic change in the construction industry over the past 10 years.
- This contractor's preference was for Design and Construct as opposed to traditional methods as there is a much closer working relationship between Designers and constructors.
- It was felt that there is lots of health and safety guidance but some new regulations are ambiguous which leads to confusion.
- This contractor felt that because Clients are undertaking vetting prior to award or just to get onto tender lists it is vital that companies ensure that health and safety issues were addressed from a marketing aspect.

- It was stated that small to medium sized companies take health and safety issues more seriously than large multinationals where it was felt that although these companies had well documented procedures site management were only applying lip service.

Project Issues

- A good relationship between the various construction parties bring improvements to health and safety, and this is more evident in Design and Construct type projects.
- Designers need to consult and communicate with contractors at an earlier stage of a project.
- Clients need to allow longer timescales prior to the award of a contract.

Changes

- The macho image associated with the construction industry was starting to diminish.
- Because of changes in taxation requirements the use of self-employed status was starting to reduce within the industry.
- Since the introduction of CDM Regulations a considerable amount of training had been undertaken throughout the industry raising awareness of health and safety.
- Health issues are becoming more evident with employees more aware through claims procedures and compensation awards reported in the press. Vibration White Finger was mentioned as an example and the associated claims.
- Companies can't solely rely on insurance to cover them in the event of a compensation claim.

Ways Forward

- Larger fines to match the severity of breaches in health and safety are needed.
- Greater involvement of Clients.
- Greater level of training required for Designers.

Session 18: Large contractor

Construction Sector

- It was strongly felt that Clients don't really care about health and safety issues, and that they believed that by appointing Consultants they are delegating their responsibilities with regard to health and safety.
- Tender documentation provided by Clients was felt to be too generic and didn't specifically address health and safety issues relative to the individual contract.
- It was strongly felt that a Client should not appoint the Planning Supervisor from the same practice as the Designer, as it could be seen as a conflict of interest.
- Selective lists of tenderers identifying companies with a good historic record of health and safety helped to improve standards.
- Designers were considered to not consider health and safety issues sufficiently. It was also felt that Designers did not have the required knowledge to consider health and safety issues within their designs.

Project Issues

- Clients still award the contract too late and they need to allow a greater lead in period to allow the contractor to plan more effectively at the start of a project.
- Certain Planning Supervisors generate too much generic documentation which does not reflect the specific issues associated with a project.

- Although awareness of some health issues has increased more education in improving health needs to be done. The last 3 years have seen an improvement.

Changes

- Recent legislation allows self- regulation, and it is considered that more emphasis was placed on health and safety issues when the HSE visited sites frequently.
- Recent regulations have identified specific duties and responsibilities, everyone has a duty towards health and safety and this is increasingly acknowledged within the industry.
- Communication to site operatives has improved due to getting site operatives involved with risk assessments and method statements.
- General awareness has increased due to registration schemes such as the Plant Operators Certification Scheme.

Ways Forward

- Externally appointed Health and Safety Consultants are ineffective.
- Partnering was considered to be a benefit as everyone works together with the same aims.

Other

- There should be a regulatory requirement on the Client to have contract specific documents produced.

Session 19 : Planning Supervisors

Construction Sector

- A major improvement has taken place within the construction industry over the past 10 years.
- Contractors have generally signed up to training / certification schemes which have been administered within the construction industry.
- Initial changes have been brought about by major players but not necessarily construction companies. Major clients have dictated a high level of health and safety within their high risk environments.
- Designers generally need to undertake a structured training course in health and safety when dealing with 'designing for safety' issues.

Project Issues

- Clients do not fulfil their role adequately and expect their appointed consultants to take on a 'Clients Agent' role without realising it's a formalised appointment.
- Clients view CDM as a paperwork exercise as a result of excessive paperwork which was generated when CDM was first introduced. This really was a failing from HSE to give guidance on what was acceptable.
- Practices who offer Planning Supervisor services should be able to demonstrate a full understanding of the requirements and that they have suitable experience to fulfil the role. It is my experience that certain Quantity Surveying practices do not hold the appropriate knowledge and experience to fulfil the role.
- A registration scheme of approved Planning Supervisors should be considered.

Changes

- Legislation since the 1992 Regulations has made significant improvement to the construction industry.

- Construction companies in general have made improvements by undertaking training programmes.
- Further education of Clients needs consideration by HSE.

Ways Forward

- Clients are still reluctant to accept their legal responsibilities and adopt a proactive approach when issuing tender documentation to prospective construction companies for quotes.
- Larger fines to Clients.
- Minimum timescales introduced as part of legislation related to the size / complexity of contract, between award of contract and actual commencement on site.
- Better quality of documentation with contractual documents totally revised to reflect a greater health and safety requirement and an up to date approach.

Other

- Change in legislation to make the Client responsible for issuing the Form 10 to the HSE with clearly identified timescales for appointment of Principal Contractor (i.e. date of award) and intended start of construction phase. If adequate thought and planning have been given then these dates should be known and achievable well in advance of the commencement of construction.
- Non transient construction sites should be regulated for a much higher standard of welfare (showers should be regulated as a minimum standard). Clients should be targeted to make sure specifications reflect this.

Session 20: Designer

Construction Sector

- Professional qualifications for Designers do not cover H&S at all. Graduates entering the profession have no appreciation for H&S risks and legal requirements.
- Current regulations are not clear and Designers struggle to keep up to date [later in interview it became clear he was not aware of the six pack].
- Currently H&S is not reviewed when interviewing potential contractors. Currently rely on personal knowledge of who is, or isn't a good firm. Do read about accidents etc in trade journals and this may influence appointments.
- Clients have very limited knowledge of H&S management and rely on the professionals they appoint to cover this on their behalf. There is an assumed agreement that this happens - nothing is put in writing.
- Some contracting companies are better than others for managing H&S on site. One company's sites are excellent - but they did have a fatality on one site which bought about a change in site management.

Project Issues

- Maintenance is usually planned for during designs but construction phase risks aren't always considered. Can rely on traditional contracts methods, when the Principal Contractors is involved early on and reviews designs. Design and build contracts are likely not to consider H&S at all, as costs are cut as far as possible. The role of the Planning Supervisor is essential on this type of job. Partnering is good for H&S management.
- Checking process to assess if H&S has been adequately planned for is a problem. There are no formal requirements for a 'qualification' to do this - relies on competent people checking

designs. This is different to what happens with accountants and solicitors. Clients are often unaware of the H&S implications of a designs they are commissioning and are not in a position to judge design themselves (assume Designers have done all that can be done).

- Designers will urge Clients to plan dangerous work better e.g. phasing of works. This obviously costs more and the ultimate decision rests with the Client.
- Project reviews do not check H&S issues specifically, but are more aimed at budgeting matters.

Changes

- CDM has not had a real impact on Clients apart for the additional costs associated with Planning Supervisors.

Ways Forward

- An accident database showing why accidents have occurred would be helpful for Designers.

Session 21: Large contractor

Construction Sector

- Interviewee wanted to point out there are two distinct divisions within the sector : civil and mechanical & engineering. He answered the questionnaire from an **M&E** point of view. Standards are usually higher in M&E than in civil jobs. This is because M&E tend to retain staff who are more professional and dedicated and receive more H&S training. The industry and the HSE accept that M&E has better standards.

Project Issues

- The company tends to work on projects ranging from £50k to £5M and believes there is a variation with both project and Clients. The sector can also be a deciding factor in the Client's attitude towards management of H&S. e.g. chemical companies tend to be more stringent than food companies.
- Client attitude varies from companies who care about all contractors and insist on training for workers prior to starting work, to those Clients who couldn't care less about people on the ground.

Changes

- Since the introduction of CDM there has been a significant improvement in H&S management. Sites are safer. CDM caused this by making people accountable. However, **Clients still don't fully appreciate their responsibilities**, they don't like the fact that an onus has been put on them and will want to pass it on. This is why improvements will need to top-down. He really emphasised this point about Clients.

Ways Forward

- The company is working with HSE on developing a new ACOP for the revised CDM regulations. Believes the changes will make more improvements.
- He had worked abroad in many EU countries. Believes that the UK leads the way for H&S management in the construction field. They are actually working with the HSE on a working comparison report between H&S implementation on Dutch sites against UK ones.
- It is accepted that accredited H&S management systems wont work for SMEs as they can't apply the procedures and most feel that the financial implications are too great (this is expressed constantly for example at EEF meetings). He argues that implementing good H&S management will save money (Good Health is Good Business). HSE want larger companies to

educate SME **AND** Clients - i.e. take SMEs under the company wings (approved supplier lists) and Designers and Planning Supervisors advising Clients on competence of contractors.

Other

- An accident database would NOT be useful to SME as most are just trying to keep their head above water.

Session 22: Designer

Pre-session telecon

Construction Sector

- Many accidents blamed on ‘poor management’ – which is unfair as many are down to human error.
- Client companies are very lean – maximise margins at the expense of H&S resource allocation - Client still has no real fear of prosecution.

Project Issues

- Clients will have varying attitude towards H&S – many Clients don’t want to take on their full responsibility under CDM. They will “emotionally and physically” pass this on to the Designers and Planning Supervisors.
- The resource budget for H&S will be allocated very early in a project (first 1-2 weeks).
- Design Risk Assessments (DRA) – the Designer can advise a Client on preferred (safer) options – but need to remember there are usually several ways to undertake a piece of work and the choice will often be made according to resource availability.

Changes

- Things have improved since introduction of CDM – things that were designed in the 80’s would not be built now.

Interview

Construction Sector

- Doesn’t believe that safety is linked to end product – i.e. is a customer really interested in whether anyone was killed during a building development. Doesn’t believe public/buyers are concerned with H&S. This is contrary to the situation with environmental impacts.
- Does believe that people generally want to work safely – good example is self-employed people. They don’t have anything to do with how a job is set-up, this is down to personal attitude.
- Refurbishment/Demolition are generally the most dangerous projects. Designers are rarely involved with this type of project as they are deemed an addition/unnecessary cost. Client will just ask contractor to consider health and safety. (Gap in regulations??).
- Can still be asked occasionally “how does CDM affect this job”?? – this tends to be from smaller, private Clients e.g. house builders.
- Client is the major controlling factor – what will influence their attitude to H&S is the budget and spin off benefits (e.g. cost saving associated with operational phase of a development).
- DRA on civil projects can be a paper exercise as Designers tend only to consider “general” construction risks and leave site management and procedures to deal with other risks.

- Attitudes can vary across the industry. Asked if he had ever come across a small company who were hot on H&S? Replied it will depend on the individuals and their experience and expertise – not necessarily the company itself.

Project Issues

- Developers (who maybe an individual) who only have a brief or one-off exposure to CDM will have a number of parties involved but they will not link up very well.
- Clients (with static sites) often view CDM as a paper chasing exercise – and a safety plan will be brief and simply point at existing permit to work systems.

Changes

- CDM has brought about changes by defining a chain in responsibility. Although Clients are still failing in some areas of their responsibility in some cases this relates back to “intermittent Clients” and lack of experience. Site owners (be it the Client or contractors influence the H&S attitude on site).
- Designers knew their obligations before CDM.

Ways Forward

- Enforcement against Clients is difficult as they hide behind Designers/Planning Supervisor.
- More regulation is not the answer – Client education is required. Maybe this could be linked to planning requirements – an opportunity to raise awareness during application process. Any research into deaths/serious incidents on sites are not covered by F10’s.
- Architects also have influence as they detail down to building materials.
- HSE guidance is available for DRA but tend to cover “buildings” – e.g. no guidance on demolition.

Other

- When completing the questionnaire he has not gone for strongly agree or disagree as there is too much variation in the sector (project / Clients). The answers will depend on type of company and Client attitudes.
- An accident database would not be helpful as there are too many variables to consider. The HSE annual report is usually adequate.

Session 23: Large contractor

Construction Sector

- Client attitudes can vary from industry to industry e.g. petrochemicals can be very good. Sometimes a company will have a good policy but practices will not reflect this.
- Sometimes the Clients involve a lot of their people who have varied construction experience; some will be unrealistic about what they want on site and this can lead to poor management.
- There is an increasing trend in ‘foreign’ contractors/Clients working in the UK. They tend to be less aware of H&S requirements than they claim to be. This is evident when asking for method statements/ risk assessments as they are not always sure what this involves. This is not encouraging a level playing field within the industry.
- There is a difference in attitudes to ‘health’ and ‘safety’.
- Health – there are government initiatives for health management but these tend to look at large employers in a static situation and are not really applicable to construction industry. Contractors use mostly sub-contractors and there is a very transient workforce making hard to

implement a health management regime. Health surveillance requires records, monitoring and inspection. Sub contractors would add this as a cost to the price of their work. May need to involve financial incentives to train consistently in health management?

- Safety is easier to enforce with sub-contractors and you can quote a piece of legislation – so they can't add to the price.

Project Issues

- Many problems stem from “One-off Clients” who inexperienced in the CDM process because they only have to deal with odd projects. They represent a growing area. Client companies are becoming smaller and requiring one-off development. This is an area that will need attention. HSE are not likely to visit these one-off sites and contractors have a hard time trying to persuade Clients to improve standards when there is no real threat of a visit/prosecution.
- Client design specifications are unlikely to change once on site regardless of CDM.
- Contractors try to “hand-hold” Clients in an attempt to win work.

Changes

- It is left to larger players in the industry to educate small players. There is no consistent approach from Clients e.g. some Clients will ask for details that others will not want.
- H&S has improved and CDM has been an element of this but public awareness has also been a factor. Public demand answers when accidents occur. Other stakeholder pressures are also important.
- CDM does not appear to have affected a change on ‘Clients’. There is no evidence that HSE targets Clients.

Ways Forward

- An accident database will not be any use. HSE used to release detailed statistics for the industry and these were very useful. A consistent approach, in how companies report incident statistics, e.g. by direct site employees, all employees is needed otherwise companies can water-down results. A consistent approach is also needed to assess competence.
- There are known inherent dangers in the industry and these haven't changed in recent years. CDM will not reduce some risks.
- Systematic approach that will cut across all parties is needed. For example, the Government is committed to improve H&S and runs campaigns.
- There needs to be sector specific campaigns reinforced by a consistent approach from inspectors as there is currently too much personal interpretation of legal requirements.

Other

- He commented that completion of the questionnaire requires generalisations to be made.

Session 24: Medium contractor

Construction Sector

- Clients/engineers don't think about H&S when putting a tender together. The bottom line (costs and time) is most important. This company had lost jobs because competitors ignore H&S and tender at a slightly cheaper price.
- Not all Clients think the same. Some have a very good attitude and hold a weekly meeting to discuss H&S. Asked why this was? He thought it might be that one is American and the other have a high profile and don't want accidents on their sites.

- Just because a Client is “big” doesn’t mean H&S is given greater priority. Timing and the bottom line are more important to companies who have a lower public profile. Some Clients are only interested when things go wrong and don’t hold regular meetings.
- Designers don’t consider H&S risk management as they are more concerned with the credit they will get for a building they have designed (e.g. co-op bank pyramid Stockport). Bit like an ego trip! It is not that Designers don’t understand the risks they just don’t design them out.
- Some Clients don’t give H&S enough priority and employ contractors to manage the risks. Clients will do the bare minimum and distance themselves from H&S. They won’t commit themselves to anything e.g. won’t sign off method statements.

Project Issues

- The length of a job is not relevant to H&S standards. He will always look at a pre-tender H&S plan and assess risks. He stated that Clients and Designers don’t usually identify all the risks/problems, because insufficient thought goes into preparing them. He would never turn down bidding for a job on H&S grounds.
- This company does go through rigorous approval of their sub-contractors and will re-employ a contractor if they have a good H&S record as opposed to a cheaper (more uncertain) contractor.
- The number of people on a site is irrelevant. It is down to the attitudes of all workers. Sub-contractors know there will be rules to follow on every site. Whether they follow them comes down to if they are enforced by the site manager. If there is no enforcement a sub-contractor will try and cut corners and save money and time. HSE visits do carry a threat but don’t make people carry out more internal inspections - they either do them or they don’t.
- Have to accept that accidents will happen.

Changes

- There has been an improvement in sector in last 5-6 years due to the contracting companies realising that improvements were needed. The sector wants to bring itself more in line with other industries. CDM has obviously assisted this (Clients have not). It is Clients and Designers who are not doing fully what is required of them.
- There is enough guidance about risk management but there are too many grey areas. The government accepts this as they keep making changes. ACOS are good but they need to be given more authority. Companies get prosecuted for not following the Regulations - but no-one understands the Regulations they implement.
- Gone are the days when staff had to buy their own PPE and would not be allowed on site without. Managing Directors have changed their attitudes and realise they can be prosecuted. Such prosecutions could lead to loss of image and therefore are effective.

Ways Forward

- The Client and Designer have to increase their involvement. There is always room for improvement across the whole sector.
- Don’t believe alliances will help as more contractors working on site will increase the risks because they don’t know each other. For example, they were working on a site with asbestos and explained the risks to their staff but another subcontractor said there was nothing wrong with asbestos and put some in his mouth to prove it!

Session 25: Medium contractor

Construction Sector

- Generally poor wages are paid across the industry and this leads to a lot of staff working extensive overtime. This leads to long shifts and tiredness, with obvious H&S implications. There is added risks when jobs are rushed to complete tasks on time.
- As a whole, the sector is under resourced (labour, time and management). Every job has time penalties and these can be additional costs on each job.
- He believes spending money on H&S will eventually save money. However, often no budget is allocated for H&S when tendering for a job and it is a cost that can be avoided to keep bid price down (same can happen with QA). A top-down realisation from company directors as these costs cannot be cut.
- Training is a big problem. Due to the transient nature of the sector, companies are reluctant to spend money on training people as they are likely to take the skills to another company. There needs to be a central training budget that companies can access. Need to make CITB more visible. There is the additional cost of “time” involved in training people which is worse by time penalties on each job.
- Many jobs are now “fast tracked”, i.e. all contractors are on site at same time as opposed to traditional civils followed by M&E etc. This makes scheduling works difficult and increases hazards. Timescales for jobs are getting shorter and planning is essential. It is difficult to estimate exactly how many people will be required for each job.
- ‘Health’ & ‘Safety’ are not divorced in people’s minds.

Project Issues

- He hates Fridays as the site closes early and people are told to finish jobs, making people rush. Fridays are always dangerous.
- Competency is not necessarily guaranteed just because someone has a certificate. Not all trades have qualifications. He doubts that certificates are always checked when employing staff.
- Site inductions do set a “tone” for H&S management on a site. However there then needs to be a continued enforcement; as site workers soon realise that although rules were specified no one actually enforces them.
- The Client has to lead. The contractor will generate the H&S culture (through induction) but Client must maintain the emphasis when site works develop and not start overlooking H&S issues. M&E workers tend to be better than civils. Can’t just throw posters up; needs consistent enforcement.
- Welfare facilities are often overlooked on site. But even when they are provided some staff abuse them (despite same workers demanding them). Workers attitudes need to change.

Changes

- CDM is a very mis-understood piece of legislation, with most people not fully understanding their responsibilities. CDM has caused a lot of confusion and not really improved the situation.
- Most roles are still not clear e.g. exactly who is the Client? What if one person owns the site but it is operated by someone else.
- Most people wouldn’t know who the Planning Supervisor is.
- Designers are still not designing out risk.

- There is no legal requirement to produce method statements and there is a lot of confusion about when they are necessary.
- CDM needs to give guidance on how to deal with volume of information that flows between different parties. Co-ordination of information is a problem e.g., the amount of info that builds up in the H&S file.
- Not convinced that CDM is the way forward and the other construction Regulations are too vague.
- Thinks the 6 pack are excellent but would be helpful to have a condensed version aimed at the construction sector.

Ways Forward

- HSE need to investigate health effects/condition of the ageing workforce e.g. looking at joint deterioration owing to manual handling activities.
- Clearer regulations are required as they are often difficult to interpret e.g. detail is needed on exactly what is safe egress to scaffolds.
- Doesn't believe more penalties will help as this only gives short-term benefits and people soon adjust. Does it depend who is penalised?

Other

- UK don't prioritise H&S, and regard workers as dispensable.
- He has worked in Germany and Holland and found there are better conditions for workers. For example, shower facilities are provided for workers so they can arrive on site in their own clothes, shower at end of day, and leave in their own clothes. He said he had even been handed a coat hanger on one site! With better conditions there is more loyalty to employers.
- In the UK staff don't get paid when they are off work ill and consequently people work on site when they are not fully fit. This leads to increased risks.

Session 26: Client (Chemicals)

Construction Sector

- Believes that companies do want a good safety record to set them above competitors. He tends to pick contractors on the basis of their having a good safety record. One scaffolding company sends him monthly reports on the accident rates (not that he wants the information but obviously the company think it is important).
- Identifying Regulations: He thinks they are working to the right regulations but how can he be certain? He wouldn't know if they had overlooked some. No one on site has the role to keep up to date with changes in the legislation.
- The site does have a H&S manager but he does not act as the Client or really get involved. The interviewee looks after capex projects so he acts as the Client.
- Alliances do improve H&S. As companies get familiar with how this chemical site works they become safer and they tend to re-employ people.

Project Issues

- They always use another company as the Planning Supervisor, but may use Principal Contractor and Designer from the same company.
- Tend to use large contractors as they are likely to point out if the Client has overlooked a H&S issue. The company's systems would not let them pass-over important regulations.

- Try to maintain H&S emphasis during a project by carrying out audits.
- They outline H&S requirements in the job specification which have proportional to the size of the job.
- Feels sub-contractors do follow site rules.
- Do check sub-contractor qualifications of new suppliers.

Changes

- There has been a change over recent years but CDM has not brought this about. It has been due to a combination of other regulations.
- If a project wasn't covered by CDM they would still carry out risk assessment and method statements. If CDM disappeared tomorrow - it would make no difference to them.

Ways Forward

- It is hard to keep up to date with changes in legislation. It would be helpful if the HSE produced a checklist which a Client could look at such a series of tick boxes to decide if certain regulations apply to a project.
- Insurers have some influence. If they said a company would have to pay a large excess on any H&S claims - the company would take notice.
- Feels Government has large scope to make improvement but HSE Inspectors not so much.

Session 27: Client (Local Authority)

Construction Sector

- When the CDM Regulations were first launched there was not enough guidance given about what their real purpose, i.e. to pull together different responsibilities and requirements rather than making new requirements. This created a lot of hostility in the first few years.
- The local authority sector has its own inherent problems. Many people in building departments have no experience of site work (institutionalised) and therefore find it hard to keep up to date with changes in technology and design etc. To draw a comparison, academics, during student holiday time, will go out and work in industry and keep abreast of changes. At the same time when people from external practices join the council they often don't appreciate the need to protect public safety.
- The decline in apprenticeships, in which H&S was taught is a problem.
- Designers do not know enough about H&S, their trade bodies need to play a role in awareness raising. Remove the Bravado attitude.

Project Issues

- Clients do not appreciate what a Planning Supervisor is for, i.e. to co-ordinate information on behalf of Client.
- Planning supervisors should be building professionals.
- A problem which the local authority has is that contracts are awarded on competitive tendering basis. This restricts them from reviewing H&S (and quality) issues relating to potential contractors. The decision is purely cost based.

Changes

- There is often confusion as to when CDM actually applies. A risk based approach could be used e.g. if large cranes will be involved on a public highway it is high risk and so under CDM even if only for 1 day.

Ways Forward

- To make managing H&S easier formal requirements for auditing should be introduced for all stages of a project. The current requirements do not allow for feedback.
- Performance targets for individuals would ensure improvements in performance of managing roles.
- Need changes in the way contracts are drawn up to ensure H&S becomes part of the contractual agreements. The council has difficulty in getting H&S files from contractors once a job has finished, This can take 6 to 18 months, a financial penalty system is needed.
- Planning supervisors should have an on-site role, particularly for larger jobs. If a contractor goes bust, the Planning Supervisor needs to be able to sort out existing site H&S information; e.g. if there has been a change in design and the risk assessment not re-written the H&S status is not always obvious.
- Accreditation systems are good thing (for both quality and H&S). It would helpful if ISO 9002 was extended to cover H&S issues.
- HSC and the Government need to give guidance for quality record keeping for projects, e.g. the use of CD ROM's. Believes the sector is ready to use this technology.
- Adopt similar approach to the that in the US of 'value engineering' which looks at the whole life of a project and considers H&S issues.
- The public need to have their awareness raised as public pressure can be a driver for change. Poor H&S management needs to become as anti-social as drink driving.

Session 28: Specialist sub contractor

Construction Sector

- Both interviewees felt that there are too many Regulations on H&S. Existing Regulations are not prescriptive enough and quoted LOLA 98 as an example.
- They agreed that being prosecuted does affect the future of a company. This company is particularly susceptible to this as they work as a specialist sector (geotechnical drilling). The sector is supported by a trade association Planning Supervisor (Federation of Pilling Specialists) who run a voluntary H&S reporting scheme, they believed that about 75% of the sector submit details to the scheme. Results are reported back on a quarterly basis.
- Spending money on H&S saves money in the long run. They feel that this is difficult to quantify as accidents will happen. Human error will always be an unmanageable risk. However they do feel that the amount of training the industry as a whole has been carrying out for the last few years is now beginning to pay off.
- One interviewee (with a background in the chemicals industry) felt that training budgets are the first thing to be cut-back when finances get tight. This is not influenced by the size of a company. Directors need to accept that training is a necessary overhead.

Project Issues

- They feel that Planning Supervisors have a parasitic role under CDM. CDM has made life harder for sub-contractors. However it can be an ally and as companies are getting more used to using it they are pushing back responsibilities to Principal Contractors.
- Severe budgets don't necessarily make a job unsafe, as long as there is a general safety culture. This is improving year on year.
- HSE visits improve awareness in the sector and usually prompt a flood of questions. This is different to other industries where visits are so frequent that they don't generate any knee-jerk

reactions. Inspections by company H&S advisors can be beneficial as long as not approached with a 'big-stick'. Need to encourage people on site to manage their own H&S. Again this sector is different as staff tend to stay with a company for longer periods and therefore you can build relationships with staff.

- Self-employed people don't necessarily make a job more unsafe. The dichotomy of using self-employed people is that no-one wants to pay to train them as the company won't benefit and self-employed workers earn more money. Self-employed people are reluctant to pay for their own training. This is an area that need addressing by regulation.
- Never encountered a 'happy' project team. People can work well together but the job may still run into problems.

Changes

- Designs are getting safer, but there are still many architects who design structures without any thought as to how they will actually be built. Trafford Centre Dome is a good example as the steel erectors had to take "chances" to build it.
- Innovations in safer methods of construction are being developed by the sector e.g. safer ways to pile. These improvements generally save money as well. This is not in response to legislation but drive by individual companies.
- RIDDOR is running very well, however there is a case for reporting on minor incidents. Trade associations may be a good leader for this. This type of reporting will only be useful if there is opportunity to discuss causes.
- HSE initiative (e.g. Good Health is Good Business) are not helpful. They tend to confuse the issues. They require some form of input from a company to be useful which uses valuable time. Trade specific initiatives may be useful. As a whole the industry responds negatively to initiatives as there is always a 'cost for the contractors'. CDM has incurred costs to companies the HSE didn't account for. People can lose sight of the basics when being distracted with paper-chasing and bureaucracy.
- He doesn't believe accreditation systems are useful. They just create more paperwork and only represent a snap-shot of a company's performance. They are now two-a-penny.
- He believes H&S training for advisors is rubbish as any well-educated person can pass a NEBOSH exam. Qualifications need to take account of practical experience.

Ways Forward

- H&S should be planned for as a necessary overhead and training provided on the basis of experience whilst recognising that resources are limited.
- Further use should be made of sector trade associations to collate and disseminate information. Trade associations can also act as a forum for discussion.

Session 29: Specialist contractor

Construction Sector

- He didn't want to comment on the sector as a whole as he represents a small specialist company.

Project Issues

- Some are good and some are bad. If a project is running behind schedule then 'they' (the Client or main contractor) will let you take short-cuts. If a job needs to be finished quickly, H&S is by-passed. However sometimes H&S is given as the excuse to slow down a job.
- People on site aren't interested unless there is an accident.

- Planning for H&S makes economic sense as method statements make jobs safer.
- H&S plans are written but the plan isn't really followed. For example, you are introduced to a job and given a copy of the plan the day before and you don't have time to read it.
- Contractors do ask about H&S records before employing but this is rarely checked once you are on site.
- There is no-one person looking after H&S for the whole job as companies manage it independently and this causes a problem.
- Big projects may be safer but this is only due to a bigger H&S team management i.e. more manpower.

Changes

- H&S is not an issue with regard to being employed unless you have a really bad record. Companies have to manage their own H&S as no-one else will. Sub-contractors have no influence over a Client. Drive needs to come from the Client.
- Not much has changed in last few years for this company as they have always been H&S conscious as they work for the chemical industry. What change there has been in the industry, has not necessarily been positive. Lots of people from all roles under CDM are still not sure what is required of them. People don't appreciate their full liability as they have not read the Regulations.
- If an accident does occur on site the main contractor will try and blame the sub-contractors.
- There have been no improvements in design.
- The Contractor states requirements for conditions on site but does not help to meet them. For example, this company has to provide its own PPE.

Future

- Following each job that this company completes they get a record signed to say that they have left the job safely so they can not be blamed for subsequent incidents.

Session 30: Client

Construction Sector

- The size of the company does not dictate the efforts made towards health and safety i.e. a large company does not necessarily perform better than a small/medium one. In the smaller sized companies directors are more responsible whereas in larger corporations directors may feel slightly divorced from responsibility.
- It is a marketing advantage to have a good safety record.

Project Issues

- Lack of construction experience is apparent when designs are produced, D & C contracts are better from a 'buildability' point of view because the person who designs the work is going to construct it. This also aids a smoother construction process as less conflict occurs between Designers and contractors.

Changes

- New legislation (goal setting), can improve health and safety. However, it is taking some getting used to after the old prescriptive legislation.
- The notorious 'macho culture' is disappearing from the industry. Years ago things like the use of barrier creams would never happen, but now the older generations are leaving the industry

and health issues are taking a high priority. Media attention to case law, like the miners is also helping to promote health issues across the industry.

Ways Forward

- Further health and safety training for new/young Designers/engineers and better understanding of the construction process is needed.
- Less use of self-employed operatives would bring about benefits, a less transient workforce would give the opportunity to provide more training.

Other

- Responsible, pro-active employers implement systems as good practice rather than to satisfy legislation.

Session 31: Trade Association

Construction Sector

- Insurance premiums increase after claims but never decrease following good performance.
- The construction industry is the first hit following a recession, and this results in people being laid off. Currently there is a boom and hence a skills shortage leading to the use of inadequately trained people who may take risks as there is lots of money to be made. To effectively manage the industry a continuous supply of work is required and this is the responsibility of the government.
- The HSE inspector only visits following an incident.
- There is a 'macho' climate where it is often thought that walking on a roof without harnesses 'gives a Client confidence' (in a similar way to the minister of Agriculture feeding his daughter beefburgers (during the BSE crisis).
- Employees are wary of health surveillance as it may reduce the probability of getting future work.
- HSE is not proactive in enforcing health issues.

Project Issues

- Clear limits of safety, such as maximum wind speed for working safely on a roof, are not defined. Time extensions can be applied for due to inclement weather, and this should include sunshine.

Changes

- The Clients knowledge of H&S issues has improved since the introduction of specialist contractors who force the issue with architects and QS. H&S is now often represented as a separate section on bids.
- The need to register work with asbestos 28 days before the work commences has improved planning.
- HSE inspectors have become more approachable and give advice. However, they can only lay down legal requirements and not the guidance notes or ACOPs.
- There have been improvements in the level of PPE worn.

Ways Forward

- CITB training and passport schemes are recognised throughout the industry such as CSCS.
- Architects and QS should receive H&S training.

- Clients have to realise that H&S controls may bring additional costs.
- Designers should consider the lifetime of the building, in particular maintenance. For example of fall from height a parapet could be included at the roof edge at little extra cost and will reduce the risk during maintenance work on the roof.
- Insurance companies should reward good performance with lower premiums.
- Tradesmen should have a higher status in society (similar to craftsmen in Germany)– courses should receive endorsements towards a degree or similar. All training should be recorded through a QA system.
- H&S should be on the agenda at all board meetings as this will increase management awareness and commitment and drive change.
- Trade associations should audit and give awards for good performance.
- The current identified risks include asbestos, but what are the risks for the future. It used to be thought that man made mineral fibres (MMF) of dimensions greater than 5 μ were not a health factor, but this is changing. Work should be done identifying and controlling new hazards. The government has a role to certify commodity materials as safe. A second example is the profile of a metal roof core which can be polystyrene or polyisocyanate – what are the fire / fragility parameters and the health effects when it is cut?
- There should be more discussion and agreement between parties such as HSE, trading standards and weights and measures to resolve H&S issues. For example, the weight of rolls of felt is not marked due to weights and measures complications and so it is possible to overload hoists.

Session 32: Mixed group

Construction Sector

- Auditing by the Client is uncommon.
- There are gaps in the CDM responsibilities as the Planning Supervisor does not come to site once the construction phase starts, and the PC acts on the H&S plan drawn up by the Planning Supervisor.
- A visit from a HSE inspector is very rare.
- Skills based trades people receive H&S training, but knowledge based, such as architects, do not.
- Self-employed people often think that because they do not require a H&S policy that H&S does not apply to them.
- There is a high turnover of staff.

Project Issues

- The importance which the Client places on H&S varies enormously.
- Smaller projects often have less experienced people and less rigorous planning Whereas larger projects are better managed and may have a greater margin.

Changes

- Management regulations 1999 require that the competent person is named, and this leads to additional training being sought.
- The increasing use of partnering can be attractive as less supervision is required.

- The trend to DIY where anyone can hire equipment and may not have the required experience will lead to an increase in accidents.
- CDM requirements impact on the timescale for a project. An architect, who uses standard documentation, often takes the role of Planning Supervisor.
- Many people have set themselves up as Planning Supervisor, but they are not all competent, and Planning Supervisor should be a team role.
- The importance of reputation has increased with big projects are scrutinised by the media.
- There are very few prosecutions for corporate manslaughter and no-one thinks that it will happen to them.

Ways Forward

- Improved project planning which involves the Client.
- H&S needs should be incorporated within business plans.
- Insurance premiums should reflect performance.
- A method of easily determining competence of contractors should be developed.
- Senior management within companies require H&S training as changes should be top down.
- The HSE should be more visible and act as an enforcer rather than a friend. Currently the HSE rely on H&S specialists within companies to flag up problems. HSE inspectors should have practical and commercial experience.
- H&S professionals should be given a higher status. Currently salaries are low and hence the business attracts poorly qualified people.
- Open door policies that encourage anyone to identify H&S issues without blame should be encouraged.
- A passport system is required to enable competence to be easily recognised.

Other areas to look at:

- In the health service chief executives have been made accountable for H&S. No-one with a criminal record can hold a senior position.

Session 33: Trade association

Construction Sector

- The construction industry is not unique, although it does have difficult characteristics that it uses as an excuse for poor H&S performance. These include the changing work environment, high turnover of workforce and the weather.
- Many Clients don't understand CDM, and consider that a Planning Supervisor will act as safety advisor, but this is not their role. It is difficult to develop understanding in Clients that undertake one off projects.
- Motivating fear factors relate more to people not wanting to explain an accident to the family rather than fear of prosecution or corporate manslaughter.
- Awareness of H&S always increases following an accident.
- Interference from an insurance company is often resented as they come from a reducing liability rather than improving H&S perspective.
- A very large number of regulations apply to construction sites which makes it complex.

- There is higher awareness of immediate safety issues than long term health issues such as stress, noise, HAVS, muscle skeletal disorders.

Project Issues

- The standard of Client regarding H&S varies widely, and is not a function of size, rather it is a function of the culture of the organisation. Highly regulated industries such as prisons or chemicals tend to be more aware. The worst Clients tend to be local authorities and central government which have a requirement to go to tender from a certain number of companies and are very demanding as powerful large Clients, but pay little money and expect short lead times.
- Most Clients do not get involved in audits of the construction site.
- There is a large variation in H&S plans and risk assessments from different contractors.

Changes

- A passport scheme has been introduced by the CSCS (and by the CITB for scaffolders) which defines the level of competence held by a person. It covers about 30 trades. It states that the person has attended a 1 day H&S course, and attained qualifications in their profession. There is a hologram to reduce forgery. In future the H&S section will be by examination. The passport works well, but needs to be more widely accepted as currently many major employers run their own schemes. It reduces the need for all employers to offer a minimal (1 hour) safety induction which repeats the message of ppe etc, but does not improve peoples H&S knowledge.
- Partnership relationships can lead to H&S issues being ‘dumped’ onto contractors.
- Corporate manslaughter will not have much impact as no-one sets out to kill. One result may be that the board will nominate a person to be responsible and he will be terrified. It is very difficult to prove gross negligence. Small and medium companies are more at risk from this legislation. Large companies introduce more paperwork to cover themselves.
- H&S performance is improving as shown by the decrease in the number of fatalities (to 77 in 1999).
- The number of self-employed is reported to be decreasing, but this may be due to people registering themselves as companies for tax reasons.
- The rush for completion of millennium projects has lead to a skills shortage and increased use of untrained, labour only, for tasks such as excavation, and short cuts are taken.

Ways Forward

- There are 23 local authorities in London, and each has a different supplier selection criteria. These should be rationalised.
- Personal fines should be introduced.
- A top down approach is needed.
- University courses in management and construction should include H&S.
- Name and shame policies should be strengthened.
- The H&S knowledge of Designers is increasing, but they do not see it as their responsibility. Lord Rogers said ‘H&S is not my responsibility’ They want to build something which is beautiful, but do not consider that it is them that has the biggest influence over manual handling requirements. They need to be made responsible, through effective Planning Supervisor.

- Planning Supervisor should understand what is required of them and stop doing site inspections, which are easy, but do not fall under their remit.
- The number of passport schemes around should be rationalised, and universally recognised.
- Guidance on health surveillance is needed.
- Further research is needed into what happens to construction workers once they finish work, for example do plasterers develop circulation problems that are antagonised by them not raising their arms for long periods.
- Further consideration should be given to the lifecycle of a building.
- Accreditation systems for H&S are NOT seen as the way forward, as they often improve paperwork in offices, but not conditions on site. Construction is constantly changing and so would be difficult to assess. It is seen as a money making scheme for accreditation companies.

Other countries

- Sweden is good.
- Malaysia – looking at implementing CDM, needs equivalent to Health and Safety at Work Act first.
- Hong Kong has improved following major accident.
- Australia – good.

Session 34: Developer

Construction Sector

- If a Principal Contractor is seen to be running a good, tidy site, it reduces accidents and improves efficiency.
- A good health and safety record is potentially good PR.
- Medium size companies attach just as much importance to health and safety as large companies. However, smaller companies appear not to care about health and safety or maybe they just can't afford it.

Project Issues

- Too much sub-letting of work results in the wrong type of people on site (smaller companies), these prove difficult to manage.
- On a project the ground rules need to be set immediately, being pro-active shows.
- Planning supervisors only 'go through the motions' to earn a 1% fee.

Changes

- Health and safety is now part of the ethos within the construction industry.
- A culture is visible amongst the younger workers but it needs to be enhanced in order to increase participation in safety drives.
- Health and safety has improved over the past ten years but this has been as a result of legislation.

Ways Forward

- Health and safety needs constant sessions to keep the momentum there, but its priority could not be increased any further within the industry.

- Planning supervisors from a professional background do not understand the role, Planning Supervisors should have a contracting background for the role to be undertaken competently.

Session 35: Small Contractor

Construction Sector

- It is a marketing advantage to have health and safety information ‘tied-up’ for the purposes of competency checks etc.
- Face to face health and safety discussions are far more beneficial than generic risk assessments which mean nothing to the individual carrying out the work.
- The industry seems to forget a lot of operatives have difficulty reading and writing, which makes safety literature less effective.
- This contractor has a problem complying with the First Aid Regulations due to their size (small).

Project Issues

- Planning Supervisors (Planning Supervisor) do not improve health and safety on site. Smaller design offices/Architects have the Planning Supervisor role forced upon them by Clients. Generally on these occasions, the design offices/Architects are not trained to undertake the role and do not fully understand its purpose.
- Money is the decisive factor for health and safety on any project.
- Planning Supervisors with little knowledge of the role expect the Principal Contractor to take responsibility for the H&S file.
- Planning Supervisors employed specifically to undertake the role are generally good.

Changes

- The only difference CDM has made is the excessive paperwork.
- The old prescriptive legislation had its advantages because you knew what you had to do. There has been a dramatic change since the introduction of the ‘six-pack’ and risk assessment.
- Self assessment is a form of passing the ‘buck’.

Ways Forward

- Having a consistent labour force is the only way to effectively manage health and safety in-house.
- Health and Safety Advisers must have credibility within the industry.

Session 36: Medium specialist contractor

Construction Sector

- This contractor stated that safety rules were there to protect the individuals and the individuals themselves were now more aware of the potential risks and dangers that arose within construction activities.
- Contracts of a larger nature restricted the use of the known ‘cowboys’ within the construction industry.
- Preferences were identified through the increased use of preferred contractors together with increase of ‘Partnering’ schemes.

- The use of a preferred list of contractors has been used extensively by this contractor in the past and experience shows the benefits to be gained.
- Market Forces focused the minds of large contractors.
- It was stated that most Clients wanted contractors that could demonstrate a good safety record.
- It was felt that Architects together with Designers were appalling in that they could not adequately assess design flaws.
- It was strongly felt that design risk assessments were not undertaken until well into the detailed design when it was far too late to alter/change any element of the design.
- Architects were felt to be not good at managing themselves and stated that Principal Contractors had in fact needed to lead the Architects.
- Design and Build contracts showed how in fact the Contractor lead the Designer/Architect in achieving designs which considered health and safety implications.

Project Issues

- Turnover of staff was felt to be a major problem. The constant changing of individual teams throughout a project was felt a hindrance whilst trying to manage health and safety.
- It was indicated that construction involved in work for larger type Clients resulted in a lot of genuine support.
- Communication and involvement with the employees was felt to play a major part in achieving 'buy-in' to health and safety procedures.

Changes

- Was undecided as to what changes to could be brought about to improve safety.
- More education required to Architects and Designers.
- More consistency within the construction industry has been achieved over the past 10 years.
- Basically felt that safety needed to be managed adequately at site level and resourced accordingly.

Ways Forward

- It is down to the individual project management to make things happen with safety issues.
- Industry is more consistent with the promotion of health and safety.
- This contractor made reference to health and safety in the European Countries and stated that the UK were far advanced in their approach to health and safety issues.
- Partnering schemes was thought to be a major influence on helping to improve health and safety and certainly the way forward for the future.
- More time up front in the planning stages to plan ahead .
- Barriers need to be broken down between the planning stages and the construction periods.
- Clients were outlined as having a major influence on how contracts were procured.

Other

- It was stated that despite how much legislation is in place or how many procedures are adopted to comply with legislation, at the end of the day it is of no use if that information cannot be translated effectively.

- It was felt that Senior Management in some smaller to medium size companies did not fully support the site management teams and this reflects in the standards of safety achieved at site level.

Session 37: Small specialist contractor

Construction Sector

- Major improvements have been made in the construction industry over the past 10 to 15 years.
- Individual workers within the industry were now more aware than ever of the health and safety risks in construction.
- Health and Safety is becoming more conscious as awareness is increased within the industry.

Project Issues

- Site inductions have played a big role in getting information to the individuals.
- A greater amount of training has been undertaken by construction companies.
- A minority exists where corners are cut because of money constraints or programming pressures.
- Programmes do not take into consideration the interfaces between the specialised trades, when programme deadlines are not achieved programmes are not normally extended and experience shows that workers are forced to working and sharing similar work areas which would not have happened if programme was achieved.

Changes

- Clients need to get their act together more.
- Timescales were regarded as the biggest problem.

Ways Forward

- Reduce the 'Fastrack' element of work within the construction Industry, it was felt that this would reduce the 'Carnage' labelled to the construction industry.

Session 38: Large Contractor

Construction Sector

- Plenty of good guidance was thought to be around but commented that small to medium size companies found difficulty in meeting the costs.
- It was felt that health and safety was not adequately covered in trade training curriculum.
- Good safety records were important to companies to satisfy certain Client companies.
- More awareness among individuals than in years gone by to health and safety issues.
- It was felt that many firms genuinely tried to improve health and safety standards by providing training and inductions.
- It was strongly felt that directly employed operatives with little turnover in personnel contributed to better safety standards.
- It was felt that certain Planning Supervisors did little to improve health and safety and was seen as fulfilling a paperwork exercise.

- It was stated that employees were more switched on to health and safety issues than in the previous years and that the 'Macho' type image was beginning to fall away. People generally had woken up to the high risks associated with construction work.

Project Issues

- Clients were criticised for not allowing sufficient lead in times to the start of a new job.
- The transient nature of the construction industry made it difficult at times to manage safety sufficiently.
- Designers were criticised for not designing out risks sufficiently and stated that they did not consider or were knowledgeable of buildability.
- Some comment was made regarding bonus schemes and how this could affect health and safety as a result of taking short cuts in favour of additional payments.
- It was acknowledged that working with known contractors improved health and safety standards.

Changes

- Better planning was identified as a means of creating a quicker change in the industry. Greater input from Clients and Designers in the earlier stages to iron out any potential problems.
- Improved H&S plans provided by Planning Supervisors which are specific to each contract and not reproductions from previous contracts.
- Improved methods of co ordination on projects.

Ways forward

- It was stated that the HSE should spend more effort in policing the sites.
- More lead in time provided by the Client to allow assessment of health and safety issues prior to commencement on site.

Session 39: Research association

Construction Sector

- Designers from large organisations are more interested in H&S issues than those from small organisations due to less resource pressure for training etc.
- Contractors have to have H&S experience, but Designers do not, and are therefore lagging behind.
- The attitude prevailing is to try to 'pass the buck' and this conflicts with the need to manage effectively.
- Both employers and labourers are much more concerned about safety effects as these are immediate and identifiable, and may lead to civil claims and prosecution. Health effects are chronic and invisible in the short term and it is very difficult to link the cause and effect sufficiently to obtain civil compensation. Workers are concerned because if they are off work they will not get paid.
- There are few prosecutions as there are insufficient inspectors. The prioritisation of their time should take into account the proactive requirements for prevention rather than cure.

Project Issues

- The Client can have a strong influence on H&S within the project, but few are interested.

- The framework of responsibility and duty between employer, employee, team member and society is not clear.

Changes

- Partnering is increasing for companies with big construction programmes, but still little used.
- A trend to 'labour only' employment happened in the 80s and 90s, as this has financial advantages, more flexibility and less liability. However there are downsides as there is less loyalty to the company and a laissez faire attitude prevails where people can not see the point in improving things as they will not see the benefits. This encourages a short term mentality.
- There has been a broadening of project complexity with a polarisation of which type of project a company has aspirations to be in:
 - some projects are leading edge and complex in terms of design solutions and management issues, reputation is important and the budget includes training costs.
 - whilst at the other end of the spectrum some projects focus on being minimum cost and do the minimum work in the way that it has always been done.
- In the middle there are organisations that have difficulty in deciding which strategy to follow. It is these which should be targeted to improve work practices. Currently they do not understand the financial benefits of effective H&S management, and object to requests in tenders. They are motivated by the fear of going to prison, and peer pressure.
- Clients need to be more honest about which of these groups they wish to employ (cost or performance) and then provide the necessary resources. Clients need to understand about value rather than price, including the lifetime of the building.
- The change in legislation towards a risk assessment approach has caused some problems in interpretation. There is a lack of understanding about the need for controls and strategy. It does have benefits, as it is not necessary that everyone check to the most stringent standards.
- Legislation is written as a legal document and is therefore difficult for lay men to interpret, and often the guidance is conflicting and adds to confusion.

Way forwards

- Currently the training load rests with the employer, and often is not met due to resource pressure. H&S needs to be included in university and professional qualifications such that it becomes an integrated part of the course.
- A 5 day course 'H&S for Designers' should be introduced similar to the NEBOSH construction certificate, and this should lead to a recognised qualification, which could be a pre requisite for becoming chartered. No course is currently available.
- Partnering leads to a better environment with better co-operation, H&S standards and more productivity, and therefore 'supply chain management issues should be encouraged. It may also increase the awareness of health effects.
- There needs to be a uniformly recognised means of identifying skills levels e.g. corgi registration.
- Pre employment health surveillance combined with checks at the end of a project would be unpopular as the results may hinder the worker getting further work, and there are also confidentiality issues. It is difficult to know what to test for.
- There is a need for further research in whole life costing issues related to H&S, such as exists for environmental impacts.
- Clients require simple guidance on how to get the best value from the construction industry. This should explain the difference between value and cost and be short and positive.

- Insurers could run a ‘no claims’ type of scheme for H&S performance.
- Currently the NHS picks up the cost of treating work related injuries, but if these had to be treated privately and the employer paid then there would be a better reflection of the true cost of accidents.
- The ‘brother’s keeper’ approach needs to be expanded – responsibility for others, particularly on unfamiliar sites.

Other countries

- USA has a visible ‘good end’ with positive PR to prove that it can be done. In the UK we do not talk about our success so much.

Session 40: Insurance

Construction Sector

- There is no link between safety performance and insurance premiums.
- The Client pays for safety, and may benefit indirectly.
- The insurers sometimes vet safety plans before underwriting risk.
- Insurers look at the record for the industry rather than the performance of a specific company.
- The biggest risk to the company is losing key employees or delays, and not health and safety risks. Until this priority order changes, the senior management (and insurers) will not focus on health and safety.
- HSE guidance is detailed, but is often difficult to interpret.
- University graduates have no health and safety training.
- There is no mutual respect between different sections of the industry.
- Senior management have little H&S knowledge.
- The true cost of accidents is not evident, the NHS bears the medical costs.
- Insurers don’t investigate enough accidents. The insurers only take a claim seriously after 3-5 years and by this time any witnesses have gone and they are forced to settle on the best argument.
- It is difficult to measure competence of contractors, and this is often done as a paper exercise. Benchmarking would be of benefit.

Project Issues

- It is expected that bigger projects are better managed, as they are more conspicuous.
- Audits are more frequently formulaic rather than proactive.

Changes

- Since the labour shortage, all companies wish to be the preferred employer.
- No-one expects to get prosecuted under Corporate Manslaughter Legislation. Also, fines are too infrequent.
- Accreditation systems only work if there is buy in at all levels of the organisation.

Ways Forward

- Changes to the culture of a company must be top down.

- Good practise should be shared, big companies are involved in committees to do this, but small companies may not be.
- HSE should give consistent advice across the company. They should decide whether their role is one of advisor or enforcer. The industry would like them to support the H&S professional through putting additional pressure on directors.
- The police should assist the HSE further in accident investigations, as this would lend weight to the issues. Currently the police prosecute individuals and the HSE or HSC prosecute corporations.
- The views of company management need to change such that they understand the link between H&S performance and business performance.
- There should be a nationally recognised passport system which is a licence to practise for all contractors and sub contractors, and this should include health and safety.

Session 41: Mixed group

Construction Sector

- There is under reporting of accidents for self-employed people.
- Method statements are usually generic rather than site specific.
- The construction industry does not give priority to health issues. The HSE should use scare tactics to raise awareness, in the same way as the drink driving campaigns.
- There is a lack of knowledge about which will be the problem materials in the future.
- The management do not put a priority on H&S as there are too few prosecutions.
- HSE is reactive rather than proactive. They give good advice over the phone, but if this function was contracted out then they would have more time for site visits.
- Prenotification form F10 should be followed up with inspections.

Project Issues

- An example was given of a Client who specifies H&S under a different part of the tender costings, so that this is not part of the competition for the project.
- Labour only workers frequently do not speak English and this leads to considerable communication problems.
- PPE is often uncomfortable, and this is the reason that people do not use it.
- When given poor welfare conditions the workers tend to abuse them, but if conditions are good then they are respected and maintained.

Changes

- CDM has formalised systems. However certain roles are not being met: Designers do not take account of the lifecycle of a building, Clients do not allow sufficient lead time and the appointment of a Planning Supervisor is often made too late to benefit the project. It has resulted in the generation of paperwork to cover peoples backs..
- The Association of Planning Supervisors is poorly organised and heavily criticised.

Ways forward

- Improvements will be top down as they need resources. Line management has a key role in promoting safety initiatives.
- Fines should be a percentage of profits.

- The passport scheme for contractors needs further marketing to ensure it is accepted as the industry standard.
- Increased training and awareness is needed.
- Executives should visit the construction site. Perhaps an executive should swap with a construction worker for a week, to become familiar with the issues facing him such as poor welfare conditions, in the way that job swaps have become familiar on television.

Session 42: Architects

Construction Sector

- Site workers don't take care of themselves. Reporting of accidents has increased since the increase in civil claims. Workers don't understand what is a high risk activity, but they do know what they like or do not like doing.
- No-one controls self-employed people.
- Clients take the most notice of health and safety as it is they who will be prosecuted.
- Professional qualifications for architects do not include H&S (either CDM or building regulations). An architect does not know how to instruct a technical team to build a design. RIBA is arrogant. This position is changing slowly.
- Courses are available for a Planning Supervisor, but there is no formal qualification.
- **There is a conflict of interest if the Designer and the Planning Supervisor are the same person.** This is frequently the case. This architects firm has a partnering arrangement with a Planning Supervisor, so they can provide the service whilst remaining independent. The Designer has duties under CDM, and the architect has duties under contract administration which may conflict.
- The Planning Supervisor has no responsibility to visit the site under CDM, but the architect is obliged to visit under the contract. The Designer identifies significant or non routine hazards, and provides this information to the contractor who interprets it into the H&S plan.
- The role of the Planning Supervisor is to ensure a H&S plan is provided. **The Planning Supervisor has responsibility but no authority.** The role of the Designer is to provide information for the H&S plan, but not to write the it.
- The Design Risk Assessment should take place throughout the design phase, but it is frequently left until the end. The DRA should be standardised as much as possible.
- The construction industry is unique as each building is a prototype.
- Architects can use H&S specialists if they need detailed advice.
- Architects may have to propose a design which is not optimal for H&S due to circumstances such as a historic building or Clients image.

Project Issues

- The Architects review the business case for any building with the Client, and H&S forms a fundamental part of this.
- The sooner that a Planning Supervisor is appointed, the safer the project will be.

Recent changes

- RIBA fought against the introduction of CDM, and since this have not been proactive in its implementation.
- CDM was considered to have only a marginal influence.

- The environment has gained a higher public profile than H&S. This could be because construction H&S does not concern everyone.
- The HSE appears to have an attitude counter to profitable industry. However, there should be more H&S inspections and prosecutions.
- Approved Document B on fire safety came into force with the building regulations in January 2000, and requires 3rd party accredited systems for materials used for fire protection. The Local Authorities will be asking for this in the future.

Ways Forwards

- Legislation could be better co-ordinated such that there is one rule book which everyone works from. CDM should be simplified.
- Partnering brings improvement.
- An accident database would be very useful, as it would allow Designers to know where historically the higher risks lie, rather than guessing. **Currently they are not aware of the issues.** This architects firm is currently writing 'job aids' such that an architect can indicate quickly and easily which are the risks associated with each activity. This will be supplemented by a risk assessment for non routine hazards. This system will be useful for training. This 'job aid' will develop as the understanding about risk increases, and will reduce the current need for starting from scratch each time. It is difficult to know how to assess a risk which you have never experienced.
- The Planning Supervisor should be made part of the design team.
- H&S should be included in the costings for a project.

Session 43: Insurance

Financial penalties can be used to drive change, and this could be through insurance premiums, but fines should be the main vehicle. Fines should be larger and more frequent.

A variety of covers can be used including cost guarantee basis, and retrospective covers. Underwriters need to make a profit.

Features of claims include deductibles where a portion of the claim is paid for by the employer. These are underwritten individually.

Premiums are based on :

- Industry statistics - relating to past claims for that business type.
- Risk management in place - need to meet legislative and industry requirements. Failure to meet this is usually evident only after a claim, but engineers are employed to survey risks.
- Negotiations with the company depending on factors such as size of package and other insurance needs.

Premiums are rarely assessed on an individual basis. Contracts are usually set up on a project basis for large construction work, rather than an annual cover.

Several countries operate Worker Compensation Schemes, including USA, Australia, Belgium and Singapore. The schemes are operated by the government. An employer pays into a pot of money. If a worker has an accident he can claim a standard amount depending on the injury type from this pot. This money will be paid regardless of fault or negligence. The scheme is underwritten by an insurance company. In addition the employee may claim for negligence against the employer and this will be covered under Employers Liability Insurance.



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