What works in delivering improved health and safety outcomes
A review of the existing evidence

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This report consists of a literature review on ‘what works’ in delivering improved health and safety outcomes, using data published since 2002. It is supplemented by an analysis of how HSE uses and generates research-based evidence, drawing on data from interviews conducted with HSE staff. The report identifies knowledge gaps in relation to ‘what works’ where further research is required, discusses barriers to use and generation of evidence and makes recommendations for how HSE could improve its use of evidence and commissioning of both policy and programme interventions and their respective evaluations.

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EXECUTIVE SUMMARY (1 PAGE VERSION)

What works in delivering improved health and safety outcomes?

The following interventions were found to be effective at some level: using face to face communication to educate and inform; new interventions involving Occupational Health Service (OHS) provision, especially in relation to prevention and cure of Musculoskeletal Disorders (MSDs); regulation among employers and workers who comply; tools and Safety and Health Awareness Days (SHADs) are helpful for willing and committed employers; worker involvement techniques such as worker health and safety representatives can be effective in disseminating health and safety messages and generating behavioural change; targeted initiatives can be helpful in enabling setting objectives and encouraging progress towards sectoral health and safety improvements.

What are the knowledge gaps?

The largest overall knowledge gap identified where further research is required was to identify which levers are most effective in obtaining behavioural change in health and safety practice at an individual and corporate level. This gap has a number of aspects including: which groups are most influential on changing worker behaviour, the power of supply chains, economic and financial incentives and the effects of sanctions including adverse publicity and restorative justice, understanding the roles of industry partnerships and intermediaries, assessing the impact of interventions used in combination with each other, identifying ‘what works’ in LA enforced sectors and/or those with migrant workers, understanding work process design and identifying the effects of targeting interventions.

How could HSE improve its use and generation of evidence?

A number of barriers to better use and generation of evidence in HSE were identified. These included time pressures, political pressures, knowledge management problems and use of analysts.

The suggestions put forward by HSE staff for making evidence accessible were making more use of workshops/seminars; written summaries; electronic media. Many also emphasised that proactive evidence supply was as important as format. Interviewees made very little use of existing documented evidence in the form of commissioned research reports and externally published evidence and relied on statistics and their own networks for evidence.

HSE could improve how it uses evidence by: agreeing on what constitutes ‘good enough’ evidence, implementing multiple channels for dissemination and access to evidence eg flexible searches of HSE databases, a web-based set of resources on evidence-based policy making and case studies of good practice, internal seminars to disseminate tacit knowledge, provide short email digests and summaries targeted by topic/sector/programme.

HSE could improve how it generates evidence by introducing a rigorous commissioning process for interventions and research, building on the Science Planning Process. This would require:

- consideration of a broader evidence base before and during commissioning of research, design, delivery and evaluation of policy interventions; developing closer working between analysts and internal policy clients; making greater use of longitudinal independent checks on behavioural change in evaluations; potentially undertaking fewer,
more focussed evaluations, for example restricting evaluations to interventions where full ex-ante appraisal of intervention choices has been made and a quantifiable impact on outcomes is anticipated; undertaking more small scale studies, secondary reviews or meta-analyses of ‘what works’.
EXECUTIVE SUMMARY (4 PAGE VERSION)

The aim of this report review is to draw together and update knowledge about what works in delivering improved health and safety outcomes and to investigate what role research-based evidence plays in shaping the design and delivery of HSE’s programmes and how the use and generation of evidence could be improved. It involved an iterative review process of published research, including reports commissioned by HSE and relevant studies identified in wider academic literature, and 31 interviews with HSE staff.

Key findings on ‘what works’ to improve health and safety outcomes

- **Inspection and awareness-raising face-to-face events** play an important role in large scale multi-method campaign activities. Partners and intermediaries can play an important role. Print-based messages alone have some effectiveness in raising awareness of risks but are weak in converting awareness to behavioural change. Multi-method campaigns appear to be more effective as there is evidence of behaviour change in a small proportion of employers.

- **New interventions are working** Occupational Health Service (OHS) provision and interventions to prevent and cure Musculoskeletal Disorders (MSDs) deliver improved health and safety outcomes.

- **Regulation** provokes improved health and safety practice among those who are willing to comply but ‘invisible’ risks such as workplace stress are harder to police through inspection and may therefore be less amenable to regulation.

- **Tools and Safety and Health Awareness Days (SHADs)** are helpful for willing and committed employers.

- **Worker involvement techniques** such as worker health and safety representatives can be effective in disseminating health and safety messages and generating behavioural change.

- **Targeted initiatives** can be helpful in enabling setting objectives and encouraging progress towards sectoral health and safety improvements by building commitment among organisations.

Intervention effectiveness could be judged on a scale of 5 levels; from raising awareness of hazards, self-reported action as a result of heightened awareness, independently verified action as a result of awareness, and measurable impact on health and safety outcomes such as accident and sickness statistics and cost-benefit effectiveness of the intervention to HSE. For most interventions, limited data was available on some of these measures, and no interventions had been evaluated according to the scale of their impact related to the size of the problem and consequent value for money obtained.

Quality of the evidence base

The **quality of evidence** is mixed. Some of the work on new interventions such as OHS services and early interventions for MSDs is robust. But parts of the evidence base continue to suffer from persistent weaknesses. Much evidence of intervention impact relies on either a) self-reported intentions to change behaviour and/or b) self-reported perceptions of intervention impact.

Some of the evidence base reviewed adds relatively little to the existing stock of knowledge because it is commissioned without reference to existing research, or evaluates interventions
which were poorly designed and whose impact is either minimal or cannot be evaluated satisfactorily.

**How does HSE use evidence? Gaps, barriers and solutions**

HSE staff use a wide variety of evidence in multiple forms. **Statistical data** was used relatively intensively, supplemented by **oral and written evidence from experts and industry stakeholders**, and **internal evidence from colleagues** and especially **information from inspectors in FOD**. Interviewees made little use of **documentary data** in the form of commissioned research reports or external publications.

Much use of evidence was underpinned by a sense of convention, in that many staff did not actively reflect on or question why or how they used evidence. However we identified three major types of factor which influenced organisational practice. These included:

- the need to meet **regulatory or governmental requirements** to demonstrate impact or value for money as a public service;

- **individual personal preferences**;

- linear or deliberate approaches to the **development of an evidence base**, founded in pragmatic need to develop knowledge to enable delivery of policy.

Developing the evidence base was the weakest motivation for evidence use, although it is not appropriate to quantify the range of the staff views.

Staff voiced two problems emerged in relation to quality of evidence: the **persistence of evidence gaps**, and a widespread concern about the **value of statistics** both for setting targets for programmes and to measure progress and outcomes. Staff felt that time lags in data collection and small sample sizes when data was disaggregated at (sub)sectional levels or by topic/theme made statistics of limited value. **Evidence gaps** were noted especially in health-based areas of policy work.

A number of barriers to better use and generation of evidence were identified. These included **time pressures, political pressures, knowledge management** problems and making best **use of analysts**. Time pressures and political pressures have been identified as common problems amongst Government Departments (Campbell et al. 2007).

The suggestions put forward by staff for making evidence accessible were making more use of **workshops/seminars; written summaries; electronic media**. Many also emphasised that **proactive evidence supply** was as important as format and a closer relationship with analysts appears important. Providing bite sized chunks of information tailored to programme needs and explaining the implications of evidence for programmes were two areas for development.

A major theme which emerged from the interviews was perceived weaknesses in the **commissioning process**. Staff made a number of suggestions to improve this such as building the research commissioning process into project planning.

**What are the knowledge gaps on how to deliver improved health and safety?**

The largest overall knowledge gap identified both by HSE staff and in the literature is which levers are most effective in obtaining behavioural change at an individual and corporate level. This gap has a number of aspects including:
Identifying which groups are most influential on **changing worker behaviour** including peers, managers, and worker representatives and whether different sources influence behaviours relating to different aspects of health and safety practice.

The importance of a **safety culture** emerged in a number of studies, particularly those related to the construction sector. However, there was little evidence which added to or advanced current understanding of what it means to have a safety culture and how it can be best cultivated.

The literature identified that further work could be done to understand how to develop the potential **power of supply chains** to influence improved health and safety practice. HSE is already doing some work in this area but documented evaluation is not available.

**Economic and financial incentives** such as insurance requirements, awards schemes or incentives for good health and safety practice may be useful in leveraging behavioural change, but further research is required to model how these mechanisms might work.

The potential **effects of sanctions** including adverse publicity and restorative justice on influencing behavioural change merit further investigation.

The role of **industry partnerships and intermediaries** in engaging organisations with health and safety management appears promising but understanding in the area is not well developed. In particular, we need to know more about which bodies might serve best in the role of intermediaries in disseminating HSE messages and how they might function in an advisory capacity. This is particularly important when engaging Small and Medium Sized Enterprises (SMEs). There also appears to be little information in the literature reviewed on what the features of an effective partnership are and how this might vary by intervention or by sector.

It is not known whether messages promoting wider workplace health and well being initiatives are more effective than those with a traditional health and safety focus.

**Intervention combinations** were an area of success with respect to the use of inspection to support messages from media campaigns. However, little evidence was available about the impact of combinations of other interventions. It may be worth conducting experimental pilots of combinations of interventions to assess whether particular ‘mixes’ have more impact.

Some sectors characterised by employment growth, the presence of ‘vulnerable’ workers and high hazard levels appear to have received less attention in the evidence base than we might expect. For example, there appears to be little evidence on ‘what works’ in some of the LA enforced sectors such as hospitality and catering, although it both employs large numbers of migrant workers and is composed of a relatively high proportion of small businesses relative to the UK economy.

A new evidence base is emerging on **interventions to prevent, control and manage risks of stress**. Longitudinal studies able to measure and account for other variables that affect both management practice and health-related absence would be beneficial to build the evidence base in this field. There is a general lack of evidence on whether behavioural change is sustained in the longer term.

Elimination of health and safety risks through **work process design** which substitute or remove hazardous activity was mentioned as a potential area for investigation in a number of studies. However there appears to be a need to identify how to undertake this in practice. This may relate to supply chain processes noted above. HSE has undertaken work in this
area eg on a kerb laying initiative which has appeared to be effective but no documented evidence on the outcomes was available.

**Targeting of interventions** by customising communication format and message content according to organisational size and potentially sector emerged as a principle which was perceived to be beneficial, but there was limited robust evidence of its effectiveness. Comparing the effects of targeted with non-targeted interventions may be helpful here.

Assessment of **intervention effectiveness** in terms of the value for money derived from different types of intervention appeared to be absent from most of the studies reviewed. This is nevertheless important in informing how HSE prioritises resources to meet its PSA targets. It may be worth the HSE undertaking its own cost-benefit analysis of the relative impact of its different interventions.

It is desirable to know ‘what works’ in specific circumstances as well as whether interventions are (in)effective. Overall this was generally not possible as studies usually did not draw conclusions about relative effectiveness of interventions in different contexts. There remains, therefore, an outstanding need to identify what works in different sectors, for different hazards and for different types/sizes of organisation.

**What could HSE do to improve the evidence base?**

1) improve how HSE uses evidence through:

- agreeing on what constitutes ‘good enough’ evidence
- implementing multiple improved channels for dissemination and access to evidence e.g flexible searches of HSE databases, a web-based set of resources on evidence-based policy making and case studies of good practice, internal seminars to disseminate tacit knowledge, provide short email digests and summaries targeted by topic/sector/programme
- using shorter standardised executive summaries for commissioned research.

2) improve how HSE generates evidence

- Introducing a **rigorous commissioning process** for interventions and research, building on the Science Planning Process. This would require consideration of a broader evidence base before and during commissioning of research, design, delivery and evaluation of policy interventions.
- Develop **closer working between analysts and internal policy clients** to bring about cultural change in the way HSE uses evidence.
- Make greater use of **longitudinal independent checks on behavioural change** rather than relying solely on self-reported evidence in evaluations. This would substantially improve the evidence quality through ‘person-triangulation’ (ie checking change by assessing evidence provided from two different sources) and provide information on sustainability of impact.
- Consider undertaking **fewer, more focussed evaluations** and more **small scale studies, secondary reviews or meta-analyses** of ‘what works’. The Cochrane Review approach used in the health sector or a ‘realistic evaluation’ approach (Pawson and Tilley, 1997) may be helpful models to consider.
1 INTRODUCTION

1.1 DEBATES ABOUT WHAT WORKS IN IMPROVING HEALTH AND SAFETY

Recent debates in how best to improve workplace health and safety have centred on two strategies which are often placed in opposition to each other in the literature, either:

- the use of legislation which requires mandatory compliance and is secured through education about the requirement to comply, inspection and enforcement, or
- voluntary approaches based on principles of enlightened self-interest, involving education of employers about the financial and moral benefits of good health and safety practice and exertion of influence through key industry stakeholders and supply chain activity.

A significant body of evidence has therefore been amassed which engages with this debate. Notable examples include Davis (2004), Wright et al. (2005), Fooks et al. (2007) and James and Walters (2005). The HSE currently pursues a mixed approach to improving health and safety in its capacity as regulator, with some inspection and enforcement responsibilities and also as an educator which provides information, advice and guidance available to employers and individuals for voluntary implementation.

This report adopts no prior assumptions about ‘what works’. It seeks to provide an objective and independent assessment of the messages that emerge out of a detailed review of a defined evidence base and interviews with 31 members of HSE staff from a range of functions. It should be noted that the House of Commons Work and Pensions Committee was conducting a review of the HSC/HSE role in regulating workplace health and safety concurrently with the preparation of this report.

1.2 HSE OBJECTIVES AND TARGETS FOR THE TIME PERIOD OF THIS REVIEW, AND THIS REPORT’S RELATIONSHIP TO THEM

The HSE’s objectives stem from its ten year strategy derived from Revitalising Health and Safety (2000) and current objectives are linked to the Public Service Agreement targets from the Comprehensive Spending Review of 2004. The overall goal is: ‘By 2008 improve health and safety outcomes in Great Britain through progressive improvement in the control of risks in the workplace’ (HSC, 2007)\(^1\). The HSE uses three main indicators of progress against targets: incidence of work-related fatal and major injuries; incidence rate of work-related ill-health and the number of days lost due to injuries and ill-health. It is seeking to reduce these against baseline data from 2005/2006 by: three per cent for work-related fatal and major injuries; six per cent for work-related ill-health and nine per cent for work days lost due to injuries and ill-health. In addition, there are specific targets for major hazards industries (HSC, 2007). The HSE uses a number of evidence-based intelligence mechanisms to direct and prioritise activity to help meet these targets, including field intelligence, externally and internally commissioned research reports and survey data from a number of sources. For example, Fit3 surveys are designed to measure changes in control measures and level of compliance over time. These will assist HSE with assessing whether it has met its contributions to the DWP’s PSA targets.

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This review does not seek to contribute directly to measuring HSE progress against these targets, but it provides some insights into the relative impact of activities which contribute to these targets (whether initiated by the HSE or other actors), as far as can be judged within the constraints of the available evidence. The review also aims to contribute to building the evidence base on the effective management of health and safety by pointing to topics where there is greater or lesser amounts of evidence on success and assessing where the quality of the evidence base is already strong or could be further strengthened. However, one important factor that informs HSE activity is not covered by this review, and that is changes in the nature and extent of workplace risks. This is an important driver of HSE activity and needs to be taken into account in developing future research priorities, in addition to the state of the current body of knowledge. For example, where little is known about the impact of workplace activity thought to pose a low risk to health and safety, the evidence base may still require development if that risk is likely to grow.

1.3 PROJECT AIMS AND OBJECTIVES

There have been a number of previous reviews of the evidence base for HSE’s activities (eg Hillage et al. 2001; Wright et al. 2005). These reports highlight that there is a large body of evidence on the effectiveness of HSE’s interventions, which shows that HSE does have a positive impact on workplace health and safety behaviour. There is also a great deal of embedded knowledge within HSE about what works in delivering improved health and safety outcomes. Some of these literature reviews also highlight the lack of robust impact evaluations on the outcomes of HSE’s interventions (Hillage et al. 2001). Although this limits HSE’s ability to link interventions to final outcomes in terms of reductions in workplace injuries or ill health; impact evaluations of programmes are not always possible or practical. Evidence on intermediate outcomes eg changes in workplace health and safety behaviour are also important for understanding how HSE’s activities impact on workplace health and safety behaviour.

The overall aim of this review was to draw together and update what we know about what works in delivering improved health and safety outcomes, to assess the quality of this evidence, and to make recommendations based on the conclusions.

The detailed project objectives were to:

■ Comprehensively re-assess the existing evidence base on what works in delivering improved health and safety outcomes (both intermediate and final).

■ Draw upon the existing reviews on the impact of HSE’s interventions, update this with what we know from more recent HSE interventions and assess the quality of the evidence base.

■ Assess how the evidence base has changed since the previous reviews, eg has the evidence base improved and if so how, or do the same gaps/weaknesses persist?

■ Draw out and summarise the key messages on what works in delivering improved health and safety outcomes (both intermediate and final).

■ Supplement documented evidence with an assessment of HSE’s embedded knowledge.

■ Highlight any differences in what works across different contexts, eg different sectors, size of firms, hazards etc.
Investigate what role research-based evidence currently plays in shaping the design and delivery of HSE’s programmes and engage in discussions with policy officials within HSE on how to deliver better evidence for future assessment of HSE’s interventions.

Disseminate the findings with programme managers and discuss the way forward, including any implications for programme planning and delivery.

Make recommendations for the way forward on improving the evidence base; including tackling any barriers to embedding the learning from existing evidence.

There are two key differences between the approach taken in this report and that of Hillage et al. (2001). In Hillage et al. we used a literature review to consider the impact of the HSE alone, rather than the broader question of ‘what works’. In this review, at the request of the HSE, we have broadened the criteria for including literature within the scope of the review, to avoid omitting any key messages about what works. This means that no studies have been omitted purely on methodological grounds prior to review for the presence of a relevant message. This necessarily means that the volume of the literature reviewed in the final phase of the process was considerably larger than the previous review and there was more variation in the quality of the research. Our remarks on the quality of the research literature can therefore not be placed in direct comparison with those we made in Hillage et al. (2001), since the same inclusion criteria for literature were not applied. Secondly, again at the request of the HSE, we have undertaken a more substantial consultation exercise with HSE staff. This covered a wider range of issues than those addressed in the previous review. In addition to collecting the embedded knowledge of staff on what works in improving health and safety, we also sought to understand how they use evidence to inform policy making and programme design, what sources of evidence they used and how any barriers to improving the evidence base for policy making could be overcome. However, we should note that the views of operational staff were not sought as part of this project as HSE has commissioned a separate, more detailed study to examine what works in terms of inspection.

Despite the efforts we have made to ensure that our review is comprehensive, we must note that the review is subject to the limitations of existing evidence. There may be initiatives which are thought to be effective but for which no evaluation data has been collected or is available, and whose effectiveness is therefore unproven.

It is desirable for the HSE to know ‘what works’ in specific circumstances as well as whether interventions are (in)effective. Where evidence enables us to specify this, we do so, but overall this was usually not possible as studies usually did not draw conclusions about relative effectiveness of interventions in different contexts. It would also be beneficial to identify the impact of different combinations of interventions. However, we found very little research which addressed the impact of interventions in combinations, and this report therefore provides limited insights into this policy issue.

1.4 DEFINITIONS OF TERMS

Three terms require definition for this report: ‘evidence’ relating to health and safety in the workplace; the ‘what works’ focus and the relative ‘effectiveness’ of different types of interventions.

At the HSE’s request, we took an inclusive approach when using the term ‘evidence’ when interviewing HSE staff. By evidence we mean any kind of data which is used to justify whether a particular intervention affects health and safety, obtained from any source. For example, it could take the form of statistics from accident reports or text in published or unpublished policy or evaluative reports. It could also be oral information passed on from
colleagues through internal and external networks or intelligence gathered through HSE’s Field Operations.

For the literature review we limited our definition of evidence to documented data. We were prepared to consider unpublished data but located no unpublished documentary sources which differed from, or added to, the findings we obtained from published pieces.

‘What works’ refers to the evidence of positive benefit that an intervention or activity has in relation to health and safety outcomes. Here our focus was to identify, at the minimum, some opinion or data which documented the effects of the intervention, even if effects were claimed as future intentions, eg to alter work practices as a result of training. Subjective attitudinal responses to, and perceptions of, the outcomes of health and safety activities therefore constitute evidence of ‘what works’, as well as objective measures of health, illness or accidents in the workplace. However, studies which describe the process of undertaking an intervention without identifying its effects do not satisfy the definition. Similarly, studies conducted at a very early stage in the development of an intervention and which are concerned solely with its potential feasibility, are not able to give an account of the effects of the intervention.

There are a number of measurement indicators available to assess ‘what works’. We divided these into three types. Firstly we can examine initial outcomes such as the number of people who came into contact with a potential source of influence on health and safety. This might include hearing of a media campaign, purchasing a tool, downloading health and safety guidance from a website or talking to an inspector or other expert. Secondly, we can look at intermediate outcomes such as whether contact with those influences resulted in changes to the behaviours of individuals or to organisational policies and procedures and whether there is a convincing case to suggest that this is linked to improvements in health and safety practice and outcomes such as risk reduction. We have confined our analysis to published sources, but it is important to note that this data may be available to HSE through internal sources such as HSE surveys. Thirdly, we can examine final or ultimate outcomes through measures such as accident rates and incidence of work-related sickness absence.

Effectiveness of interventions can be considered from different perspectives. Health and safety research commonly evaluates interventions in terms of their impact on the various levels of outcome discussed above, often without taking into account the resources required to implement them. However, for organisations in general and the HSE in particular, ‘effectiveness’ needs to be considered from a broader perspective including the relative costs and benefits of different interventions so that resources can be targeted appropriately. Much of the evidence reviewed does not explicitly evaluate interventions from this perspective and we return to this point in our conclusions in Chapter Seven. We must also judge whether interventions are more or less effective in terms of the type of outcome they achieve, with behavioural change and evidence of impact on health and safety outcomes being more significant than raising awareness. Judging the relative effectiveness of different interventions is tempting, but this approach nevertheless remains limited by the absence of cost-benefit data and the problem that comparative evaluations of interventions are often not conducted which makes explicit comparison of impact risky.

The variation in the type and quality of evidence considered in this report poses potential risks for unguarded and incautious interpretation. In analysing the evidence and drawing our conclusions, we pay particular attention throughout the report to the type of evidence upon which research conclusions are drawn and alert readers, wherever we believe they should be wary in using the conclusions that emerge from research findings. Equally, where evidence is particularly reliable or robust, we emphasise this. Considering the whole evidence base
also allows us to comment on the overall quality of the research in the area of health and safety in the workplace.

1.5 **STRUCTURE OF THE REPORT**

The remainder of this report is structured as follows:

- Chapter Two describes the methodology used to identify, sift and review literature considered in the body of the report and the process taken for the selection, conduct and analysis of interviews conducted with HSE staff.

- Chapters Three and Four each review the main findings from the evidence base.
  - Chapter Three focuses on communications campaigns; Safety and Health Awareness Days (SHADS); guidance; and approaches to handling risk including risk assessment, risk reduction and risk control.
  - Chapter Four covers standards, tools, health interventions, worker involvement, incentives and recognition schemes, inspection and regulation.

- Chapter Five discusses HSE staff views on ‘what works’ to deliver improved health and safety and compares these views with the evidence from the literature.

- Chapter Six considers how HSE staff use and generate evidence in their work, covering choice and rationale for evidence selection, staff perceptions of the quality of the evidence base, barriers to using evidence and how these might be overcome.

- Chapter Seven draws together the findings from the different elements of the review. It presents key messages about ‘what works’, assesses the quality and scope of the evidence base, identifies knowledge gaps which HSE may want to address and makes recommendations for how the quality of the evidence base and HSE’s use of it could be improved.
2 METHODS

The research to date has consisted of two main elements, a semi-systematic literature review and qualitative element involving face-to-face interviews with HSE staff and board members. A third element, a final consultation phase involving the presentation and discussion of this report through seminars with stakeholders, will complete the research project. The findings will also be used to produce a guidance document on the use of evaluation which will be published separately.

In this chapter we briefly outline our approach to the qualitative element of the research which consisted of 31 interviews with members of HSE staff and how these were analysed using the qualitative analysis software package Atlas.ti. We then go on to describe the process of conducting the literature review in terms of a broad search and identification strategies, the detailed reviewing and the compilation of review findings using a proforma. Finally we report on the nature of the resultant evidence base. This stock take of the evidence provides a background to the findings reported in the rest of the document. For further details of the methodology please see the report Appendices.

2.1 QUALITATIVE RESEARCH

The HSE identified that the findings from previous reviews have not been used as fully as they might have been. In order to assess perceptions of the utility of evaluation research and to identify ways in which it could be improved, it was decided to consult relevant individuals within each activity area. The purpose of gaining their involvement was to speak in some detail to staff with responsibility for commissioning research. We conducted 31 interviews with key stakeholders across different areas of HSE activity to gain information on how research is used and to tap embedded knowledge on ‘what works’. These interviews also served to generate interest in, and commitment to, participation in the project.

2.1.1 Design of interview guide

Staff interviews were included in the design of the study with three objectives in mind:

- To ensure the research picks up on embedded knowledge of what works which may not be published.
- To explore how research currently feeds into the design and delivery of HSE’s programmes, including individual decision making processes, barriers to embedding learning from existing evidence and how to deliver better evidence for future assessment of HSE’s interventions.
- To get feedback on how policy group, programme directors and managers work with analysts, what support they want and how this should be provided.

2.1.2 Selection of individuals for interview

A list of 16 initial contacts was provided to the researchers, including board members and directors from which to identify first round interviewees occupying senior roles in HSE. This was supplemented by a list of a further 30 staff members provided by the HSE project manager, including representatives from Fit3 and the Chief Scientist’s Unit and several staff from each of the following teams:
The research team mapped the list of names onto the organisation chart to understand the coverage of the population they wished to sample. Recruitment continued with the aim of gaining representation across the HSE. Thirty-one interviewees were achieved with a range of HSE staff and board members. The final achieved sample of interviewees included 23 operational staff, three analysts and five board members. Twenty-four of the interviewees were based in London and seven were based in Bootle. Twenty-six staff interviewees worked in a non-sector specific or cross sector role, while the remainder had specific sectoral responsibilities. We also know that 11 of the interviewees had at some point in their career worked as inspectors and 16 had not come through that route to their current role.

Interviewees were contacted in writing with a letter explaining the purpose of the interview. A follow-up telephone call was then made to confirm participation and make arrangements for the interview. The research team experienced a good response from contacts and two-thirds of the total list of 46 contacts agreed to be interviewed within the timescale of the project. Most interviews took place in person at HSE premises; a small number were conducted by telephone.

2.1.3 Analysis

All interviews were recorded and transcribed with permission of the interviewees. The analysis of the transcribed interviews was conducted with the aid of the qualitative analysis software package Atlas.ti. This software is a tool which helps to identify and organise themes and to link these to the original text. It has a number of strengths including the promotion of consistency and rigour and allowing close access to the original text throughout the writing process.

A list of codes was drawn up to reflect the discussion guide and the intended reporting structure. Each transcript was then ‘marked up’ against the coding frame. One researcher was primarily involved in coding the data which ensured consistency in use of codes and he was supported throughout by a more senior researcher.

Authors also assigned each interview to appropriate ‘families’. Families are a way of grouping the documents according to common characteristics. For example, characteristics such as whether the interviewee had worked as an inspector in the past or whether the interviewee was a board member. The authors could then explore the differences across these groups as they reported the findings. The codes and groupings used are detailed in Appendix 2.

The query tool was then used to produce output of coded text, based on selections of codes and families. For example, all of the text assigned to code 6 (general sources of evidence) could be sorted according to whether the interviewees had previously worked as inspectors or not.
Although the analysts primarily used a prescribed coding frame they also used memos to record thoughts and ideas not covered by the codes. The memos served as a way of capturing ideas and observations separate from the code list. Both during the analysis and the writing phase, team members were able to consult staff who had undertaken the interviews to clarify any questions of interpretation.

2.2 LITERATURE REVIEW

Further information on the methodology is available in the appendices and it is not our intention here to dwell in detail on the various phases of sifting and selection of evidence. However, we start with a broad description of the search and identification strategy followed by a description of our review process, and finally the nature of the resultant evidence base.

2.2.1 Search and identification strategies

Search

We were aware that there is a great deal of work concerned broadly with occupational health and safety. However, much of this work is only of peripheral relevance to this review. The scope of this review was studies with some relevance to the activities of the HSE. This therefore served as one of the key criteria at the search phase. The literature search consisted of three principal components:

- consideration of HSE research reports (published on the HSE website)
- a formal search of the academic literature using relevant commercial and academic databases using prescribed search terms
- a limited search for international literature reviews through websites of non-UK organisations with similar responsibilities to HSE which were identified through links from the HSE website. This element of the search produced a number of narrow and highly specific pieces of literature but no general reviews. The material identified was not able to add significantly to the evidence base required, so after consultation with the HSE and in the light of the project timescales and budget, it was decided to discontinue this element of the review. It should therefore be recognised that there is a substantial amount of international literature which is a potentially valuable source of evidence to augment the literature considered in this report.

The search phase for the HSE reports was relatively straightforward as all research related reports published since the beginning of 2002 on the HSE website were considered for review. This involved a total of 846 reports, including research reports and contract research reports, as well as HSL, Off-shore and miscellaneous reports.

The academic element was more complex and is detailed in Appendix 3. A wide range of electronic, online databases were used to conduct the search covering a range of disciplines including economics, business management, legislation, sociology, psychology and politics. Search terms were prescribed. Two approaches to searching the databases were used, the first based on HSE activity and the second based on health and safety topics. This resulted in a total of 591 articles being considered for inclusion.
Identification

Both the 846 HSE reports and the 591 academic articles found during the search were then sifted by title. This was an iterative process, involving several stages, which are detailed in Appendix 3. The broad criteria used to identify which reports were relevant to the study were:

1. The research must be published since the beginning of 2002.
2. The study must focus directly on work-related health and safety, as opposed to health and safety generally.
3. It must provide some indication of the impact of interventions, whether at an intermediate or final stage. The key was to identify information on ‘what works’. (Interventions may include campaigns, services, tools, models, guidance or legislation.)
4. It must report on research, that is it must be based on consciously collected data. The form or quality of the data was not of concern at this point, but opinion pieces and position papers were excluded.
5. The findings must contain some assessment of whether an intervention ‘works’ in improving health and safety rather than whether an intervention simply functions satisfactorily (ie only addressing the question at the level of feasibility or usability).
6. Very technically specific research dealing with scientific methods and processes was beyond the scope of the project given its limited wider applicability to addressing the research questions posed.

All the above criteria were not prescribed in advance, rather the researchers considered the pool of documents in relation to the aims of the research project in developing each question. A large number of studies, particularly those from academic journals, were rejected because they were theoretically based rather than reporting on empirical findings about the impact of an intervention. Others examined health and safety issues, based, for example, on secondary analysis of accident data but were not concerned with the role of the HSE directly. The entire process resulted in 117 documents being identified to go forward for second review. Of the 117 documents which made up the evidence base, the majority were published by the HSE and HSL. Ten of these pieces were made up of background literature or reports which were important to illuminate the context for the review, although they did not directly evaluate interventions.

2.2.2 The review process

At this stage, it was identified that there was considerable ambiguity in the relevance of some of the studies to the objectives of the review, but consideration through title or abstract alone was insufficient to evaluate their relevance. A further, more detailed review stage was deemed necessary and then conducted for 25 pieces. This involved circulating the studies for team review by considering either substantial sections or, in most cases, the entirety of the study in relation to the review criteria developed. Following discussion among the team, a further 23 studies were removed from the body of evidence to be included in the review.

Lastly the research team documented the findings of each remaining study against a questionnaire. Where members of the research team had authored a report or article, independent reviewers undertook this process. As the pool of documents contained both single study reports and literature reviews, two appropriate but similar questionnaires were
used. These are available in Appendix 5. These questionnaires or proformas enabled the collection of different types of data.

- Information on the coverage of the report was summarised. Specifically, indicators were sought for the area of activity covered (e.g., information and guidance, enforcement, inspection etc.), the industrial sector if relevant and the level at which it was trying to address risk (from raising awareness through to controlling impact).

- Each report was given a final check to confirm its relevance to the study and that the findings were based on evidence. This had to confirm that the research examined health and safety issues within the area of the HSE’s concerns and that the research assessed interventions and drew conclusions. An outline of the evidence on which the research was based was required as well as some indication of the sample. A flexible and inclusive approach was adopted in order to maximise the amount of material available to the authors.

Once basic criteria were confirmed then the objectives and findings of the research were noted and these findings form the evidence of ‘what works’ on which the remainder of the report is based. Eighty-two reports were summarised. The major reason why studies were rejected at this stage was due to insufficiently clear focus of the studies on ‘what works’. Studies with inconclusive, partial or mixed messages were, however, retained within the sample.

Studies were rarely excluded on the basis of their methodology, rather assessments were made of the methodological robustness, which allowed the authors to weight the evidence appropriately. So although the team adopted an inclusive approach, they were also aware of any problems or weaknesses in the data when interpreting the results and drawing conclusions.

The team discussed and clarified issues as they emerged throughout the review process.

### 2.3 THE NATURE OF THE EVIDENCE BASE

After the review process, the team examined all the returned proformas and considered the reviews both individually and in relation to each other; a further 16 reports were excluded from the evidence base at this point based on the summaries and comments provided by reviewers, leaving a total of 66 pieces. The evidence base is largely made up of research published by the HSE and HSL. We now go on to examine these studies in terms of their coverage.

The nature of the activity or activities covered by the study was documented in the proformas. A breakdown for the studies that were included as part of the evidence base is presented in Table 2.1. As these data show, a major focus of the research is on information and guidance. Standards and recommended approaches also feature strongly.
Table 2.1: Nature of the evidence base: Area of activity addressed in report

<table>
<thead>
<tr>
<th>Area of activity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and guidance (eg messaging and communication)</td>
<td>38</td>
</tr>
<tr>
<td>Licensing and regulation</td>
<td>8</td>
</tr>
<tr>
<td>Safety reporting</td>
<td>1</td>
</tr>
<tr>
<td>Inspection</td>
<td>8</td>
</tr>
<tr>
<td>Investigation</td>
<td>4</td>
</tr>
<tr>
<td>Enforcement</td>
<td>8</td>
</tr>
<tr>
<td>Standards and recommended approaches (eg management standards)</td>
<td>18</td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
</tr>
</tbody>
</table>

Reviewers were also required to report on the level at which risk was addressed by the report. The data below show that the resultant evidence was evenly spread through the pyramid of risk reduction.

Table 2.2: Nature of the evidence base: Level at which risk is addressed

<table>
<thead>
<tr>
<th>Level at which risk is addressed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising awareness of the risk generally</td>
<td>45</td>
</tr>
<tr>
<td>Assessing the risk</td>
<td>33</td>
</tr>
<tr>
<td>Preventing the risk (eg reducing the likelihood of an accident happening, reducing exposure to a toxin?)</td>
<td>43</td>
</tr>
<tr>
<td>Controlling the impact of the remaining risk (eg protective clothing, minimizing the consequence of a major hazard?)</td>
<td>30</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
</tr>
</tbody>
</table>
3 EVIDENCE FROM THE LITERATURE ON WHAT WORKS (PART ONE): COMMUNICATIONS CAMPAIGNS, AWARENESS DAYS, GUIDANCE AND HANDLING RISK

3.1 SUMMARY

This chapter contains the first set of findings from the literature review element of this report. It covers communications campaigns, safety and health awareness days (SHADs), guidance, strategies for handling risk, including risk assessment, risk reduction and risk control.

Evidence on print-based interventions showed that a picture-based messaging project in construction appeared relatively successful in raising awareness of health and safety issues and changing behaviour. Other print-based interventions reviewed were less effective in raising awareness or changing behaviour, as workers either did not read the messages or were influenced by organisational contexts which meant that they were likely to ignore the campaign message. Print-based interventions alone appear to have some degree of effectiveness in raising awareness of risks but do not appear to be particularly effective in generating behaviour change, a finding which is consistent with that of our previous review (Hillage et al. 2001).

Campaigns can be targeted either by focus of the message, by choice of recipients or by choice of delivery channel used for the messages (eg hard copy, face-to-face). Evidence on the impact of targeted campaigns suggests there is both an appetite from organisations and individuals for targeted messages. Using face-to-face delivery channels was felt to be more effective for SMEs. However, there appears to have been little attempt to assess whether customised messages or targeted campaigns have more impact than untargeted campaigns or messages on either changes to behaviour or health and safety outcomes. The evidence base therefore appears to be relatively weak in assessing whether meeting stakeholder preferences actually delivers improved outcomes.

Multi-method campaigns incorporate training and inspection activities to support print and media campaigns in raising awareness of risk. Evidence consistently shows limited overall effectiveness of communications campaigns in terms of their impact on behavioural change and health and safety outcomes, although they do have some impact on raising awareness which is consistent with the findings of an earlier review (Hillage et al. 2001). Multi-method campaigns appear to have most impact on behavioural change compared to print campaigns, but their impact is limited to a proportion of employers.

The evidence base gives us information on awareness and levels of implementation of guidance. There is mixed evidence on whether guidance is used. There is some self-reported evidence on the intermediate outcome of changed behaviour as a result of guidance, but none of the research reviewed examined impact on health, injury or accident statistics. The evidence base is therefore relatively weak in this area.
Evidence on the impact of SHADs suggests that they are popular with attendees and relatively high proportions of delegates report taking action as a result of attendance. However, it is likely that participants are already engaged/interested in health and safety issues as evidenced by their willingness to attend events, and this could mean that they were already predisposed to taking action prior to their attendance. There is little evidence of impact of SHADs on ultimate health and safety outcomes.

Studies on approaches to handling risk through assessing, reducing, or controlling it were relatively weak in terms of the impacts identified. Studies showed that quality of risk assessment varied greatly and that the effectiveness of the risk reduction approach used will depend on organisational context and the nature of the hazard. Evidence on risk control concluded that a number of factors were important in making these interventions effective. These included good leadership, improving process design by eliminating hazards or making work processes safer, effective safety management and supervision, targeted information and training, attention to improving the overall safety culture of an organisation, and ensuring that equipment is appropriate and well maintained. However, most of these studies contain no data on self-reported behavioural change or evidence on health outcomes.

### 3.2 COMMUNICATIONS CAMPAIGNS

#### Summary

Evidence on print-based interventions showed that a picture-based messaging project in construction appeared relatively successful in raising awareness of health and safety issues and changing behaviour. Other interventions reviewed were less effective in raising awareness or changing behaviour, as workers either did not read the messages or were influenced by organisational contexts which meant that they were likely to ignore the campaign message. Print-based interventions alone appear to have some degree of effectiveness in raising awareness of risks but do not appear to be generally effective in generating behaviour change, a finding which is consistent with that of our previous review (Hillage et al. 2001). However, even the largest HSE campaigns may be of low intensity and undertaken on a relatively small scale compared to mass media campaigns conducted in other fields. They are also often conducted over a relatively short period of time.

Campaigns can be targeted either by focus of the message, by choice of recipients or by choice of delivery channel used for the messages (eg hard copy, face-to-face). Evidence on the impact of targeted campaigns suggests there is both an appetite from organisations and individuals for targeted messages. Using face-to-face delivery channels was felt to be more effective for SMEs. However, there appears to have been little attempt to assess whether customised messages or targeted campaigns have more impact than untargeted campaigns or messages on either changes to behaviour or health and safety outcomes. The evidence base therefore appears to be relatively weak in assessing whether meeting stakeholder preferences actually delivers improved outcomes.
**Multi-method campaigns** incorporate training and inspection activities to support print and media campaigns in raising awareness of risk. Multi-method campaigns appear to be more effective than print-based interventions as there is evidence of behaviour change in a small proportion of employers. There was consistent agreement in the evidence that combinations of techniques, such as the use of SHADs, training events and inspection were beneficial because they reinforced campaign messages. No data was available from the evidence base on the health and safety outcome measures.

### 3.2.1 Print interventions

Three studies reviewed address the effectiveness of print-based interventions, which were aimed at relatively narrow target groups. Specifically these examined:

- Employee awareness of the content of HSE’s Health and Safety Law Poster which is displayed in all workplaces, through a consultation exercise with employees in organisations with which HSE has contact.

- Posters and leaflets aimed at reducing falls from height in a pilot project among teachers in three local education authority areas.

- A picture-based project which contained graphical representations of correct and incorrect safety behaviour (e.g., lifting bricks) to improve safety awareness and behaviour in construction conducted in six participating organisations.

Group interviews assessing employees’ awareness and understanding of the HSE’s Health and Safety Law Poster found that despite having been seen by employees within a workplace, most (out of a sample of 60) had not read it (Daniels et al. 2007). A major weakness was that the poster was insufficiently clear and eye-catching to inspire people to read it. A series of focus groups and questionnaires assessing the effectiveness of a pilot poster and leaflet campaign to increase teacher awareness of falls from height in the classroom found that there were no major changes in awareness as a result of the pilot campaign among the sample of 101 teachers (White and Snodgrass, 2007). More importantly, the report argued that leaflets and posters were unlikely to have a significant impact on risk control for dangers from falls or to change behaviours and risk-taking. The reasons for this included factors such as the location of safety equipment (such as stepladders) in storage cupboards away from classrooms and time pressure on teachers, which affected their willingness to use equipment, and an absence of equipment due to costs of purchasing it.

The Trojan Horse pictorial message project was found to be a successful method of raising awareness and understanding of health and safety issues and changing behaviour (Chinien et al. 2006). The study found that awareness of the health and safety messages increased after repeated exposures to the messages, from 75 per cent awareness after the first set of messages to 89 per cent awareness after the third set of messages, based on interviews with over 70 construction workers from 12 sites. The Trojan Horse approach also appeared to have a positive impact on operatives’ behaviour. Those behaving unsafely corrected their actions after seeing the message and these changes lasted during the six week period of the research. The report authors argue that this is because picture-based messages are clearer and easier to understand than text-based messages.
3.2.2 Targeting communications

Communications can be targeted in at least three ways:

■ by customising the focus of the message

■ by choice of recipients

■ by choice of delivery channel used for the messages (eg hard copy, face-to-face).

The type of influencing technique used was found to be important in customising messages. Surveys of worker views on the usability and usefulness of risk communication leaflets found that positive rather than negative framing of risk messages was more influential on worker intentions to adopt safe working practices (Ferguson et al. 2003). However, the study did not confirm whether behavioural intentions are translated into actual change, so this would require further research. The effects on intentions were increased by prior exposure to adverse health outcomes and high levels of prior use of Personal Protective Equipment (PPE), suggesting that workers’ predispositions towards health and safety may need to be taken into consideration in communications design.

Two studies investigated employer preferences for broad versus specific guidance on health and safety with some implications for targeting communications by choice of recipients. SMEs desire very specific guidance according to interviews and a postal survey of nearly 800 firms with a response rate of around 20 per cent (Wright et al. 2003). A literature review also suggested that SMEs prefer sector specific information (Gervais, 2006). Large firms expressed a desire for a series of hazard guides (Wright et al. 2003). This research also found that many organisations did not actively seek information on health and safety, suggesting a continuing need for proactive dissemination.

The choice of delivery channel (eg postal versus face to face) was addressed in three studies reviewed. Two examined the particular communication techniques that work for SMEs. Gervais (2006) examined 36 studies identified from HSE and HSL databases as well as e-journals and e-portals. This study found that no one technique stood out as better than others. Gervais (2007) surveyed over 150 firms in one local government area and found that SMEs prefer to be contacted by post. However, intermediaries who work with SMEs perceived that face-to-face contact was more effective in stimulating them to take action to improve health and safety outcomes. This may indicate a discrepancy between preferred methods of communication and effective methods of communication. It may be easier to gain the attention of SME managers through face-to-face than postal communication. Alternatively, it may indicate a difference in communication preferred according to purpose; SMEs may prefer post as it is less intrusive when they perceive no immediate need for information but prefer face to face communication when they perceive urgency in gaining advice and support. Whitnell (2004) consulted a range of HSE staff about successful interventions to deliver messages about health and safety to hard to reach groups. No clear consensus emerged on any one intervention being most successful, but active outreach and engagement using intermediaries were thought to be most suitable to gain attention and use of multiple channels was believed to be most effective. More evidence of the impact of targeted campaigns on behavioural change and health and safety outcomes is required.

3.2.3 Multi-method campaigns

HSE sometimes uses multi-method approaches to risk awareness raising, using training and inspection activities to support print and media campaigns. Four studies reviewed considered the outcomes of national campaigning: two evaluated the HSE Watch Your Step campaign.
intended to control workplace injury from slip and trip hazards. This targeted medium sized
and large duty holders, influential businesses and employee stakeholder partners in target
sectors.\footnote{Target sectors were construction, manufacturing (focusing on food, printing, plastics, MVR and furniture),
general public services, healthcare (including hospitals, residential and non-residential care), post and
courier activities, land transport (principally freight by road), storage and warehousing, retail, hotels and
catering.}

One evaluated the HSE Height Aware Campaign. Its primary target audiences were
employers, clients and procurers of work, employees and the self-employed in the building
and plant maintenance sector. Secondary target audiences for the campaign were those in the
agricultural sector and those involved in workplace transport. One broader investigation into
effective methods and media for communicating health and safety messages contained
relevant messages. Campaign success can be evaluated according to market penetration,
self-reported behavioural change or hard data on health and safety outcomes. No data was
available from the research evidence on the latter outcome measures. There was consistent
agreement in the studies that combinations of techniques, such as the use of SHADs, training
events and inspection to reinforce campaign messages improved effectiveness compared to
print or media campaigns used alone.

Campaign success measured according to market penetration appears mixed. An
assessment of the HSE’s Watch Your Step campaign found that ten per cent of targeted
employers from a sample of over 800 had some unprompted recollection of the campaign.
This is higher than the annual tracking survey data which showed that three to four per cent
of employers overall, spontaneously recalled the campaign, along with about six per cent of
company CEOs/Directors. However, pre- and post-campaign scores on the extent to which
both employers and workers regard slips and trips as a risk did not change (Noble et al.
2007). An evaluation of the HSE’s Height Aware campaign found that two in five workers
and employers recognised at least one part of the campaign when prompted, based on pre-
and post-campaign surveys of over 200 employees and 600 employers from at risk groups
who work at height (Oliver, 2007).

Self-reported behavioural change due to campaign exposure was also relatively uncommon.
Ten per cent or fewer of employers and employees reached by the HSE Height Aware
campaign had taken or planned action such as cascading information or conducting risk
assessments due to the campaign (Oliver et al. 2007). Thirteen per cent of employers
recognised the Watch Your Step campaign when prompted and claimed to be taking some
action in response, although qualitative follow up work revealed that, in many cases, the
actions had not materialised six months after the end of the campaign (Noble et al. 2007).

This finding was supported by the second round of evaluation. It found the greatest impact of
the Watch Your Step campaign was in raising employer awareness and encouraging duty
holders to raise awareness amongst staff rather than encouraging any tangible actions such as
changes to policy or practice. The evaluation used telephone interviews with a sub-sample of
participants in a previous evaluation, and a random sample of 28 companies taken from HSE
inspection reports (Ford et al. 2007). Both Ford and Noble identified factors which made
employers more responsive. Employers most affected by the campaign tended to be those
receptive to health and safety messages in general and would therefore maintain and enhance
pre-existing health and safety management, rather than companies with little or no pre-
existing health and safety activity.
Combinations of campaign activity appeared to have most behavioural impact, supporting in particular the case for reinforcing media campaigns with opportunities to gain training and advice through inspection activities. Those who had attended SHADs or training events or who had had visits from inspectors connected to the Watch Your Step campaign were more likely to report tangible changes in behaviour, due to being given relevant and specific advice in greater depth (Noble et al. 2007). Employers and inspectors who participated in the HSE Height Aware campaign stated that targeted inspections were important in helping firms to identify risks and gain advice. Employers also requested provision of more advice over the telephone rather than through leaflets or websites, supporting the view that an interactive approach may work best (Oliver et al. 2007). Gervais (2007) aimed to identify effective methods and media for the communication of health and safety messages and information with target stakeholder groups, focusing specifically on SMEs. Based on interviews with eight industry experts and a survey of over 150 organisations, this study argued that a combined approach, incorporating the use of a variety of methods, including intermediaries and face-to-face communication is necessary to achieve effective communication. The industry experts argued that no single communication method was invariably any more (in)effective than another and all must be tailored to specific organisational needs and preferences.

3.3 GUIDANCE

Summary

Three studies reviewed examined the impact of guidance on health and safety behaviour in organisations. One study evaluated health surveillance programmes on hand-arm-vibration (HAV), one study evaluated the Control of Substances Hazardous to Health (COSHH) Essentials guide and one evaluated HSC guidance on directors’ responsibilities for health and safety. The evidence gives us information on awareness of guidance and levels of implementation of guidance. There is mixed evidence on whether guidance is used. While there is some self-reported evidence on the intermediate outcome of changed behaviour as a result of guidance, none of the research reviewed examined impact on health, injury or accident statistics. Overall therefore, the evidence base on guidance is relatively weak.

In relation to awareness of guidance, Kinoult (2006) evaluated health surveillance programmes provided by ten occupational health service providers and compared them with published HSE guidance for hand-arm vibration (HAV), finding that all organisations were aware of the HSE guidance. Wright et al. (2003) assessed the increase in the board-level direction of health and safety following HSC guidance on directors’ responsibilities for health and safety. The majority of the 200 respondents had heard of the HSC guidance, with a slight increase in awareness apparent in a follow up survey. Overall the proportions of public sector organisations with board-level health and safety representation were substantially lower (53 per cent compared to 66 per cent of the whole sample).

Reported implementation of guidance is mixed. Of the organisations in the HAV study, only three out of ten were following it, with the remaining seven providing less frequent or detailed surveillance. Four organisations had clear policies and procedures in place and five were providing incomplete surveillance, with a lack of training for Occupational Health (OH) nurses and physicians. From the study of guidance for board directors, those who had heard of it were slightly more likely to have board-level direction of health and safety.
Research with 500 SME purchasers of the Control of Substances Hazardous to Health (COSHH) Essentials guide showed that 80 per cent of the purchasers had used the guidance since purchase, of which the majority reported few problems with use. Three-quarters of firms using the guidance had taken some action as a result, representing 60 per cent of the total sample (Wiseman and Gilbert, 2002). The most common action taken was to check that existing control measures were working, whilst almost half had provided training or information to workers. The COSHH guidance was generally found to be appropriate and relatively straightforward to use. Half of the firms in the sample operated in production and construction sectors, in which COSHH is likely to be a priority hazard. However, this study can only identify the impact of guidance on firms which purchased it and we therefore do not know how guidance is received by firms that have not directly sought it.

3.4 SAFETY AND HEALTH AWARENESS DAYS/ROADSHOWS/WORKSHOPS

Summary

Six studies reviewed evaluate the impact of workshops, roadshows and Safety and Health Awareness Days (SHADs). Two studies evaluated slips and trips roadshows, one study used stakeholder interviews to explore awareness of the HSE Slips and Trips Priority Programme, two studies assess SHADs in motor vehicle repair and one study assessed workshops on HSE Stress Management Standards. SHADs appear to have a degree of success in raising awareness and generating behavioural change and are well received by participants. We cannot necessarily conclude that SHADs are generally effective in improving health and safety outcomes; however, since participants may have some degree of engagement or interest in improving health and safety to motivate attendance, (delegates at the Slips and Trips Roadshow were found to have relatively high levels of knowledge, for example). Participants may therefore not be representative of organisations in the wider economy. However, this depends on how participants are recruited, since in some sectors, such as agriculture, participation was offered in lieu of inspection as a way of targeting disengaged/hard to reach employers. In many cases, pre- and post-intervention data is not available so it is not possible to verify reported claims of improved awareness or reported behavioural change. The scale of impact of SHADs may be limited, when their scale is compared to the extent of the problem, since they do not run on a large scale.

Self-reported data gives positive evidence of the impact of SHADs in raising awareness of health and safety issues. A majority of over 200 questionnaire respondents who had attended one of four pilot SHADs on the use of motor vehicle paint reported that their levels of awareness of hazards and knowledge of effective control measures and personal protection had increased as a result (O’Hara, 2006a). An evaluation of the HSE Slips and Trips roadshow found that it raised awareness of the risks of slips and trips and gave participants manageable ways to tackle the problem, based on interviews with 102 attendees in the three to four months following attendance (Powell, 2007). An evaluation of the same initiative, focussing on Government Departments and the insurance industry, similarly found that there was a significant improvement in the knowledge of the risks of slips and trips among 72 attendees. The attitudes of the delegates pre- and post-roadshow had also improved in that fewer were inclined to place responsibility for avoiding slips and trips on individual employees (Howard et al. 2005). The majority of participants reported that they had benefited from participating, even in cases where there was a high level of prior knowledge
about some of the issues, according to questionnaires completed pre-seminar and post-seminar and follow-up telephone interviews. These findings may indicate some progress has been made in raising awareness of the risks of slips and trips since an initial evaluation of the HSE Slips and Trips Priority Programme by Snodgrass (2006). This evaluation involved semi-structured interviews with five directors of key stakeholder organisations who had little awareness of the programme and believed it was not widely known across industry. Although this study has small numbers of participants, it is arguable that a higher level of awareness among key stakeholders could be expected.

Evidence of self-reported change in management practice following SHAD attendance was similarly strong. Around 80 per cent of 102 respondents reported that they had made changes in the workplace after attending a Slips and Trips Roadshow, and many directly attributed these changes to roadshow attendance. The type of changes made included including internal communications about risks, physical changes to the workplace, or the purchase of a surface roughness measuring kit and around 50 per cent of participants reported making multiple changes of this type. Of those who reported few or no changes, a significant proportion were awaiting the results of national footwear trials before introducing slip-resistant shoes. Respondents in Howard et al.’s report (2005) stated that preventing slips and trips had a raised priority and that information was being cascaded through guidance packs. Some said that action had been taken to remove slippery surfaces within their workplace. Participants in HSE workshops on the Stress Management Standards for work-related stress similarly espoused workplace change as a result: 62 per cent of over 100 attendees who were willing to be contacted out of a total of around 1,000 participants introduced or were planning to introduce the standards to their organisation (Pearce, 2005). However, it is possible that those who were willing to be contacted might be more positive about the event. Seventy-five per cent of the 36 businesses who had participated in a SHAD on motor vehicle bodyshops’ control of isocyanate exposure had taken action as a result according to visits made to business premises by field scientists (O’Hara et al. 2006b). Seventy-eight per cent of participants were subsequently confident that their company met relevant health and safety regulations. Exposure control methods to isocyanate-based paint had improved in over half the organisations participating, for example through the provision of a suitably ventilated booth or spray room and use of appropriate spray guns (O’Hara et al. 2006b).

There was much more limited evidence of self-reported impact on health outcomes as most studies did not have data on this. HSE staff noted in a report on the activities of FOD that few inspection visits take place to assess the impact of SHADs on employer behaviour (Marlow and Weyman, 2004). However, the majority of respondents who participated in the HSE Slips and Trips Roadshow felt that there had been an improvement as a result of introducing changes, backed up in an unspecified number of cases with company statistics showing a drop in accidents or claims (Powell, 2007).

3.5 APPROACHES TO HANDLING RISK

3.5.1 Risk assessment

One study reviewed specifically examined risk assessment interventions. Neathey et al. (2006) examined the effectiveness of the HSE leaflet ‘Five Steps to Risk Assessment’ in drawing the attention of employers, particularly SMEs, to their statutory duties to undertake risk assessment and helping them to conduct it. The study was based on telephone interviews and some case studies with managers and owner/managers of over 1,000 organisations (mostly SMEs) across a range of sectors. It found that most organisations carried out some kind of risk assessment. However, the quality of this risk assessment varied greatly and
overall, larger companies were more likely to have a thorough risk assessment strategy than smaller companies. Forty-one per cent of organisations claimed to use the ‘five steps’ approach and further analysis of reported organisational practice in survey responses showed that 19 per cent met the actual criteria laid down in the approach. However, a further one-third of those stating that they did not use the five steps approach appeared to be following its principles. The leaflet was found to be used more often in the public sector, finance, agriculture and in manufacturing than in retail and services and the leaflet and principles were adopted more often in larger than smaller companies.

3.5.2 Risk reduction

### Summary

Three studies reviewed focus on risk reduction, examining strategies to reduce risk in different areas. One examined low-cost ways of managing physical risks in the printing industry; one examined violence management training in healthcare and one examined training interventions used in implementing the Duty to Manage Asbestos regulations. These studies are taken from widely different contexts; the only key message to be drawn from them is, unsurprisingly, that the effectiveness of the approach used will depend on organisational context and the nature of the hazard. The contributions to knowledge made are specific to the areas on which the studies focus. One further message on training as a method of risk reduction can be extracted from the literature review by Fooks et al. (2007). This found evidence that training leads to higher knowledge acquisition and reductions in accidents, injury and illness where it involves repeated practice and dialogue with workers, in contrast to computer-based or more distant methods. The evidence base therefore suffers from some weaknesses.

Brown and Rushton (2003) examine the development of low-cost risk reduction strategies for the prevention of dermatitis in the UK printing industry. The study used a literature review to identify successful interventions in other industries, followed by observation, focus groups and pilot studies to test intervention strategies. The study identified four kinds of intervention: skin checks by a health professional and provision of advice; provision of suitable gloves and creams; leaflets and other educational materials; and best practice skin care policies by companies. Gloves were found to be the most practical intervention, as long as they were suitable and accessible. Best practice skincare policies were also found to be very effective in preventing dermatitis, although better suited to larger organisations that are more likely to possess the necessary resources.

In a different context, Zarola and Leather (2006) look at violence management training across healthcare organisations, using pre- and post-training evaluations. It found that this training is having positive but limited short-term benefits in terms of contributing to participants self-reported sense of wellbeing and attitudes to their job and organisation. Key elements in effective training in violence management include: a focus on content that emphasises how the organisation as well as the individual can reduce the risk of violence and content that is closely allied to perceived need.

The final study in this section evaluates one aspect of the HSE’s Cascading Messages Through Others Campaign (CMTOC) in relation to the implementation of the Duty to Manage Asbestos Regulations (Sinclair et al, 2007). The campaign had a broad remit involving a number of activities, but this study focussed on use of training interventions,
often organised by intermediary partners. Around 30 interviews were conducted with duty holders and the intermediaries who organised the training, together with a number of site visits. The sample is not representative of the range of campaign activities, due to recruitment difficulties but the study found that the training organised by the parties had a beneficial impact on awareness of risk and action taken to reduce risk for some participants. The training was found to be particularly beneficial in risk awareness raising in small organisations, where there was lower awareness of requirements in the first instance. The role of the intermediary partner was reported as important, particularly in providing expert help to duty holders, and there was evidence that the duty holders remained dependent on consultants after the training had been completed.

3.5.3 Risk control

**Summary**

Few studies on risk control were identified. Two reviewed for this report addressed the causative factors of dermatitis among workers exposed to metalworking fluids and the causes of major hazard incidents. Their conclusions focussed on the importance of good leadership, improving process design by eliminating hazards or making work processes safer, effective safety management and supervision. However, these studies contain limited data on health outcomes and little detail on what might constitute, for example, effective leadership or communication in different types of organisation. There was little new evidence found on risk control to add to that reviewed in an earlier report (Hillage et al. 2001).

A semi-systematic literature search was undertaken by Bell and Healey (2006) to explore causes and risk control methods in major hazard accidents. While comprehensive in its use of databases and other sources to search for literature and use of focussed search terms, the report did not use systematic criteria for screening the literature discussed based on review methodologies. Findings stressed the importance of leadership in an organisation, clarity in the discussion of health and safety within the business, knowledge of good practice, visiting work sites and communicating how important safety is. Emergency planning and accident investigation were also felt to be important.

Semple et al. (2007) examined the causative factors and prevention techniques for dermatitis among workers exposed to metalworking fluids, using a multimedia questionnaire and follow up investigations. The study argued that the main causal factor in dermatitis is the incidence of wet work rather than exposure to metalworking fluids, arguing that limiting and minimising wet work is important.
### 4 EVIDENCE FROM THE LITERATURE ON WHAT WORKS: (PART TWO) – STANDARDS, HEALTH INTERVENTIONS, WORKER INVOLVEMENT, INCENTIVE/RECOGNITION SCHEMES, INSPECTION AND REGULATION

<table>
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<th>Summary</th>
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<td>This chapter covers standards, tools, health interventions, worker involvement, incentives or reward and recognition schemes, inspection, regulation and targeted initiatives.</td>
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Initial evidence on stress management standards indicates that they may be having a positive impact, but the data upon which this is based is not robust as it lacks a longitudinal dimension. It is also unclear what the sustained impact of the initiatives is, as some are at an early stage of development.

For health and safety tools, the evidence showed that in general, users perceived them as helpful, but there is little reliable data on take-up as a proportion of the potential user group or robust evidence of tool impact on health and safety outcomes. This makes it difficult to give a robust assessment of the extent to which the tools ‘work’. There was little evidence of impact on health and safety outcomes.

There is some positive evidence for the impact of occupational health interventions, both for general use and in relation to musculoskeletal disorders. The evaluation of these services and their costs and benefits is at a relatively early stage of development but the quality of the evidence base is generally stronger and more robust in this subject area than many others.

Worker involvement, through worker safety representatives for example, appears to have some influence on behavioural change and international literature shows that this is more effective in ‘stronger’ forms associated with union involvement. However, evidence reviewed for this report adds relatively little to existing knowledge in the area.

There was no clear evidence of the impact of incentives or reward and recognition schemes and a lack of robust research in this area.

There is widespread evidence on the effectiveness of inspection, but little evidence on whether different forms of inspection are more or less effective. The educative role of inspection appears to be important and the role of partners and intermediaries in the inspection process appears to be influential. The wider international literature was more robust and yielded stronger conclusions here than the specific pieces reviewed for this report. There is an outstanding need for evidence on how inspection should best be targeted in terms of topic and sector.

Managers report that regulation is an important lever in improving their health and safety practices and there is some evidence that regulation produces behavioural change.
However, there are persistent problems of non-compliance with regulation due to employers’ difficulties in understanding and interpreting regulation and conducting risk assessments. It is also much easier to police compliance with regulation that deals with visible health and safety risks eg. Working at height, rather than invisible risks such as those connected with mental health and stress. Therefore use of regulation is more applicable to some sources of health and safety risk than others.

HSE is interested in increasing stakeholder engagement and developing partnerships with key sectors as ways of improving commitment to health and safety management and has embarked on new targeted initiatives to achieve this. Targeted initiatives in manufacturing industries feature partnership working between employers, unions (where present) and HSE; setting of tailored targets for sector accident reduction; sector specific improvement eg changes in safety culture; benchmarking with other sectors. Some evidence was found of faster decreases in injury rates after the introduction of the schemes and better H&S management practices, with qualitative evidence attributing improvements to the initiatives.

4.1 USE OF STANDARDS, APPROACHES AND OTHER MECHANISMS TO IMPROVE HEALTH AND SAFETY

4.1.1 HSE Stress Management Standards

Summary

Stress has emerged as significant work-related health problem over the past ten years and grown in importance for HSE activity. Four studies in this section examined the effectiveness of a range of interventions aimed at tackling stress, of which three are based specifically on the HSE’s Stress Management Standards. While some initial evidence indicates the interventions may be having a positive impact based on employer views and responses to stress interventions and evidence of impact on health outcomes, the data upon which this is based is not robust, often lacking a longitudinal dimension. The sustained impact of the initiatives is also uncertain because some interventions are at an early stage of development. In these cases, more data is required to determine the impact of an intervention. The HSE has embarked on two major research projects to evaluate its Healthy Workplace Solutions programme of employer workshops and the Stress Management Standards Implementation Project (SIP1). Evidence from these projects is not yet available but may be useful in contributing to the evidence base on this theme.

Self-reported evidence indicates employer views and responses towards risk management approaches for stress are positive and may make an impact on reducing workplace stress. For example, Cox et al. (2002) examined risk management to control stress at work in hospital staff, using case studies based on interviews, organisational and survey data. The survey found that the majority of groups studied reacted favourably to the risk management approach adopted to dealing with workplace stress, and that it generated creative, practical management responses to solving problems. Stakeholder interviews conducted by Briner et
al. (2003) found that company-specific management standards as a means of tackling work-related stressors were regarded as useful and sufficiently generic for widespread use. The HSE Stress Management Standards approach was reported as attractive to users in a trial of a well-being programme for schools and the key motivator which made it appealing was subsidies from the HSE (Worklife Support Limited, 2007).

Evidence of the impact on health outcomes of stress management approaches was positive but the evidence must be treated with caution as it is often limited and lacks longitudinal perspective. Cox et al. (2007) found the impact on well-being from stress management approaches in hospitals was modest based on data from two repeated surveys, but ultimate impacts could take longer to emerge. Worklife Support Limited’s (2007) study of the well-being programme in schools found absence rates for teachers did decline in the following year, but data on annual absence and turnover rates was only given by a minority of schools and no longitudinal data was provided. Tasho et al. (2005) undertook interviews after psychosocial risk assessments or stress audits with 15 stakeholders in a county council and examined summary absence statistics over three years. The study claims that the activities can lead to an action plan of stress management interventions, resulting in a lowering of absence levels and a net saving of £1.13 million. However, different methods of data collection were used for some years, which may account for some of the variation and the study provided no statistical analysis of trends and changes in variables, which means that it is difficult to assess exactly how much impact the intervention had on absence levels.

4.1.2 Tools

Summary

A number of tools and techniques are available to organisations to assist them in managing health and safety such as charts, workbooks, forms and website material. The self-assessment and evaluation process is an important part of health and safety management to identify priorities for individual organisations and much of the material produced is intended to help managers meet their legal responsibilities. Most of the tools examined by research reviewed for this report were aimed at helping managers to identify risks and hazards. Four of five studies dealt with HSE designed tools: an e-pilot risk self-assessment form for farmers, the HSE Health and Safety Climate Survey Tool, the HSE Manual Handling Assessment Chart (MAC) and website, and the Slips Assessment Tool (SAT). One deals with a line management workbook on health and safety in the NHS. There was little reliable or robust evidence of tool impact on health and safety outcomes, and for all of the studies discussed below except the MAC, we do not know how representative respondents are of the target population for the tool. This makes it difficult to give a robust assessment of the extent to which the tools ‘work’ and renders the evidence on tool impact rather weak. We examined: market penetration of tools, uptake and usage, perceptions of tool utility, self-reported impact on behaviour and evidence of impact on outcomes. Organisations were generally positive about utility and reported a number of behavioural changes as a result of tool use. We suggest that it may be important to gain more information on the degree of market penetration of health and safety tools and the feasibility of overcoming any barriers identified. This is necessary to inform and shape policy on the utility and scope of application of these techniques. Published data on outcomes is also required.
Only the MAC evaluation tested market penetration. This consisted of a large scale survey of random stratified sample of 1,484 organisations (Melrose et al. 2006) which found that only around one-fifth had heard of MAC.

Tool uptake and usage among those exposed to them were mixed. Sixty-seven per cent of purchasers had used the Health and Safety Climate Survey Tool in a random survey of 500 purchasers, but a third had purchased and not used the tool (The Keil Centre, 2002). A majority of the farmers using the e-form reported that it had raised their awareness of health and safety issues. Half of the sample of farmers completed the e-form self-assessment, and reports of problems among non-users included difficulties in downloading, number of areas covered, detail of content required and time pressures making completion difficult (Lindsay, 2005). The evaluation of the NHS health and safety workbook for line managers attributed the lack of evidence of impact to the low levels of implementation in the workplace, though it is not clear whether this was due to workbook design or workplace factors (Niven, 2004).

Those who had used the tools were mostly positive in their perceptions of tool utility. A majority of users of the MAC, SAT and farmers’ e-form for self-assessment found them useful, although sustained use of the MAC was limited with users tending to conduct at most one or two risk assessments with it. A positive response to the SAT from a number of duty holders was also reported (Boorman, 2006).

Relatively positive accounts were given of tools’ self-reported impact on behaviour. In the MAC study, just over half the sample in 43 follow up telephone interviews had identified ways of risk reduction and one-third had identified sources of risk which were not previously recognised. A majority of users of the Health and Safety Climate Survey Tool stated that they had taken action as a result of using the tool. Actions taken included introducing a behavioural safety programme, providing better personal protective equipment, identification of risk-taking behaviours and incident reporting. Numerous examples were given of benefits of using the SAT in response to an open-ended survey question, including appropriate choice and maintenance of floor covering.

Evidence of impact on outcomes is more limited. A majority of users of the Health and Safety Climate Survey Tool believed it had had a positive impact on health and safety. Very few MAC users felt capable of attributing any quantitative benefits in terms of sickness absence or accidents, although this could be due to not having examined company statistics at the required level of detail rather than the absence of any effect. Examples provided by SAT users were not systematically analysed or quantified and the study of the farmers’ e-form did not seek to evaluate impact on health and safety outcomes so assessing the extent to which these tools contribute to health and safety is not possible. In the NHS study, higher use of the line management workbook was significantly correlated with lower numbers of major incidents and a higher staff rating of working environment in an accompanying safety climate survey, but no overall impact on health and safety outcomes was found.

4.1.3 Interventions involving Occupational Health Services

Summary

This is a new strand of health and safety activity which did not appear in the previous review by Hillage et al. (2001). It is receiving increased policy attention as a theme of the government review of the health of Britain’s working age population (Black, 2008). Our report includes six pieces of research which examined the role of occupational health provision covering risk prevention/management and tackling existing work-
related health problems. Two studies are discussed first below, both of which are focussed on general advice services, followed by four focussed specifically on Occupational Health Services (OHS) for the management of musculoskeletal disorders. There appears to be some positive evidence in particular for the impact of the services for musculoskeletal disorders but the evaluation of these services and their costs and benefits is at a relatively early stage of development. However, these findings are consistent with those of other research that early intervention has a beneficial effect in enabling return to work following sickness absence (Hill et al. 2007). The quality of the evidence base for this subject area is generally good, and some of these pieces of work are among some of the most methodologically rigorous which were reviewed for the study. This is because some have a longitudinal element to the research, some include control groups and some include (self-reported) health data or outcome data rather than simply perceptions of whether an intervention made a difference. Information is available on the impact of OHS services on both individuals and organisations and is mostly positive for both groups.

One OHS general advice service was aimed at both individuals within organisations and their managers, while one was aimed solely at individuals accessing OHS through GP surgeries. The former is a project called ‘Constructing Better Health’ (CBH) which sought to raise awareness of occupational health issues in construction through a mixture of face-to-face and remote OH services. A two wave survey of employers with a matched control group and face-to-face user and stakeholder interviews was used to evaluate it (Tyers et al. 2007). In terms of organisational impact, CBH users showed better performance on five out of 11 health and safety practice measures compared to non-users and/or the control group. Users had higher rates of accidents, injuries and absence based on six out of nine outcome measures but this could be due to self-selection bias and higher awareness of health and safety issues leading to higher rates of reporting. CBH users had better management practices and were more likely than non-users to sustain these over time, although they were less likely to use OHS support and return-to-work arrangements at the second point of data collection. This suggests that CBH was effective in promoting and helping employers to sustain existing good practice, rather than introducing new health and safety management activities. The intervention found difficulties in reaching very small employers and in persuading managers to make use of case management and wide scale changes to OHS practices.

Indicators of the impact of OHS on individuals are available through both the CBH study and one of OHS offered through GP surgeries. Individual case studies in the CBH studies showed higher levels of health awareness, improved health behaviours and better risk prevention by individuals (Tyers et al. 2007). Likewise, participants in the OHS service through GP surgeries found their symptoms reduced and there were also statistically significant reductions in 25 (of 31) different symptoms identified via follow-up questionnaires and interviews, though intervening factors apart from receiving advice may account for this (Jackson et al. 2004). Participants in the OH service were more likely to work full-time than non-participants, reported significantly more symptoms in the baseline survey than non-participants, and had higher levels of exposure to all types of workplace hazard. Therefore, they potentially had more to gain from participation and might be more motivated to take action to address work-related health concerns. Advice recipients reported significantly fewer organisational (eg bullying), physical (eg exposures to toxic chemicals), and environmental (eg poor ventilation) hazards in their
workplace at follow-up, as well as a reduced total number of hazards. However, psychosocial hazards did not appear to reduce.

One multi-method study assessed case management of musculoskeletal disorders (MSDs) (Hanson et al. 2006). The systematic international literature review showed that case management can be effective with moderate evidence showing organisational impact such as reduced healthcare costs, treatment duration, legal claims, and improved productivity and that rehabilitation programmes using cognitive behavioural approaches were cost effective and reduced pain. A majority of professionals also surveyed for the study felt that case management programmes were cost effective but very few case organisations had undertaken such costing exercises to prove effectiveness.

The same report also found that early interventions were effective in reducing work-related absence, which is supported by findings in another piece of research. It consisted of a controlled trial of OH guidelines to address psychosocial barriers in return to work following MSD-related absence in one organisation (Burton et al. 2005). Spells of absence reduced at one test site where workers were contacted promptly once absent compared to both the control sites and the other test site, where workers were contacted much later on average during their sick leave. The average return to work time at the test sites was 40 per cent faster than control sites and future work loss was 57 per cent lower at both the test sites compared to the control sites over the 12 month follow-up period.

There is little evidence as yet to show whether variation in the types of OH interventions makes a difference to their effects. However, one project compared different types of interventions for MSDs and involved 16 organisational case studies in a longitudinal evaluation over 20 months. This was reported in two studies (Whysall et al. 2005; Shaw et al. 2007). Interventions were either standardised or tailored according to the ‘stage of change’ managers and employees were in, ie their degree of commitment to changing risk management behaviours. The tailored interventions were found to be significantly more effective in promoting maintenance of risk reducing behaviours and behavioural change to advance workers from contemplating change to taking action to control the risk of MSDs, as well as reducing self-reported discomfort. It may be worth exploring the potential impact of tailoring health and safety messages and interventions according to the attitudes and mindset of the recipients in future research. These findings echo some of the messages emerging around the importance of tailoring messages in communications campaigns (see Section 3.2.2.).

4.1.4 Worker involvement

Summary

There is a considerable volume of international studies which have investigated the role of worker involvement (WI) in health and safety management, mostly located in the employment relations literature. Major concerns are whether formal or informal structures are most effective in generating worker participation, the role of unions in improving health and safety management and how to engage workers in workplaces such as SMEs, which have little tradition of employee involvement. Five studies dealt with WI activities. Two studies assessed the impact of mobile worker representatives on health and safety practices, one examined trade union dissemination of HSE campaign messages through safety representative training, one examined the WI methods in the construction industry and an international literature review contained messages on WI.
**Impact on health and safety.** The studies were mostly positive in their findings, though this was mostly based on perceptual data, which was not independently verified, rather than evidence of impact on health and safety outcomes. Overall, the studies reviewed include some innovative methods of involving workers or their representatives in improving health and safety, but the conclusions from the HSE studies do not add substantially to the existing literature on the topic in terms of identifying new evidence of the impact of worker involvement on health and safety outcomes. Worker involvement appears to be more effective in ‘stronger’ forms associated with union involvement, but reduced unionisation and recognition due to sectoral and attitudinal change make the utility of relying on these formal mechanisms to engage workers questionable. It may be necessary to explore the potential of using alternative routes. HSE could draw much more extensively on the available international literature on worker engagement to strengthen its own evidence base on this topic.

Two studies of mobile worker representatives found positive reports of changed management practice. The Worker Safety Advisor (WSA) pilot used nine roving advisors and reached 88 employers (Shaw and Turner, 2003). Seventy-five per cent of employers who participated stated that they made changes to their approach to OHS as a result and over half indicated these changes would not have happened without the involvement of the WSA. Involvement of the WSAs in small non-unionised workplaces was reported to be helpful by employers. Across the whole sample, WSAs were stated to contribute to risk awareness raising, risk assessment, prevention and control. One study evaluated the activities of roving safety representatives (RSRs) compared with health and safety advisors in the agriculture sector over a two year period (ADAS Consulting, 2006). The study found a positive impact of interventions made by OHS advisors and RSRs on risk assessment, prevention and control, based on performance scoring by independent consultants.

Similarly, perceptual data from interviews and questionnaires in a study about the trade union dissemination of HSE campaign messages on ‘Better Backs’ through UNITE safety representation training courses showed some reports of beneficial impact. Hillier et al. (2007) based their analysis on 200 questionnaire responses from union representatives in 200 organisations three months post training, 20 follow-up telephone interviews and nine case site visits. Around half the representatives claimed that they raised back safety issues or disseminated information in their workplaces within three months of attending the course, and of around 25 per cent who sought new H&S equipment and training around manual handling, almost all saw these changes implemented by managers.

Some research was less clear in its outcomes, but contains messages about factors perceived to be important to WI. Cameron et al. (2006) investigated WI methods, in particular participatory approaches to OHS in construction using an industry workshop to identify ‘what works’ and then assessments in nine construction sites using a range of methods to increase worker engagement. Data from the workshops showed that participants believed partnership, communication, training and incentives were important for WI methods. The authors emphasise the role of informal communications and training in the case studies but the research design does not permit us to attribute significant weight to these conclusions.

Evidence which showed a WI impact on health and safety outcomes comes from Fooks et al. (2007) and Davis (2004). Fooks et al.’s literature review found that stronger forms of worker participation involving joint safety committees and union representation were associated with reduced adverse health and injury outcomes, although it is not made clear
whether this is assessed on a cross-sectional or longitudinal basis. No detailed evidence on
the relative merits of precise mechanisms was identified. Davis (2004) claims that a number
of studies show a positive impact of WI on health and safety. The rest of the studies
reviewed for this report were not able to show such impact due to research design and
methods used. Claims about the impact of the WSAs (Shaw and Turner, 2003) and
actions taken as a result of receiving the Better Backs campaign material (Hillier et al.
2007) were not systematically and independently verified. Participating organisations
were self-selected for both studies on mobile representatives, so may not be
representative of the wider population of employers and other possible contextual
influences on changes to health and safety practices may have affected the results.
Although the impact of worker engagement on a range of health and safety outcomes
was set as an objective in the work of Cameron et al. (2006), no results were available
for this; the study focussed primarily on methods to improve worker involvement as an
outcome in itself rather than as a means to improve health and safety.

4.1.5 Incentives/recognition schemes

Summary

A number of studies reviewed for this report call for greater knowledge about the role of
different levers to improve health and safety, eg Fooks et al. 2007. Two reports were
identified which examined the role of incentives and recognition schemes in promoting
health and safety. One evaluation concerned a pilot scheme to enable SMEs to gain
access to subsidised health and safety mentoring and training support from consultants.
The second concerned the perceived value of recognition schemes, whereby an
organisation receives some kind of accreditation, membership of a scheme or an award
based on assessment of their management practices. Neither study was able to provide
strong evidence of the intervention’s effectiveness. This is clearly an area where there is
a lack of robust research and further evidence into the feasibility and impact of different
levers to achieve individual and organisational change is needed.

One evaluation concerned a pilot scheme to enable SMEs to gain access to subsidised health
and safety mentoring and training support from consultants, evaluated through postal survey
of participants (Technopolis, 2004). Participants reported increased understanding of health
and safety issues, enabled compliance and that it assisted in the improvement of the working
environment. Over half of those receiving training support perceived reductions in accidents
and number of sick days, whereas of those receiving mentoring, one-third reported accident
reduction and just over ten per cent reported reduced sick days. Weaknesses of the
evaluation are its reliance on self-report data without independent verification of changes
claimed, and the non-random nature of the sample, a majority of which reported planning
changes to health and safety management before they participated in the scheme. These
results are similar to some of the conclusions reached about the OHS initiative Constructing
Better Health (Tyers et al. 2007), suggesting that these kinds of support mechanisms may be
useful for SMEs.

A single piece of research reviewed the impact of recognition schemes (including a small
proportion not related to health and safety) through interviews with scheme organisers and
20 interviews with randomly sampled employers, split evenly between participants and non-
participants in recognition schemes (Hopkinson and Gervais, 2006). Scheme participants
believed good publicity, improved working practices and improved health and safety had
resulted but had no tangible data to support their perceptions. They tended to regard schemes as reward mechanisms rather than as incentives for behavioural change.

4.2 INSPECTION AND ENFORCEMENT

4.2.1 Inspection

**Summary**

The broader literature on inspection activities makes a strong case for its positive impact on health and safety management regimes (see, eg Davis, 2004; Gunningham and Johnstone, 1999). Inspection activities can take a number of different foci and forms. These include proactive versus reactive inspection, where proactive inspection takes place according to schedules of visits planned by either HSE or LAs and reactive inspections take place in response to, eg an incident or complaint; single issue or multiple topic inspections and whether inspection works best when combined with other activities such as communications campaigns.

Some studies reviewed for this report were concerned directly with the impact of inspection and some examined broader activities of HSE’s Field Operations Directorate (FOD). There was a surprisingly small amount of research evidence on the work of FOD. These are broadly supportive of the view that inspection is effective in its impact on health and safety outcomes, but there is very little hard evidence in the form of health, injury and absence statistics to make a robust case, or on the nature of improvements that managers made to health and safety practices in response to inspection. However, these may have been documented in studies which predate or lie outside the literature which fell within the scope of this review. Only one study was able to give reasonably credible evidence of differences in organisational practice as a result of inspection. In this respect the research reviewed here is considerably less robust than international studies which predate the time period for this review. One message to emerge from the findings is of the potential important advisory element of inspection activities and a belief in the importance of a partnership approach between those undertaking inspections and organisations receiving them. There is however, a continuing lack of evidence on how inspection should best be targeted in terms of topic and sector. The principles underpinning enforcement were supported and enforcement was found to influence duty holders to a reasonable extent. However there was no evidence of a simple relationship between levels of enforcement and improvement in the way health and safety is managed due to the influence of other factors on organisations’ behaviour.

Convincing evidence of the impact of inspection was produced by Fairman and Yapp (2005) who made 41 visits to small hairdressing firms in six geographical areas. They found that LA inspection had a statistically significant impact on compliance with electrical safety requirements. The numbers complying with COSHH were also higher in LA areas with higher levels of inspection and intervention but numbers were too small to test statistically. Inspection and enforcement were found to be effective because of their role in achieving compliance with regulation. The small firms were found to equate compliance with
following the instructions given by an external source of advice or enforcement, rather than self-assessment. The research casts doubt over the organisations’ understanding of compliance, and suggests that face-to-face explanation may be important for smaller organisations. A second piece of research also found that HSE inspection may stimulate improved management practice. In a trial of a well-being programme in schools, HSE inspections were found to motivate local authorities to conduct risk assessments for stress (Worklife Support Limited, 2007).

4.2.2 Intermediaries and partnerships in inspection

The role of intermediaries in undertaking inspection and information dissemination type roles emerged as important within inspection literature. Fairman and Yapp (2005) found safety assessments by training colleges who placed students in hairdressers were important in improving compliance with risk assessment. Trade associations were found effective in distributing campaign material in the hop growing sector according to a literature review primarily of HSE reports (Mather, 2004). This work of intermediaries links to a recurrent theme of the importance of partnership between those in inspection roles, intermediaries and organisations. The Rubber Industry Advisory Committee (RUBIAC) campaign attempted to reduce manual handling accidents, based on industry partnerships in the rubber sector and self-report data from the organisations showed some evidence of subsequent decrease in accident rates (Mather, 2004). Marlow and Weyman analysed the views of around 30 HSE staff (2004) who also believed that partnership was important in gaining organisational commitment. However, the nature of partnership and whether there are different models for different contexts, is not explored.

Evidence focussed on the role of HSE’s Field Operations Directorate was less convincing. Chegini (2005) assessed the impact of topic-based inspection which focussed on priority areas of concern rather than traditional generic approaches, using statistical evidence, the views of around 50 inspectors and a survey of duty holders. This study found no evidence of impact of the new method of inspection on either management compliance, the numbers of fatalities in priority sectors or other health and safety outcomes. However, the numbers of enforcement contacts with employers had increased and inspectors reported being more likely to enforce against priority topics in priority sectors.

One study found that field operations staff believe that inspection and enforcement were effective mechanisms to improve health and safety practice in hard to reach employers (Marlow and Weyman, 2004). However, staff doubted the long-term effectiveness of sector wide blitz inspection campaigns without specific targeting of sub sectors or geographical areas.

4.2.3 Enforcement

Wright et al. (2006) undertook surveys of inspectors, duty holders and discussions with stakeholder groups covering regulators, employees and victims groups to evaluate the effectiveness of enforcement following the publications of Enforcement Policy Statement (EPS). Inspectors found the Enforcement Management Model was useful and the report argues that it had changed inspectors’ approaches to enforcement decisions to support the key principles. The study showed that all aspects of enforcement including principles of transparency, targeting, proportionality, accountability and consistency influence duty holders to improve health and safety to a reasonable extent. However, there is no simple relationship between levels of enforcement and improvement in the way health and safety is managed, as a wide range of other factors are involved. These included the size of the
organisation (larger ones were more likely to respond positively), whether the organisation has a reputation to protect and whether senior management took an interest in the enforcement proceedings. Enforcement was found to influence duty holders in two ways: in their organisation it had an educative impact, and in response to hearing about enforcement or incidents in other similar organisations, it created a wish to avoid adverse publicity.

4.3 REGULATION

Summary

There is a widespread view that regulation is a powerful tool in improving organisational practice (eg Davis, 2004). The evidence covered by this review is broadly supportive of this position, though not particularly robust in quality. We must note that regulation is much more straightforward to police for visible risks such as working at height rather than invisible risks such as mental health problems and therefore is not equally effective for all risks. Most of the studies reviewed for this report suffer similar weaknesses of being heavily reliant on self-reported data from duty holders, without independent checks on their activities and do not use random and balanced samples including a mixture of duty holders who differ in their likely attitudes and responsiveness to regulation. Management preferences for different forms of lever which would persuade them to comply with regulation show variation. Different levers were preferred by different types of organisations, noticeably that those with a negative view of health and safety favoured punitive measures, while those who were more engaged favoured reputational incentives or educational support. A moderate proportion of managers made claims about the impact of regulation on health and safety management practices, and were positive about the extent to which they think regulation has improved health and safety. However, we also note areas of difficulty in securing compliance with regulation, chiefly due to problems of interpretation and conducting risk assessments. This appears to be a persistent problem as it was noted in Hillage et al. (2001). Regulation therefore appears to be effective for risks which are amenable to visual scrutiny for purposes of enforcement and is also limited in its influence to those employers who make efforts to comply. We should also note the context of regulatory reform in which current government policy is focussed on ‘better regulation’ which is proportionate, targeted and aimed at improving business performance.

There is variation in management preferences for different kinds of lever which would gain their legal compliance (Wright et al. 2005). The study found that organisations which perceived health and safety as important and were sensitive to reputation and customer views were more favourably disposed to incentives and persuasion. Respondents with a negative view of health and safety and an unsupportive cost or cultural regime were most in favour of enforcement and fines to ensure legal compliance, while those who found health and safety management a burden preferred enforcement and support. This advances the work by Davis (2004) which found through a literature review that regulatory compliance was driven by a generalised fear of reputation damage and financial loss. Wright et al. (2005) also point out that enforcement may affect reputation, so one interpretation of their findings might be that
enforcement is likely to have power over a larger proportion of organisations than incentives and persuasion.

They also found some sector specific differences. For example, a greater proportion of large organisations perceived that enforcement would have a long-term impact on their willingness to improve health and safety than SMEs. Businesses from some sectors were more likely to report that insurance costs would drive them to improve health and safety. These sectors were agriculture, charities, hotels, leisure, local government, manufacturing, media, social services and transport.

We should be cautious in the weight we attach to the conclusions, because while conducted on a large scale (39 interviews with industry stakeholder groups and evidence from a large postal questionnaire completed by general managers or H&S staff from over 1,700 employers/intermediary bodies), the report is based on respondent perceptions rather than impact measures. It is possible that the kinds of measures managers say they would prefer might not be those which would actually have greatest influence.

Several studies found claims of changed management practices in organisations as a result of regulation. Legal obligation was cited as the most common reason which prompted development of health and safety systems, acknowledged by 65 per cent of organisations in a survey of just over 2,000 firms on compliance costs (Lancaster et al. 2003). This corroborates the evidence in the literature review by Davis (2004) which also found regulatory compliance was a primary lever in stimulating management action on health and safety and fear of prosecution was a major driver of board level action. The effects of legislation may be cumulative: one piece of work on Construction (Design and Management) regulations found that the Health and Safety at Work (HSW) Act and the Management of Health and Safety (MHSW) contributed to its influence. Regulations were also influential in stimulating changes to health and safety management practice (BOMEL, 2007).

An evaluation of the Provision and Use of Work Equipment Regulations (PUWER) 1998 and the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 found that organisations took one of a range of actions to achieve compliance and the proportions taking action varied between 25 per cent and 40 per cent depending on the action concerned (Wright et al. 2003). These included risk assessment of equipment, more time spent planning lifting operations and provision of staff training. Small firms were less likely to take action but may also have been less likely to use equipment covered by the regulations. Similar claims of changed behaviour to meet obligations were made by respondents in a study into the impact of the requirement for safety reporting by organisations who had entered the top tier covered by Control of Major Accident Hazards (COMAH) regulations (Brazier and Waite, 2003). Seventy-two per cent of a sample of over 150 duty holders surveyed who were affected by the Working at Height (WAH) regulations reported taking action following implementation of the regulations. Actions included use of new safety equipment and conducting or revising risk assessments. Observation indicated working at height being avoided, that ladders were being replaced with other forms of access equipment, and that companies were introducing policies and training employees to ensure compliance. The evidence was gathered from an unspecified number of companies during 30 case visits (Wearing et al. 2007).

A majority of respondents in a survey of nearly 500 organisations for the PUWER and LOLER study reported that the regulations had led to perceived improvements in health and safety practices, such as improved risk awareness and behavioural changes in staff. Participants in the COMAH study believed that the need to comply with safety case reporting had raised risk awareness and improved risk assessment, prevention and control (Brazier and White, 2003). In a study of Construction (Design and Management) regulations,
the duty holders believed that the new provisions were effective in raising awareness of OHS and in stimulating risk prevention by clarifying role and responsibilities of duty holders and promoting good practice, especially among larger contractors (Mulholland et al. 2005). This is based on a study of around 75 participants in focus groups and interviews and is more optimistic than previous research into the level of compliance with CDM cited in Davis (2004). It is, of course, possible that the compliance has improved since the earlier report, but the nature of any drivers for change is not identified (Mulholland et al. 2005).

There were mixed views on whether the CDM regulations helped to reduce ill-health or injury (Mulholland et al. 2005). According to Lancaster et al. (2003), a majority of organisations reported that any action they took in response to regulation had had no effect on a range of outcomes, but 27 per cent reported a positive effect on time lost through accidents, and a further 16 per cent claimed reductions in sickness absence. Construction and manufacturing sectors were most likely to measure and report benefits and construction companies commented on the importance of health safety management in winning contracts. Twenty-eight per cent of 78 duty holders surveyed for the Work at Height regulations reported lower accident numbers and fewer unsafe practices after their introduction, which may be indicative of a positive impact, although the authors observed little impact of the regulations in terms of changes to site practice (Wearing et al. 2007).

**Difficulty in securing compliance** with regulation were noted in three studies. Hodge and Winton (2003) state that a proportion of the 700 employers responding to a questionnaire regarded the First Aid Regulations (1981) as important but admitted only partial compliance. This was due to problems of understanding and applying the regulations especially among small firms. Some believe that they are not covered by the regulations or are concerned about the costs of first aid training and that the guidance accompanying the regulations is not sufficiently clear. Mulholland et al. (2005) report that duty holders in their evaluation of the Construction (Design and Management) regulations had problems in understanding how to undertake risk assessments. This was accompanied by a focus on completing paperwork rather than implementing practice, due to a lack of basic training. Similarly, duty holders under LOLER and PUWER had encountered some difficulties in interpreting the regulations, especially less prescriptive elements (Wright et al. 2003) and a majority of duty holders affected by the Work at Height regulations were judged not to understand them (Wearing et al. 2007). This problem may have been worsened by a need for an Approved Code of Practice (ACOP) or guidance, which was noted by inspectors and trade union representatives. Sectoral specific problems were also evident in this study: some firms reported difficulty in gaining compliance from contractors in the food and drink, road haulage and construction sectors.

Only one study found no connection between regulation and employer behaviour. This investigated the sanction of disqualifying directors convicted of health and safety offences (Neal and Wright, 2007). It argued that the law had not been used sufficiently frequently to have any significant effect on director behaviour. This was partly due to low levels of awareness of the relevant legal provisions on the part of HSE staff, which meant that the provisions of the legislation were not promoted by HSE to the courts. However, this study did not include widespread collection of the views of the target population on whether the law has influenced their behaviour.
4.4. TARGETED INITIATIVES

HSE is interested in increasing stakeholder engagement and developing partnerships with key sectors as ways of improving commitment to health and safety management. This is a relatively new area for which one study was found. Eleven targeted initiatives were introduced by HSE in manufacturing industries and were intended to reduce accidents and ill health (Wright et al. 2008). The design and content of each initiative varies but common features are: partnerships working between employers, unions (where present) and HSE; setting of tailored targets for sector accident reduction; sector specific improvement eg changes in safety culture; benchmarking with other sectors. Five sectors for which sufficient data was collected show faster decreases in injury rates after the introduction of the schemes, comparatively faster decreases than in the manufacturing sector as a whole and are reaching targets above those set in the RHS strategy. Participating organisations had superior H&S management ratings based on observation by HSE staff and independent evaluators, and managers and employees in participating sites reported qualitative examples of H&S improvements such use of new safety equipment, more training and systematic implementation of H&S systems. Many of the participating organisations attributed these improvements to the targeted initiatives and in one industry (quarrying), improvements in injury rates are occurring at a time of reduced contact with HSE FOD staff. There was little evidence, however, of measurable improvements in H&S climate as a result of the initiatives. Success factors for the schemes included having an initiative specific committee or steering group, a defined set of terms/agreement, resources to support participating companies, monitoring progress and maintaining commitment.
5 HSE EMBEDDED KNOWLEDGE OF ‘WHAT WORKS’ COMPARED WITH EVIDENCE FROM LITERATURE

5.1 SUMMARY

One of the objectives for this report was to determine the views of HSE expert staff on what works in delivering improved health and safety and to compare these with evidence from the literature. This question was addressed in 31 interviews with HSE experts from across a range of HSE departments.

A significant minority of staff found it difficult to identify successful interventions, but of those who did, there was broad consistency with the findings from the literature. HSE staff believed that stakeholder involvement/partnerships, inspection, tailored interventions, interventions to address MSDs and worker involvement were successful interventions, and evidence in the literature supported this view. There were two areas of contrast between findings from interviews with HSE staff and evidence from the literature. Firstly, HSE staff believed that sensible risk management and SHADs were effective approaches to improving health and safety but the evidence base reviewed produced stronger endorsements for other interventions. This does not necessarily mean that staff perceptions are inaccurate, as the scope of literature reviewed for this report or weaknesses in the evidence base may account for their omission from it. Secondly, the literature produces relatively robust evidence on the impact of Occupational Health Service (OHS) on health outcomes, although this was not cited by HSE staff. The major likely reason for this is because the provision of OHS is not a core activity for HSE. HSE staff relied on a mixture of criteria to make their judgements including statistical data, evidence and ‘anecdotes’ from field intelligence. Sometimes their perceptions of success were grounded in successful implementation of an intervention, rather than evaluation of its outcomes.

In terms of variations in impact of interventions by size and sector, there was evidence that face-to-face contact is more effective in engaging SMEs than other forms of intervention, although we recognise that the numbers of organisations reached in absolute terms may be low. There was evidence of some behavioural change in the construction sector arising from the impact of regulation and some health benefits from the provision of Occupational Health Services (OHS). We were not able to judge ‘what works’ by nature of hazard as there was insufficient evidence.

5.2 STAFF VIEWS ON ‘WHAT WORKS’

Staff interviewed received the opportunity to identify interventions which they believed were most effective and to explain how they came to these judgements.

A wide variety of interventions were cited as effective with no discernable pattern by job role or seniority within HSE. Staff numbers were evenly divided across the whole range of interventions so no single method stood out as being more successful than others. Our
analysis categorises responses into two kinds: those which nominated successful interventions and those which identified processes underpinning successful interventions.

5.3 PROCESSES UNDERPINNING SUCCESSFUL INTERVENTIONS

5.3.1 Stakeholder involvement

HSE staff believed stakeholder involvement was important to their work. It was characterised as a top-down strategy of intervention usually organised on the basis of industrial sector or supply chains. Key stakeholders such as major employers, trade and representative bodies worked in collaborative relationships with HSE and intermediary bodies to improve health and safety. For example, staff reported that in both the paper and board and the ports industries, improvements to their health and safety records were directly attributable to HSE intervention which galvanised the industry to take responsibility for a poor safety record. For the ports, this involved establishing a new industry body:

‘It did a lot of things that PSO [Ports Safety Organisation] did but had a very much more higher involvement from senior people in the industry that was lacking... So that if you like was evidence that we changed the perspective in the industry.’

Similarly, staff cited a number of attempts at stakeholder involvement within the construction industry, where ‘supply-side initiatives’ were launched through collaboration with senior industry representatives. These included production of kerb-stone machinery to reduce manual handling accidents and reducing the size of cement bags.

‘Bring everybody together and sit them round a table and basically agree that from a date in the future mechanical handling of kerb-stones will become the norm, that you the hire industry will, we want you to make more of these things available, you the manufacturers we want you to make these more user-friendly, you the contractors will only quote using these, you the client... and bang heads together and lo and behold you get this step change where 90 per cent of the time kerbs are no longer manually handled.’

Partnership through the supply chain was also identified as helpful in the COSHH programmes. Here this method of engaging stakeholders at different levels of production was used to eliminate or modify hazardous materials. One interviewee described the series of decisions undertaken with relevant parties:

‘I don’t know if you’re familiar with the COSHH hierarchy but the way of thinking about it, do you actually need to use the substance at all, and if you could eliminate at that level that’s the first thing you try and do and then if you can’t eliminate its use can you actually use it in a different form.’

Staff also noted that stakeholder involvement requires engagement at all levels of organisations, and cannot be confined simply to senior management or industry representative bodies. They justified this view by giving examples of where stakeholder interventions were less successful in terms of health and safety outcomes as a consequence of failure to change behaviours of front line staff. For example, in a campaign to improve the safety record of railway workers, there was no discernable improvement:

‘We were seeing no movement on the accident figures – people were still being killed and hit by moving trains and I think... you could realise up at this level you are working with the industry groups who are saying well these are the new standards and equipment but when you actually got down to what happened on the ground you
found it was a different culture... a gang of people would turn up in a truck having been given the job. Yes, this is what you are meant to be doing, but it bore no relation to everyday life. And they would carry on the way they always had done... cut corners because they have always done it like that and no-one’s ever got hurt.’

5.3.2 Appropriate targeting of communications

HSE staff believed that prioritising target audiences and researching their needs for particular ‘hooks’ or design of campaign materials was a key feature of intervention success, which is also evident in the literature discussed in Section 3.2.2. One example was a reportedly successful campaign on reducing dermatitis in hairdressers. Hairdressers were chosen for targeting as they were one of the most high risk groups and a number of salient features were identified that helped to inform the communications strategy. This represented a break from the norm and staff felt that more traditional HSE communications strategies would not have been as successful in engaging the target group:

‘What they [hairdressers] want is something creative and visual. With that knowledge we engaged creative people to come up with a communications campaign. And they came up with something that nobody at HSE in a million years would have come up with.’

Similarly, HSE staff believed that the campaign ‘Good Health and Safety is Good Business’ was a success because of the way the message was communicated:

‘We spoke to the audience in their language.’

Another example given of customising campaign materials was that of sensible risk management for SMEs, especially the value of using good case study examples.

‘Over the years businesses hear this term risk assessment, think of it as difficult, particularly smaller low risk businesses, the idea of the sensible risk campaign is to say it’s not difficult you can do it and even provide them with examples of what it looks like when you’re doing it because that’s often what small businesses want, they want to be told what to do but they don’t want it to look complicated.’

Additionally, staff believed that using one strong message within a media campaign was important for success. They recognised that this could cause tensions with the need for HSE to communicate multiple messages and required a change of approach:

‘One of the gospels of faith is that you give one big message. You don’t have multiple messaging in a media campaign. It doesn’t work. But of course that is what our evidence tells us that is what we have to do... Instinctively we want to put all these messages across in one fell swoop.’

5.3.3 Worker involvement

Staff viewed worker involvement as a successful progressive approach that both generated awareness in the targeted audience and was successful in changing perceptions of health and safety practice. For example the ‘sensible risk’ and ‘noise and vibration’ interventions involved engaging workers to take more responsibility for their health and safety by providing relevant further information:

‘There was lots of research evidence around. The more you involved workers in the management of health and safety, the better you’d be able to manage risks.’
5.4 SUCCESSFUL INTERVENTIONS

5.4.1 Safety and Health Awareness Days (SHADs)

HSE staff believed that the Safety and Health Awareness Days (SHADs) model of intervention was successful as a communications strategy. This uses large scale, open seminars or conferences to engage a large number of people within a particular industry or area. The ‘Slips and Trips’, ‘Height Aware’, and ‘Watch Your Step’ programmes were all cited as successful in generating awareness via this method.

‘The shattered lives campaign, the previous campaigns we’ve run, Watch Your Step or Height Aware have been good at raising awareness. They’ve been fairly broad brush. You’re trying to target quite a big audience. What we’re trying to do with this is try to target more specific sectors and particular people within sectors. Not only do you raise awareness but you’re trying to influence a behavioural change.’

Staff also described the use of this model in agriculture as a way to engage a hard to reach group where inspection was less successful in generating behavioural change. SHADs were justified as a potentially cost effective alternative to inspection, rather than a proven success. There was some confidence in the use of SHADs to raise awareness of health and safety, but staff were cautious about the SHAD impact on behaviour:

‘Is there some other way that we could do our business that might be more cost effective and as it happens might be able to produce greater benefits? Now when we started on that we had no idea whether it would or it wouldn’t and indeed some might say the jury’s still out on SHADS.’

5.4.2 Inspection

HSE staff across the organisation felt that inspection was an effective means of intervention, both alone and when used in combination with broader communications campaigns. They also valued the field intelligence gained from inspectors as a source of evidence on the impact of other interventions.

Inspection as a stand-alone activity

HSE staff believed the merits of inspection lie in targeted enforcement of HSE regulations and its power as a ground level means of embedding the messages the HSE wishes to promote. One interviewee described the process:

‘Nothing in my working experience works better than being at a meeting with a health and safety manager on their site and telling them that you’ve done your inspection and you’re not very happy and here are a list of issues that you’re not very happy with. That has such an immediate effect that I can’t think of an alternative.’

The contemporary style of inspection rather than the traditional ‘policing’ approach was perceived as beneficial because it gave inspectors more discretion in their role:

‘I think that is what our inspectors do as a rule, they weigh up the relative impact of the message they are giving depending on the type of organisation they are going to.’
Inspection in combination with communications campaigns

Staff described inspection alone as not cost-effective and suggested that alternative strategies worked better.

‘You need to look outside our traditional approach... you’ve got to influence very large numbers of people, which our inspection process can’t do.’

They pointed instead to the value of inspection in combination with communications strategies. In particular, they acknowledged the importance of follow-up inspection activity to support communications campaigns:

‘Research has been done about interventions. Springing to mind is the Watch Your Step campaign where there is a bigger impact among duty holders where an inspector was involved. You raise awareness but at some stage we say we’ve raised your awareness, what are you doing?’

Staff believed strongly in the value of inspection to stimulate duty holders to seek out further information, thus creating an impact beyond the immediate visit:

‘The inspection stuff can actually grab people’s attention and make them aware that there’s an issue but leave them more thirsty for information about how to deal with that issue, that this one contact is not going to be sufficient to deal with all their questions even on a very straightforward issue.’

5.4.3 Musculoskeletal disorders and HSE Stress Management Standards programmes

Changes in the composition of the labour market and the economy have shifted the emphasis in HSE’s work. Where once the HSE policed safety standards in traditional heavy industries such as coal production, metal and other manufacturing, it now has to address disease and health issues which may be affected by individual behaviours within and beyond the workplace. HSE staff quoted musculoskeletal disorders and the HSE stress management standards programmes as examples where new areas of health and safety concern were being tackled successfully.

Staff felt that the major strength of the MSD programme was a holistic approach which worked through multiplicative mechanisms and acknowledged a need to cure as well as prevent disorders. As one interviewee put it:

‘You could intervene and make a difference to musculoskeletal disorders provided you had six magic ingredients – you needed all six and if you didn’t have all six it wouldn’t work. The six are: senior management commitment, worker involvement, proper risk assessment, risk control measures, education and training, and because you won’t prevent all MSDs you need rehabilitation.’

‘The key message of HSE MSD programmes, supported by authoritative evidence is that you prevent MSDs where you can; prevention messages are cost effective, but you can’t prevent all MSDs, so case management and return to work procedures are essential.’

One interviewee argued that this approach could be applied to other HSE objectives:

‘If you think about it although they found it works for MSD it also works for other problems.’
Staff believed that the HSE Stress Management Standards programme was a good model of intervention due to the extensive range of consultation in designing the standards. The level of attention to detail and expertise involved in standards creation was anticipated to make them more effective:

‘Having gone through a series of loops with a whole load of occupational psychologists and medical experts we came out with a conclusion that you probably could devise a set of management standards that, if you do these things, you will lessen the potential for people to be made ill at work as a result of stress.

‘I think stress management standards are a very recent example where we really did a lot of scientific work, developed some ideas about management standards, tested them, refined them, tested them and refined them; and we’re still going through that process.’

Staff also felt the programme was useful in terms of the evidence it was generating through a novel use of inspectors, and that this would feed into an iterative process of improvement to the intervention:

‘The main thing we’ve been doing is working with 100 organisations who have implemented the Management Standards process and the way we have done that is by attaching to each of those organisations an inspector who has been re-labelled a stress partner... [which] has allowed us to generate a whole host of both qualitative and quantitative information... which we continually feed into the way in which we develop subsequent guidance.’

5.4.4 Sensible risk management

In major hazards industries, HSE staff discussed risk control as a key method of reducing accidents. The goal of these interventions is to change perceptions by influencing the target duty-holders to minimise risk:

‘Now on that assessment intervention plans are developed to ensure that those duty holders are as I said before controlling the risks of those major hazards as low as reasonably practicable, that is the intervention.’

Elsewhere, staff stressed the importance of appropriate and proportionate approaches to risk management, though they did not justify this with evidence of the success of the approach:

‘We accept there are risks in all walks of life, you just need to be sensible about managing it.’

This has been a major principle of the HSE Sensible Risk Campaign, which has advocated proportionate risk management, based on prioritisation of major and severe risks so that employers are less likely to dismiss risk management as time consuming and expensive.

5.5 DIFFICULTIES IN IDENTIFYING ‘WHAT WORKS’

One finding was that a large minority of staff found it difficult to identify the effects of interventions which they believed were successful. Ten of 31 staff interviewed were not able to identify a successful intervention. There were various reasons for this:

- A few staff had not been in their posts for long enough to see the impact of a policy or programme or worked in senior roles which did not give them a detailed knowledge of the outcomes of specific interventions.
A number of staff identified difficulties with evaluating interventions. Establishing causality in the success of interventions was a tricky area. Even if desired results were achieved in an area to contribute to PSA targets, staff stated it was difficult to assess the contribution of a specific intervention. Additionally, they remarked it was even more difficult to identify which components of multi-faceted interventions were most effective. It was much easier to attribute causality to very specific campaigns such as wearing hard hats in construction.

Some staff were cautious about categorically describing interventions as effective, as they were conscious of the risks of describing any intervention as an unqualified success and aware that even successful interventions might be further improved.

Some staff described an intervention they were familiar with, but were not able to offer any endorsement or evidence of its success.

Some staff felt that interventions were designed and developed under particular time and cost pressures which would either make evaluation difficult or result in them being launched before a full evaluation of their appropriateness was conducted. The example given here was of the HSE Stress Management Standards.

Staff were conscious that measurement indicators for health conditions and diseases may be slow to respond to changes in interventions and that some health conditions and diseases may develop over a long period of time and therefore do not show up quickly in health statistics. These factors compound the difficulty of evaluating the impact of interventions.

The difficulty that HSE staff had in identifying ‘what works’ to improve health and safety outcomes is also arguably a reflection of the quality of the evidence base. Staff may be understandably reluctant to rely on perceptual or self-reported data from about the impact of interventions. The emphasis that HSE is required to place on achieving PSA targets is likely to focus attention on quantifiable impacts to support these goals.

5.6 BASIS OF JUDGEMENTS ABOUT ‘WHAT WORKS’

Staff relied on a range of rationales to form conclusions about ‘what works’. Here there was some variation by staff group. Analysts working with statistical data tended to use macro figures of health and safety indicators whilst policy and programme staff tended to use more informal, anecdotal and qualitative feedback about ‘how’ an intervention worked in addition to the statistics.

Judgements about the relative success of interventions used a range of sources and the following comment is typical:

'We're using some of the evidence base because we've got the statistics, we're using data on some of our intervention techniques where we've we published what their roles are, and then we're actually using our judgement and also our assessment of where you can get to at any particular moment in time at any particular industry or sector.'

Feedback from HSE field inspectors and members of the relevant industry whom they respected was an important source of evidence about the relative success of an intervention campaign, particularly in identifying areas of strength or weakness. Although this anecdotal form of evidence was an important and trusted means of feedback, staff commented that it could not be validated or formally recorded as evidence that an intervention was succeeding. However, the example given above of the inspector gathering evidence as an HSE ‘Stress
Partner’ in the HSE Stress Management Standards programme illustrates the possibility of gathering hard data through this channel. In the absence of statistical evidence, staff believed other shorter-term performance measures such as whether people are complying with an intervention were useful.

Staff who identified successful interventions did not necessarily rely on evidence to make that judgement. In some cases, for example, they cited interventions as successful which were not yet completed or where results of evaluations were not yet available. This suggests that HSE staff may form their perceptions of ‘what works’ based on perceptions or alternative criteria rather than harder evidence of outcomes. The quotations above suggest that a sense of success came simply from discovering that a new or unusual approach or intervention was feasible and ‘success’ was equated with implementation.

5.7 DO HSE STAFF VIEWS AND MESSAGES FROM THE LITERATURE AGREE ON ‘WHAT WORKS’?

5.7.1 Areas of similarity

There was a striking level of agreement between HSE staff views and the literature reviewed for this report about ‘what works’ in terms of being effective one or more of the levels of impact. Interventions which showed some level of effectiveness are:

**Inspection**

Inspection emerges with the strongest endorsement of effectiveness from both the literature review and the embedded knowledge of HSE staff. In particular, its educative and advisory role appears important, rather than the traditional enforcement function.

**Stakeholder involvement/partnerships**

Stakeholder involvement and partnership approaches were identified through interviews and the literature reviewed, but each strand of work placed a slightly different emphasis on this factor. Staff believed that stakeholder involvement through industry group and employer representation was important in building commitment from organisations to implementing HSE interventions. They extended these principles widely across HSE activities.

Evidence from the literature centred on partnerships with and through intermediaries, for example showing that partnership approaches to the inspection process could make it more effective. We should note that ‘partnership’ can take many forms and the nature of the partnerships discussed either by staff or the literature is not particularly clear. It may be helpful to understand what effective partnership looks like for different interventions in different circumstances.

**Tailored interventions**

Interviews with HSE staff placed emphasis on the importance of tailoring communications messages to the audience to increase the likelihood that the messages are heard and acted on. The literature supports this view, but suggests tailoring of interventions is important in a broader sense. It suggests not only that other interventions such as those for MSDs should be tailored to the needs and circumstances of different groups, but also that different incentives and interventions may work more or less effectively for different groups (Wright et al. 2005).
Interventions to address MSDs

The literature showed evidence of reasonably high quality that interventions to control and manage MSDs have positive effects on final health and safety outcomes (Whysall et al. 2005; Shaw et al. 2007). Some staff were familiar with this evidence and used it to justify their belief in the effectiveness of these interventions.

Worker involvement

The need to secure worker commitment to behavioural change is logically critical to the implementation of health and safety management techniques. Both the literature and HSE staff agreed that the principle of worker involvement was important, but a slight difference in emphasis appears in how the term is applied. Worker involvement in the literature tends to refer to a set of tools or techniques to ensure that workers are given a voice in the processes of health and safety management. Some comments from HSE staff employ a slightly different definition of worker involvement. This regards worker involvement in the implementation of health and safety management as necessary to gain compliance and effect behavioural change by virtue of their significance to the work process. In this sense workers are the ultimate ‘targets’ of health and safety management and worker involvement refers to the degree to which an intervention engages them.

5.7.2 Areas of difference

There were also some areas of difference between staff views and the evidence from the literature on the question of what works to improve health and safety. Some factors received greater weight from HSE staff than the literature, and some factors appeared in the literature but were not identified by staff. Staff identified sensible risk management and SHADs as being effective approaches to improving health and safety but the evidence base reviewed produced stronger endorsements for other interventions. This does not, of course, necessarily mean that staff beliefs are unfounded since there could be a number of reasons for the discrepancy. Firstly, the evidence on the impact of SHADs on health and safety outcomes is not particularly strong, but this does not necessarily mean that they do not achieve beneficial outcomes, simply that the evidence base does not yet demonstrate this. Additionally, they may only be effective on a small scale relative to the prevalence of the hazard they are intended to address, due to the overall numbers of SHADs that take place. Secondly, with respect to sensible risk management, it is possible that strong evidence for the effectiveness of this approach exists, but predates the publication period for literature included in this report.

The literature produces relatively robust evidence on the impact of Occupational Health Service (OHS) on health outcomes, although this was not cited by HSE staff. A major likely reason for staff omitting this from discussion is because the provision of OHS is not a core activity for HSE.

5.8 ARE THERE ANY VARIATIONS IN WHAT WORKS ACCORDING TO SIZE AND SECTOR OF ORGANISATION OR NATURE OF HAZARD?

This question could be answered by examining:

a. the relative impact of an intervention applied in different sectors where evidence exists
b. the relative impact of different interventions within a single sector, as long as multiple interventions have been applied and evidence is available on their impact.

c. the relative impact of different interventions adopted to address the same hazard.

In commenting on variations in ‘what works’ according to size and sector of organisation and type of hazard, it is important to recognise that these judgements cannot be comprehensive. Firstly, every intervention is not necessarily applied in every sector, in some cases because interventions have been targeted at particular sectors. Secondly, even where interventions have been applied across multiple sectors, evaluative studies typically sample a range of sectors which often varies between studies. In many studies, the numbers of organisations participating from different sectors are too small to draw well-founded conclusions. Thirdly, making an assessment of the impact of different interventions on the same hazard requires both the implementation of different interventions to address the same hazard and that evidence of their relative impact exists.

To undertake this analysis we undertook three procedures. First we scrutinised literature findings for messages about organisations of different sizes, in different sectors. Where evidence on relative sectoral impact was not evident in the main text of published literature, we scrutinised appendices. By categorising all literature according to sector in the database we used to record it, we were also able to undertake a systematic comparison of literature by sector rather than by intervention. We also sought evidence of whether any hazards were best addressed by particular interventions.

With regard to a) and b), the evidence is relatively consistent and themes emerge about three sectors:

- SMEs
- construction
- the public sector.

SMEs are an organisational group of perennial concern for improving practice in health and safety and a recurrent theme in the literature was of difficulty in penetrating them through arm’s reach methods, such as media campaigns. Face-to-face contact with HSE staff through roadshows and inspection or intermediaries such as consultants, sectoral organisations and other advisors appears to be valuable in providing technical support and advice to help small companies understand health and safety legislation and implement sound health and safety practices. These organisations lack (or perceive that they lack) the time, expertise and resources to undertake these activities unaided. SMEs also perceive themselves as ‘different’ from the larger organisations and are seeking more tailored information and guidance material. It is possible that the HSE’s internal ‘Think Small’ initiative has increased the attention paid to SMEs in research commissioned by HSE, which may account for their prominence in literature reviewed for this report.

On the relative impact of different interventions within a single sector, a clear message only emerged for the construction sector and the public sector. Regulation continues to have some effect on improving health and safety practice, although the evidence is not particularly strong, given the persistent problems in compliance noted in Section 4.3. Additionally, the review showed the potential benefits of Occupational Health Services (OHS) in the construction industry and is consistent with a claimed need for wider provision of these services indicated by Black (2008). However, interventions which successfully influence SMEs should also be given particular attention, given the high proportion of SMEs in the sector.
Within the public sector, rather than reporting on ‘what works’, we simply wish to note that the sector appears to face tensions in implementing health and safety management practices. Pearce (2005) notes that with regard to stress, there is better understanding of the problem but less management commitment to solving it than in the private sector (Pearce 2005). This may be related to time pressures faced, which were noted as particular to school teachers in the report by White and Snodgrass (2007).

On the question of hazards, we did not find sufficient evidence of multiple different interventions being used to address the same hazard to be able to comment.

Overall, therefore, there is an outstanding need to understand what kinds of interventions work best in different sectors, for different hazards and for organisations of different sizes, since knowledge in this area remains patchy.
6 HOW DOES HSE GENERATE AND USE EVIDENCE ON ‘WHAT WORKS’?

6.1 SUMMARY

Staff drew on a wide variety of evidence and most used multiple forms of evidence, rather than one particular source. **Statistical data** was most frequently mentioned, but this was supplemented by use of **oral and written evidence from experts and industry stakeholders**, and **internal evidence from colleagues** and especially **information from inspectors in FOD**. Our analysis showed that interviewees made little use of **documentary data** in the form of commissioned research reports or external publications. This is unsurprising given some of the criticisms that staff made of this form of evidence (see section 6.4). Most staff had a general appreciation of the importance of evidence use, especially statistical data which was used relatively intensively. Some senior members of staff believed that staff were too reliant on statistical data and should make use of broader sources of evidence.

A clear and shared understanding of the commissioning and evaluation processes for interventions did not emerge from interviews. Evidence use was, therefore, highly variable with few patterns discernible across interviewees. We discuss this further in Section 6.2 below. A number of staff were unable to talk in great detail about how they used evidence in their roles.

Much use of evidence was underpinned by a sense of convention, in that many staff did not actively reflect on or question why or how they used evidence. However, we identified three major types of factors which influenced organisational practice. These included:

- **linear or deliberate approaches to the development of an evidence base**, founded in pragmatic need to develop knowledge to enable delivery of policy

- **the need to meet regulatory or governmental requirements** to demonstrate impact or value for money as a public service

- **individual personal preferences**.

Staff voiced two problems that emerged in relation to quality of evidence: the **persistence of evidence gaps**, and a widespread concern about the **value of statistics** both for setting targets for programmes and to measure progress and outcomes. **Evidence gaps** were noted especially in health-based areas of policy work.

A number of barriers to better use and generation of evidence were identified. These included **time pressures, political pressures, knowledge management** problems and making best **use of analysts**.

The suggestions put forward by staff for making evidence accessible were (in majority to minority order of preference): **workshops/seminars; written summaries; electronic**
media. Many also emphasised that proactive evidence supply was as important as format.

A major theme which emerged from the interviews was perceived weaknesses in the commissioning process. Staff made a number of suggestions to improve this such as building the research commissioning process into project planning.

6.2 WHAT SOURCES OF EVIDENCE DO STAFF USE?

There was a widespread use of statistical data and target based information across all work areas of the HSE. Statistics were often the first evidence source cited by interviewees. They were used in two ways: firstly prior to the policy or programme commissioning process for determining the areas in which interventions were needed, and, secondly, as a form of data to evaluate progress against targets. Some interviewees found that using statistics to define future activity was useful:

‘What the stats do though actually and this is one of the things that I think is extremely helpful is that it focuses the business on the priority areas.’

Interviewees accessed evidence through a range of networks internally and externally. These comprised external health and safety professionals, industry representatives from businesses and trade unions and, internally, colleagues from different departments, especially field operations. Trade associations and business federations were frequently mentioned. Use of different networks varied slightly according to role. It was more important for some staff to be informed of international developments through external contacts, for example, and some staff located in sectoral roles made heavier use of networks. For some, this exposure to outside sources was critical in preventing insularity in policy development. One person justified use of external sources as follows:

‘HSE is an organisation where we develop these kind of great blocks of in-depth expertise and we convince ourselves that we know best and then we tell people what to do about it and I think what that means sometimes is that I don’t always think that we get an objective view internally.’

Staff regarded contact with sectoral and industry groups as a vital source of information and intelligence about organisational difficulties with implementing regulation and reported that it sometimes served to stimulate gathering of further evidence or commissioning of research to inform HSE activity:

‘We get challenged on the real life situations, this is not theoretical stuff, this is people in industries working with us to say “How do I mitigate this risk? This is how we are working, in practice what do you think we should do, how do we solve this problem?” In law it’s their problem to solve but as a regulator you work with people...In that sort of dialogue these questions pop up and often we might say to an industry: “It’s your problem, you research it”, but sometimes when it is generic enough or across lots of industry sectors, we will justify thinking we need to do some research on this.’

Industry and expert networks, especially discussion with stakeholders, were widely used to provide input into the design and development of interventions and to define appropriate models, ways of working or testing out of initiatives and interventions in pilot projects. Staff felt that this provided guidance when hard evidence of what would work was not available. One person described how this process worked on one intervention:
‘HSE did a large discussion with stakeholders with a discussion document to find out what they thought [topic name] meant and what areas they thought HSE should be focusing its strategy on and identified areas that they should be working on and as a result of that a working group of the great and the good was set up…there would have been very little, outcome, quality, evidence to support any particular routes of intervention… the people in that group based their knowledge on practical experience’

Internal networks were equally valued. Many staff alluded to the long average staff tenure at HSE and pointed out how this enabled them to build up a good set of contacts for information on different topics over time.

Interviewees from all departments referred to the field evidence as part of a ‘suite’ of evidence necessary at the design stage but also a crucial ‘feedback loop’ at the point of evaluation.

‘That tacit knowledge of inspectors and people who have been in HSE working with industry, visiting workplaces, talking, engaging in the consultation networks that we have got actually constitutes quite a good bedrock of experience that is based on practice. HSE is rich in that sort of understanding and I think it often does drive our thinking.’

Few HSE staff told us that they used published sources of evidence other than statistics. In particular, there was little comment on use of reports or publications. Very few cited key written pieces of evidence that they found invaluable and few made reference to use of wider literature that was not published by HSE. The major reason for lack of use of HSE commissioned research was the sheer number and length of research reports, which interviewees found off-putting and stated they did not have time to read:

‘There it is the wonderful study on something and I suddenly find it’s 450 pages and 70 pages executive summary.’

‘I’ve tended not to spend all of my time at HSE reading through racks of reports that we produce on evidence.’

6.3 WHY AND HOW DO STAFF USE AND GENERATE EVIDENCE?

Motives for using and commissioning evidence varied. Much use of evidence was underpinned by a sense of convention, in that many staff did not actively reflect on or question why or how they used evidence. However, we identified three major types of factor which influence how staff used evidence. These included deliberate or linear approaches to the development of an evidence base, founded in pragmatic need to develop knowledge to enable delivery of policy; the need to meet regulatory or policy requirements to demonstrate impact or value for money as a public service; or individual personal preferences. While there was some difference of degree in emphasis between these three perspectives, it is not possible to specify their relative contributions to decision-making. In part this is because personal preferences and individual characteristics such as role in the organisation will have affected how much staff were influenced by the first two factors. A second reason is these categories emerged from our analysis rather than being discussed with staff, who were not asked during interviews to prioritise each factor in turn. However, our analysis indicates that the deliberate approach of seeking to develop an evidence base was somewhat less prominent than other motives. Lastly, a small number of staff suggested that on occasion, staff ignored evidence for various reasons and took decisions about which interventions or areas of activity to pursue using other criteria such as intuition. Some of
these staff believed that others shared their views but would not be prepared to state them outright.

One way of viewing evidence use and generation is as part of a deliberate and linear process of developing an evidence base consisting of multiple stages. Initially, evidence determines priority areas for policy interventions. Evidence is subsequently used or commissioned based on knowledge gaps in the evidence base to identify the most suitable interventions to tackle the problem. Lastly, the intervention is then evaluated and the results then added to the stock of knowledge about the relative success of the intervention. The dominant use of evidence was at the first stage to identify policy priority areas, and as highlighted in Section 6.2 above, statistics were most heavily used here. We found relatively few examples of staff using this three step deliberate process, however, and only a minority suggested that they were consciously contributing to the evidence base. Most of those who did so either worked in or had experience of social science or analytic roles. Staff did not talk of how lessons learned about the relative success of interventions, or their component parts, influenced subsequent initiatives. Instead, there was a common perception that staff often ‘reinvented the wheel’ when designing and delivering interventions. A number of factors are put forward to account for these problems in Section 6.8 below.

HSE’s status as part of a central government department, funded through general public taxation, surfaced in some interviews as a driver for evidence production from regulatory or policy requirements. It led to needs for evidence to meet two purposes: the requirement to conduct regulatory impact assessments and the obligation to justify appropriate use of public funds. This factor was therefore raised by staff who worked on some of HSE’s larger and more expensive interventions. They perceived that the larger the financial commitment to any intervention, the greater the scrutiny under which it would be placed. This influenced both the impact expected from the intervention and the quality of the evidence sought both to inform the development of the intervention and for its evaluation.

‘When you’re spending £1.5 to £3 million on a big campaign then there’s an obvious driver there to research it beforehand to make sure that money is being well used.’

‘Evidence based policy is coming more and more to the fore within HSE, because you do have to justify what you’re doing and why you’re doing it the way you’re doing it. That is not going to go away, the justification, because of the resource situation.’

Some staff noted that a commitment to prove the value of interventions could inhibit innovation and creativity in the approaches chosen, because resourcing risky or untested methods could be perceived as a waste of money.

‘We haven’t had the trial and experiment culture and perhaps it is because…it is caught up in the use of public money, the feeling being that you can’t mess around with public money, you should be doing the right thing, not doing 20 experiments until you get it right.’

Most staff acknowledged that individual factors were powerful in driving evidence use. Personal topic interests were one factor that influenced choice of evidence used and commissioned. These might be quite legitimate in that specialists working in a particular policy or programme area are likely to use evidence and commission evidence that relates directly to their work. However, staff reported that colleagues’ motivations were often less impartial, though none admitted to this behaviour themselves. There were reports that staff used evidence to justify existing beliefs or prejudices:

‘Evidence is used in a very partial way and people come to the table with their own baggage or prejudices in terms of what works and what doesn’t and then selectively
identify these pieces of evidence that stack up in support of those prejudices and dismiss stuff that doesn’t.’

‘People turn to the evidence to bolster up what they’ve already decided to do.’

A small number of interviewees, particularly senior staff, suggested that employees might reject or ignore the evidence base entirely if it contradicted entrenched views:

‘What tends to happen is somebody has a good idea, somebody has a prejudice about what they want to do, they get on with it because again we’ve got people who are committed and want to deliver.’

‘I suspect psychologically in some ways we don’t want to hear some of the evidence because we have made a decision and we have got a programme and we believe it is the right thing to be doing. I suspect at times we might blank certain evidence or decide to carry on with something because we believe we have made the right decision. We don’t want to hear what the evidence is telling us because it will mean dismantling some of our work and I don’t think we are quite ready to take that sort of assessment.’

A small group of staff also believed that intuition was sometimes employed as a substitute for grounding policies or programmes in evidence, saying that decisions relied on ‘a bit of gut feeling’. They accounted for this in the organisational culture of HSE, where as a mark of professional competence and experience, staff were expected to know what might be appropriate interventions. A small number of interviewees believed that questions might be asked about their capability if they did not.

Custom and practice and convention emerged as an influence both on decisions about whether to use evidence and which evidence to use. A minority of staff were concerned that colleagues sometimes did not consider alternative solutions or methods when interventions were being planned and designed. They believed that staff tended to rely on commonly used methods. This, of course, could be entirely justifiable where approaches have been found successful. Given this report identifies weaknesses in knowledge of ‘what works’ through the literature review and HSE staff views (see Section 6.5 below) however, it is worth noting. This has particularly important implications for willingness to innovate and appropriate choice and design of interventions to support the delivery of HSE policy objectives.

‘The option appraisal, what could we do here, tends to be pretty constrained and that’s by what people know has been done before, what things are traditional HSE way of doing things and it tends to be some reassembling of the traditional ways.’

Some staff reported that colleagues became attached to working with particular sources of evidence and were sometimes reluctant to use others.

‘Classic comfort zone. If people have utilised a particular evidence base for some time then the tendency is to refine that evidence base rather than to try and take a paradigm shift and go completely in the opposite direction.’

6.4 WHAT FACTORS INFLUENCE STAFF CHOICE OF DIFFERENT TYPES OF EVIDENCE?

Staff reported that two major factors influenced choice of different types of evidence. These were policy or programme area and personal characteristics. The programme or policy area in which staff worked partly determined the kinds of evidence available and
consequently used by interviewees. A number of staff drew attention to weaknesses in statistical data for their work. This drove them to use other sources. As one put it: 'In practice you have to rely on a diverse range of evidence'. This approach was supported by some senior members of staff who believed that staff were too reliant on statistical data and should make use of broader sources of evidence.

The second factor consisted of personal characteristics in terms of aptitudes, professional discipline and individual preferences. Interviewees stated a preference for different types and sources of evidence. They also felt that personal factors influenced the choices which their colleagues made in selecting evidence and the value that they placed upon different sources.

'Statisticians inevitably look for formal national statistics...A social scientist seems to be quite happy to take more qualitative evidence as well as stuff that meets strict parameters.'

A variety of personal factors were referred to including: inclination, personal experience, professional leanings, familiarity, value placed on the evidence source, use of trusted colleagues, how embedded individuals were in internal and external networks and habit. No single factor emerged from our analysis of the interviews as being more prevalent than others.

'It depends on the individual. People who have good networks within the organisation will often do rather a good job in terms of consulting colleagues. Other people are more individualistic and may not regard that as a very useful source of information, even in terms of determining what we might do to establish whether there's a need for further research or not.'

'It’s a combination of the regard with which you hold providers of any piece of information, irrespective of how it’s been gathered. You think this is a reliable, useful and worthwhile source and that will be driven by a whole raft of things about previous experience.'

6.5 WHAT DO HSE STAFF THINK OF THE EVIDENCE BASE?

Staff acknowledged that there was not necessarily a consensus within HSE of what constituted ‘good evidence’. A number pointed out that differences in educational backgrounds and work areas between colleagues accounted for these variations. One commented: ‘People from different disciplines have a very different take on what the evidence says. Or what evidence you should collect’. Nevertheless, there was a dominant perception that the evidence base had some significant faults and could be substantially improved. A number of staff spoke at length and with some vehemence about their perceptions of its failings and evidence being filed ‘on a shelf’ without being touched. A number of staff suggested that too much research is commissioned, leading to data overload.

'I think there is an issue as to whether people tend to commission research ‘by the yard’ which then produces huge amounts of research. My colleagues then tell me they can't tell me the outcome of it because they haven't had time to read it all.'

Two problems emerged in relation to quality of evidence: the persistence of evidence gaps, and a widespread concern about the value of statistics both for setting targets for programmes and to measure progress and outcomes. Evidence accessibility and usability are also relevant here. We discussed these in relation to low use of research reports in Section 6.2 above and summarise staff views on how accessibility could be improved in Section 6.7 below.
Evidence gaps were noted especially in health-based areas of policy work.

‘We’re still quite limited in what we’ve got available in a lot of ways. You can count dead bodies, you can’t necessarily count ill-health and a lot of our ill-health data is based on surveys that people respond to. So it’s their opinion. So it’s quite difficult with some of the things to know how good the evidence is that we’re working on anyway.’

The second problem cited in the quality of evidence centred on a widespread scepticism about the real value of statistics and how useful they were for informing policy design and providing information for evaluation purposes. Criticism was particularly evident amongst interviewees involved in newer programmes and interventions, especially where outcomes were affected by factors such as organisational culture or management decisions which were beyond the influence of HSE. A number pointed out the huge difficulty in isolating the impact of health and safety interventions when health problems had multiple causes, some of which were related to lifestyle, rather than work.

‘On the ill-health side it is difficult to know how much of an impact you’re having. You don’t know until ten years down the line and there might be other environmental factors that influence the ill health outcomes.’

‘We’re not in a single unit of cause and effect relationship, the system has got many levers in it.’

Measuring progress against targets through statistics was a particular concern. Staff felt that it is extremely difficult to establish cause and effect measures for the work of the HSE and its various units. The targets themselves were also widely criticised. This led interviewees to use statistics to measure progress when compelled to do so, but somewhat less commonly from preference. Interviewees identified a number of problems with the use of statistics for benchmarking progress. These included time lags, narrow focus, self-report methods of data collection, sample size and sectoral coverage.

‘I’m not saying that the targets aren’t important but there are issues concerning the appropriateness of those kind of metrics…what you really need in terms of targets are leading indicators not lagging indicators.’

‘The sanctity of stats…there’s always a risk when you put numbers on things that people think they’re right…taking the very uncertainties in numbers is quite hard.’

‘It sounds as though I’m slightly jaundiced or prejudiced about the stats, I’m not, I think you just have to recognise that when we go in the right direction its great, but when we don’t, it’s quite difficult to analyse what it is that we’ve done differently or wrong that might have a cause and effect relationship.’

A further criticism was that the statistics did not necessarily address policy questions to which staff sought answers. As one person put it:

‘The statistical information provided by HSE I find to be a) not very helpful and b) probably dubious… I don’t think they tell us anything about where we’re going.’

6.6 WHAT PROBLEMS AND BARRIERS DO HSE STAFF ENCOUNTER IN GENERATING AND USING EVIDENCE?

Staff identified a number of difficulties in generating and using evidence to inform policy and programme development. These included time pressures, political pressures,
knowledge management problems and making best use of analysts. It is notable that the first two factors have been identified as common across government (Campbell et al. 2007).

6.6.1 Time pressures

These appeared in three forms. Firstly, time pressures affected staff making use of evidence. Secondly, time pressures affected staff who were providers of evidence (see also Section 6.6.4 on the use of analysts). Thirdly, time pressures in annual budgeting sometimes meant that the amount of time available for evaluation was very short because budgets fluctuated and evaluation monies sometimes had to be spent within a financial year. The lead-in time and the overall time-scale of any programme or intervention also affected how much time staff had to make use of evidence. Time was a constraint in terms of developing or improving an evidence base. This was usually linked to immediate pressures to meet a policy need.

‘When people face time pressures, their initial reaction isn’t to trawl through previous reports necessarily, but to look ahead and decide how best to fill the gap.’

‘I guess at times it comes down to how much time you can afford to spend sharing joint knowledge and how much you are focused on getting the task in hand done.’

Lack of time to plan interventions meant that staff were sometimes operating with approaches which had not been compared to potential alternatives. This reinforces the point about limited option appraisal made in Section 6.3.

‘... at the time people came up with one methodology which was the one, but there may have been others if we had spent more time exploring we might have had a range of methodologies, but we went for one fairly early on in the process.’

Some staff felt that time pressures also affected the quality of evidence that was produced:

‘Research does take a long time to commission, push through, get the results out that are clear and don’t require further research to take them forward. We can do some quick and dirty stuff. Some of the more meaningful research projects do take a long time.’

A number of staff mentioned the value of field intelligence about ‘what works’, gathered from colleagues in FOD. However, they recognised that these colleagues had a limited capacity to record and circulate evidence to colleagues in policy groups. Some staff were aware that HSE had previously trialled systems for collecting feedback from field staff, but these were no longer used as the demands on a shrinking inspectorate were significant.

‘The field force are under a lot of pressure in terms of workload. Getting them to have the time to feed back is not easy.’

6.6.2 Political pressures and the policy formation process

Some of the time pressures perceived by staff arose from requirements to meet policy needs. While some noted the benefits of a policy process which sought to pay greater attention to evidence-based policy-making, a number found that policy pressures posed difficulties. These took three forms. These were problems with evidence quality and evidence availability for developing policy and fast-moving policy cycles which inhibited adequate evaluations of interventions.
In some cases, staff felt that they were forced to use evidence which was limited or incomplete:

‘Colleagues have no option but to produce policy because there might be a central government edict and our colleagues who are providing the evidence in terms of the analytical likelihood of a particular event say there isn’t enough data to be able to provide a robust answer.’

A number of others talked of political pressures leading to policy-based evidence rather than evidence-based policy. As mentioned above this is not specific to HSE and was found to be a common barrier to the use of evidence based policy (Campbell et al. 2007). This might lead to staff having to implement policies which were contrary to evidence, having to provide solutions ‘without corporate knowledge or impact information’ and of hurried decisions:

‘You’ll have little impact information but you’ll still need to come up with a solution because the politics demands it and so you’ll come up with something to do.’

‘The department wants to see progress so we will just jump quickly then to the next stage.’

‘The minister says I want this, we have to deliver. It doesn’t matter whether the evidence is there or not. I’ve seen consultative documents where the evidence base is non-existent. It has “this is what the minister wanted” written all over it.’

Staff felt that in addition to creating pressures at the initial stages of the policy and programme design process, policy demands, the need to move onto tackling new or changed priorities meant that there were sometimes insufficient opportunities to learn about the performance of previous projects.

‘You’re very often rushed on to the next thing before anyone allows you to do an evaluation of what did and didn’t work.’

6.6.3 Knowledge management

Knowledge management emerged as a problem in many interviews. This took two forms. Firstly, staff reported that it was hard to assess the extent of corporate knowledge. As one interviewee put it: ‘I think the biggest barrier is the fact that we just don’t know what we know’. The major reasons behind this were a perceived failure to capture tacit knowledge, poor transfer of knowledge between different parts of HSE and vulnerability to loss of corporate knowledge through staff turnover. Secondly, even when staff knew evidence existed, accessing it could be difficult.

Understanding what kind of corporate knowledge existed was difficult because staff perceived that HSE could do better at capturing tacit knowledge. Interviewees then reported that this deterred people from using corporate databases because they did not feel the information contained was comprehensive.

‘Tacit knowledge is not codified and vulnerable to loss. There is an awful lot, probably far too much discussion, meeting, checking, talking within the organisation which is probably good thing for drawing out some of that tacit knowledge, but at the same time it is very hard to point to whether it is ever captured or recorded.’

‘One of our cultural issues is that we’re not good at recording everything that we’ve done. Therefore people don’t believe that if they look on the database they’ll get a
Problems in accessing and appreciating knowledge from different parts of the organisation also emerged. These were attributed either to organisational structure or to failure to \textbf{transfer knowledge} developed in one field of expertise to others.

‘Inspectors have got huge amounts of knowledge and professional judgement. But the field force tends to be separate from the analysts and social scientists and they don't have the forum to meet and discuss these things. The main issue is the disjuncture between what goes on in the field and what goes in HQ...there is an enormous amount of anecdotal evidence gathered. We could be smarter in using that.’

‘I think there is a mentality within HSE that doesn’t appreciate that work that has been commissioned, particularly in the major hazards fields. Some of the human factor things, things about error, things about culture actually are applicable. Within HSE we don’t think like that. We think it is either major hazards or it isn’t. But once again it is that demarcation in HSE so there is a real lack of understanding about how these things can fit together.’

Perceptions here varied significantly, and some parts of HSE were felt to have notably stronger ties with each other than others.

\textbf{Staff turnover} was a problem, especially where individuals had rare knowledge. This may be a future concern to HSE given its imminent relocation.

‘Corporate memory is a challenge...You’ve got a few people who are very specialised in a particular area and when they go they take that knowledge with them.’

There were mixed views on ease of access to knowledge. Some people claimed they had no problem at all in using HSE’s internal databases. Others felt the database demanded too much precision in the search terms used for locating reports.

‘If you look on our website reports are just listed in numerical order... And if I can remember the title of a piece of research that I already know about, then I can search and find it. But very often I've found I couldn't remember the exact title, I mean I had a rough idea and couldn't find it all. Even if I knew it existed.’

A further problem for some was that desired evidence was held or owned by organisations other than HSE. Some interviewees alluded to data held outside the HSE by companies, industry groups and health care professionals to which they do not have access.

\textbf{6.6.4 Role and use of analysts}

The majority of staff who mentioned use of the Chief Scientific Advisors Group (CSAG) were highly appreciative of their work. They reported that their working relationships with CSAG were good and some felt that these had improved in recent years because CSAG staff were becoming more responsive to their needs. The work of CSAG in feeding bite-sized chunks or summaries of information in particular was appreciated. A number of staff perceived that recent revisions to the format of the annual statistics publication had made it much more ‘user-friendly’. Staff reported that analysts had developed the HSE’s understanding of ‘the potential richness of certain sources of evidence’ and ‘opened up a better understanding that’s informed programme thinking about what we need to do’, leading to the organisation becoming a ‘more intelligent customer’.
However staff identified three problems which they felt inhibited optimum use of analysts for supporting internal customers. One was the multiple demands placed on analysts, one was resource constraints in terms of their number and one was their structural position in the organisation.

Some individuals felt that analysts had the difficult task of fulfilling multiple demands and that internal customers would benefit from more support. This was exacerbated by the current commissioning process which gave individuals considerable freedom to commission research, potentially with little support from analyst colleagues.

‘We quite desperately have a need for analysts. They get diverted into tedious government tasks, noticeably impact analysis which takes up a huge amount of their time. We are not properly using our analysts as a challenge function...Analysts are better placed to meet people's research needs rather than people trying to meet their own research needs. I think we've gone down the wrong path of thinking everybody can deal with research.’

Some staff were aware of resource constraints on the availability of analyst support. The number of analysts has fallen in recent years and it was pointed out that this could have an impact on the quality of interventions designed and implemented.

‘I am sure it is absolutely common place you find that you find one piece of work that gets blown up into justifying a whole raft of activity and when you got back and assess it you realise it is incredibly thin and flimsy and should never have been used to justify things. But to get it right you need the people who have got the time to rank and assess the evidence and that's quite a demand on our support teams.'

The drop in the number of analysts was linked to their position in the organisational structure of HSE. A small number of interviewees recalled a period when groups or teams had a dedicated analyst allocated to them with benefits of closer working relationships and perceived easier access to them for policy groups. As the number of analysts has fallen in recent years, the latter arrangement was no longer viable. One interviewee recognised a dilemma between the two options HSE had pursued to date in organising the function:

‘I think there is this corporate tension between having all the analysts together, which I think is right for some of the things that they need to do, not least professional support etc but also having them to be seen as parts of teams that devise and deliver good regulatory outcomes.’

6.7 WHAT ARE HSE STAFF VIEWS ON HOW TO IMPROVE THE ACCESSIBILITY OF EVIDENCE?

The suggestions put forward by staff for making evidence accessible were (in majority to minority order of preference): workshops/seminars; written summaries; electronic media. Many also emphasised that proactive evidence supply was as important as format. Staff did not want to seek out information solely by themselves, but wanted to receive evidence targeted to their needs.

In terms of broad evidence preferences, just over half the staff interviewed stated that their preferred method of receiving evidence was in a face-to-face setting through regular workshops/seminars. Although some acknowledged that this might place ‘another burden’ on already over-stretched staff, they felt that face-to-face presentations were the best way of absorbing key messages and understanding their implications through debate with colleagues. In the longer-term such sessions were actually believed to reduce the amount of time needed to digest new evidence:
‘I find those very useful, I often pick up in a matter of an hour or so an awful lot of information. Again it is a matter of organising it and getting it to work but it does work well: with a couple of quick presentations and hand-outs, you can absorb an awful lot of information very quickly.’

‘I think that presentations are quite a good way of giving you in an hour or an hour and a half a flavour of what it was about and sometimes hearing people talk about it you can make links that you couldn’t make looking at a bit of paper, you’d certainly be hard pressed time wise to read, but actually having had the presentation you might do more.’

‘You discuss the finding and it’s much quicker to take the information in.’

As the quotations above suggest, workshops were also felt to ‘bring an issue to life’, to ‘increase engagement’, facilitate ‘iterative discussion’ and interrogation of the data presented. Staff also believed that workshops aided the transfer and application of findings from one area to another.

Just under half of those interviewed wanted evidence in written summaries. The dominant view from staff was that a shorter format should be used to deliver key messages than that typically commissioned in HSE. Most recognised the difficulty of digesting large numbers of long research reports due to a shortage of time, even if these were within their own area of work. Some relied on executive summaries to keep abreast of new evidence and referred to the need to ensure that key messages were contained within concise summaries of no longer than two pages in any research report. However, some staff stressed that detailed reports should still be produced, as they might be valuable if staff needed more information on a topic. Some recommended the ‘1, 3, 25’ rule consisting of a one page summary, a more detailed summary over three pages and a main report that was no longer than 25 pages, with detailed findings presented as technical appendices. The majority of staff simply expressed a desire for ‘something short and snappy’. Several felt that summaries of documents ‘in a PowerPoint form’ or in ‘short position papers’ would be useful for continuing the work of dissemination particularly where this subsequently took place with a number of different audiences. However, a small number stressed the importance of having access to detailed technical reports if they were subject matter experts or wished to learn more about an area. It may therefore be important to tailor research outputs to different kinds of audiences and cater for their different needs.

A small minority of interviewees were interested in the use of electronic media to improve accessibility of evidence, using either email or better web-based resources. A few requested regular emails targeted to topic and/or programme areas, with relevant links to full reports. They felt that such methods would be a useful way of raising awareness of intelligence and allowing personal archiving of relevant details. A similarly small group wanted a more active web-based resource as a storage device for evidence and a dissemination resource:

‘A web community and in that area we put all new documents relating to evidence and policy making and so it is building up a resource for those that attended the courses and for those who perhaps know about them from colleagues. They can actually go in and they can get the presentations, they can get all the recent guidance on evidence based policy making from the Cabinet Office and from others.’

A significant number relied on web searches for up-dating their own knowledge and were frustrated by the need, at times, to ‘Google’ for HSE documents in order to find internal information. A better HSE web system was therefore seen as a potential solution to duplication and time wastage. One interviewee felt that such a system should look to other sites to improve efficiency and recommended borrowing an ‘Ask Jeeves approach’.
Interviewees felt that **proactive evidence supply** could be improved, incorporating a quality assurance process. A number requested that HSE social scientists should produce more summaries of key findings from reports and target these to staff in what one person termed a move from a ‘pull-flow’ to a ‘push-flow’ system for disseminating evidence. Many wanted the findings from new evidence to be explicitly positioned within a larger body of evidence, taking account of earlier research where relevant. They felt this would provide a better indication of whether the latest results were confirming or contradicting existing evidence or adding entirely new knowledge to a given topic. Staff also felt that social science colleagues could provide a sense of the limitations or weaknesses inherent in the evidence. A small number welcomed work that had been done to label research quality using a ‘happy to sad’ face system. Although there was a widespread recognition that different HSE units with different needs apply different criteria to judge research quality, there was still a broad consensus that evidence could be usefully rated using transparent credibility/quality standards to indicate, as one interviewee put it, ‘pedigree’. This also links to the role for analysts discussed in Section 6.6.4. Analysts have a role to play in providing bite size chunks of information and working more closely with policy customers to explain implications of evidence face to face.

### 6.8 WHAT STRATEGIES DO HSE STAFF SUGGEST FOR IMPROVING THE QUALITY OF THE EVIDENCE BASE?

A major theme which emerged from the interviews was perceived weaknesses in the **commissioning process**. Staff did not always distinguish between the commissioning of interventions and policies or the commissioning of evidence but there are important links between the two. As Section 6.4 showed, individual preferences played an important role in determining how staff chose and used evidence, and this was linked to their beliefs about the effectiveness of different interventions.

There was a perception that colleagues sometimes did not take a deliberate and considered approach to choice of interventions and that this was due to a lack of clarity in objectives, insufficient consultation with internal experts including analysts, with colleagues in other departments and lack of research into the most appropriate intervention option to pursue:

‘We’re not very good at being really clear about what we’re trying to achieve. Often it’s a bit woolly.’

‘Pieces of work are going on in one place that either completely repeat what has been done elsewhere which is quite common, or they actually run completely counter to all the evidence that we have got, but they just go ahead on their own.’

‘You tend to find research is often commissioned by individuals. There is insufficient discussion as to what the real issues are which need to be answered, insufficient discussion with the people who are going to do the research as to how practicable the research is. People are insufficiently taking advice, people who are going to do the research can often advise you as to what would be a more sensible form of research to do. We tend to miss out that stage. People do too much on individual responsibility and are too ready to assume themselves to be experts in areas where they are not expert.’

‘Sometimes parts of the organisation could commission research without really taking account of broader implications and without engaging appropriate people in other parts of the organisation.’
'I think HSE is poor at doing literature reviews before determining what further work to do.'

This then resulted in weaknesses in the evidence base:

'I think very often the research doesn't answer the policy question. But that's not down to the researchers, it's often down to the policy people not being sufficiently intelligent as customers in specifying the questions that they want answered.'

'We get what we ask for and sometimes we don't know what we're asking.'

A number of staff suggested that a more robust commissioning process for evidence and interventions might help solve these perceived problems. They stressed that it should be part of project planning and require internal clearance before research projects or interventions could go ahead.

'I think the process has got to start with people who are responsible for some block of work and saying do we really need this research, would it really help us or what would really help us and the kind of commissioning, signing of process at that level before it goes to the other people internally whoever they may be.'

'If you plan your next [project], point two on our system is refer to good practice produced, then it will have to be done, because it’s embedded in the process and even if they don’t want to do it, they’ll do it.'
7 CONCLUSIONS

This report has considered the available evidence of ‘what works’ in delivering improved health and safety outcomes. This involved a stock take of the evidence base which has accumulated since a previous similar review (Hillage et al. 2001) and consultation with a number of expert staff in HSE.

7.1 SUMMARY OF KEY FINDINGS AND MESSAGES ABOUT ‘WHAT WORKS’

From the evidence a number of key messages emerge about ‘what works’, in terms of interventions which are effective at some level.

- Evidence suggests that inspection and awareness-raising face-to-face events play an important and valued role in large scale multi-method campaign activities. Campaigns may be useful to generate dialogue with HSE inspectors who are acting in an advisory capacity and may prompt changes in behaviour among employers who are already committed to or interested in improving health and safety. Print-based messages about health and safety have some success alone in raising awareness but appear less effective than other methods in generating behavioural change. This finding is consistent with that of the previous review (Hillage et al. 2001).

- There is relatively strong evidence for the impact of advisory and educative contact between health and safety experts and businesses in improving health and safety practice. This might include the educative functions of inspection or information and support provided by third parties.

- There is relatively robust evidence on improved health and safety outcomes from interventions involving Occupational Health Service (OHS) provision and interventions to prevent and cure Musculoskeletal Disorders (MSDs). This may be because the small number of studies undertaken in this area are using relatively robust methodologies. Measuring impact of interventions on current health status or conditions may also be easier than measuring the impact of interventions which are intended to lower future risks. It may be worth focussing evaluation on interventions that are likely to have a quantifiable impact, so the importance of ex-ante appraisal of policy and programme choices is important to identify where evaluation resources should be targeted.

- The evidence shows both a demand for and some evidence of impact from tailoring interventions to meet the specific needs of organisations and individuals. For example, SMEs seek information that is targeted to their particular concerns and evidence on early interventions for MSDs shows that these are more effective when they are tailored to individuals’ pre-existing attitudes.

- There is reasonably good evidence that regulation provokes improved health and safety practice among some employers and employers continue to report that regulation is an important stimulus of change. However, there are continuing problems in achieving compliance with health and safety regulation due to employer confusion in interpreting it and difficulties in applying risk assessment processes. This appears to be a persistent problem for SMEs. It is also easier to monitor compliance with regulation that covers visible risks (e.g. working at height), rather than invisible sources of risk (e.g. stress and mental health problems).

- There is mixed evidence on interventions such as tools and Safety and Health Awareness Days (SHADs). Among those employers who use them, these interventions are often
reported as helpful in raising awareness, with some evidence of behavioural change. However, engagement with these interventions demands a pre-existing commitment to or interest in improving knowledge or behaviour. These interventions are likely to be less effective in improving health and safety among disengaged or hard to reach groups.

- There is some evidence of the impact of worker involvement techniques such as worker health and safety representatives in disseminating health and safety messages and generating behavioural change.

- Targeted initiatives can be helpful in enabling setting objectives and encouraging progress towards sectoral health and safety improvements by building commitment among organisations.

7.2 HOW DOES THE STOCK OF EVIDENCE IN THIS REVIEW COMPARE WITH THAT INCLUDED IN THE 2001 REVIEW?

We might compare the current evidence base with that considered in Hillage et al. (2001) according to: the relative quantity of evidence; the range and scope of evidence in terms of topics and interventions covered; and relative evidence quality in terms of methodology and presentation. However, we must stress that this is not an exact comparison and guard against too much weight being placed on it. This is because the scope of the current review is much broader than the scope of the 2001 review.

In terms of the relative quantity of evidence, the evidence base we began to sift was considerably larger than the one identified in the 2001 review (1436 pieces compared to 950). Our criteria were broader in that we were not solely restricted to considering the impact of HSE interventions and therefore we did not exclude evidence solely on grounds of methodology. The number of reports we reviewed at each stage of the detailed review processes was greater and the volume of literature included in the final evidence base was 40 per cent larger than that of the previous review (70 pieces compared to 41). However, our current review only spans seven years of the development of the evidence base so these figures may be indicative of an increase in the volume of health and safety research being undertaken. However, a growing quantity of evidence does not necessarily improve research quality, which we discuss below.

In terms of the scope and focus of the evidence, we found more studies of interventions involving campaigning than the 2001 review (38 pieces compared to 14). The other major difference was a growth in the literature concerned with voluntary standards, tools and approaches. This is consistent with HSE’s increasing emphasis on information and educational activity and achieving voluntary improvement of health and safety practice. This is reflected in emerging evidence on newer topics and interventions we noted in Chapter 5. In particular, a number of new interventions, often involving Occupational Health Service provision, relate to conditions connected with work-related health rather than work-related safety, such as MSDs and stress. There is a growing interest in the role of partners and intermediaries as transmitters of HSE messages including those representing organisations and individual employees, which was identified as an area worthy of focus in the previous review (Hillage et al., 2001). HSE may wish to undertake rigorous option appraisal to ensure that it prioritises commissioning of interventions which will yield optimal impacts.

Our assessment of the quality of evidence is that it is mixed. Evidence in some newer areas of intervention such as Occupational Health Service provision and methods of tackling MSDs is relatively well designed and robust. However, significant parts of the evidence base continue to suffer from persistent weaknesses with little, if any, substantive improvement since the 2001 review. A persistent methodological difficulty is that much of
the evidence base relies on either a) self-reported intentions to change behaviour and/or b) self-reported perceptions of intervention impact and relies on cross-sectional rather than before/after or longitudinal data. This may lead to over claiming or under claiming of the impact of an intervention. It is recognised that obtaining hard impact data can be difficult due to time lags in impact, the role of other contextual influences which can affect health-related outcomes and the expense of research methods such as those which involve workplace visits. However, collecting data on intermediate outcomes is important in building a sound evidence base and deserves attention. We note that HSE has access to data from its own surveys such as the Fit 3 surveys, which may contribute to plugging this gap and are basing our assessment from data used in published studies. **Collecting independent evidence of intervention impact through following up self-reported data is critical to demonstrating the impact of interventions.** This is particularly important for assessing the causal impact chain between interventions, employer behaviour and ultimate outcomes. It is often not clear whether actions taken by employers are sufficient to lead to improved health and safety outcomes (i.e injuries and ill health). There is a presumption that improvements in processes such as risk assessment and practices are beneficial but it is possible that they may have no impact on outcomes.

Methodology in terms of research design for the framing and scoping of studies was weak in some cases. **Some of the evidence base reviewed adds relatively little to the existing stock of knowledge.** This can be entirely justifiable if a well-designed piece of evaluative research is intentionally repeated and produces the same results as an earlier study. However, a number of studies reviewed appear not to have been informed by or embedded in existing literature on the topic. These studies might usefully guide the kinds of research questions being asked so that new knowledge and understanding about the effectiveness of interventions can emerge, enabling more useful conclusions or recommendations to be drawn. As a result, the conclusions of some pieces of research could be regarded as somewhat general or superficial in nature. For example, the finding that ‘leadership’ is important to the management of health and safety does not tell us what good or effective leadership looks like, whether there is only one form of it, or whether different forms might be more or less effective in different organisational contexts.

A further example here is some of the evaluations of HSE campaigns. While some of the surveys of target groups are often conducted robustly and follow high standards in survey administration, there is little evidence that either the campaigns themselves or the evidence which evaluates them builds cumulatively on knowledge of what worked well or less well in previous campaigns. Equally conclusions about the use of partnerships and industry networks may require nuancing. For example, use of networks in local business sectors is cited as a potential way of influencing the health and safety practices of SMEs. However, this may be ineffective for SMEs operating in particular sectors with a culture of competition and reluctance to network.

The connections between conclusions and recommendations lacked a transparent and logical link in some studies. This had two dimensions. Firstly, the rationale for the recommended solution to a perceived problem was not always clear. Secondly, when recommendations were made, it was not always clear whether alternative solutions had been considered, and, if they had been rejected, what the grounds were for doing so.

One significant and fundamental weakness in much of the evidence base is a **lack of information on the relative effectiveness of different interventions**, especially taking into account their relative costs to HSE. This was also absent from evidence reviewed in Hillage et al. (2001). Without this information, it is difficult for HSE to formulate a sound strategy for targeting its resources most effectively to maximise the likelihood of meeting its PSA
targets. HSE staff suggested that working more innovatively with employers to gather data on intervention impact might help address this problem.

A minority of the research considered also had some failings in transparency from poor presentation. Reliability and quality assurance indicators for research were not always evident. In some cases the methods of recruitment for research participants at organisational and individual level was not stated, and in some cases, the numbers of participants from which data was collected was not given. Summary descriptions of the data upon which research findings were based were sometimes not provided in executive summaries, and in a few cases, executive summaries did not contain clear messages about findings and conclusions.

7.3 WHAT ARE THE OUTSTANDING KNOWLEDGE GAPS IDENTIFIED IN THIS REVIEW?

We are able to identify the following specific knowledge gaps based on a combination of collating those identified by research literature, by HSE staff and by our analysis of both data sources. HSE may wish to consider undertaking further research in each of these areas.

The largest overall knowledge gap identified both by HSE staff and in the literature is which levers are most effective in obtaining behavioural change at an individual and corporate level. This gap has a number of aspects including:

- Identifying which groups are most influential on changing worker behaviour including peers, managers, and worker representatives and whether different sources influence behaviours relating to different aspects of health and safety practice. This needs to be supported by research into the influences that can best reduce risk-taking behaviours. Further work which segments different groups and identifies the most appropriate messages with which to target them is also needed.

- The importance of a safety culture emerged in a number of studies, particularly those related to the construction sector. However, this evidence added little to advance current understanding of what it means to have a safety culture and how it can be best cultivated.

- The literature identified that further work could be done to understand how to develop the potential power of supply chains to influence improved health and safety practice. HSE is already doing some work in this area, but no published evaluation data was available at the time the project was conducted.

- Economic and financial incentives such as insurance requirements, awards schemes or incentives may be useful in leveraging behavioural change, but further research is required to model how these mechanisms might work.

- The potential effects of sanctions including adverse publicity and restorative justice on influencing behavioural change merit further investigation.

- The role of industry partnerships and intermediaries in engaging organisations with health and safety management appears promising but understanding in the area is not well developed. In particular, we need to know more about which bodies might serve best in the role of intermediaries in disseminating HSE messages and how they might function in an advisory capacity. This is particularly important when engaging SMEs. The wider literature on SMEs stresses that they are not a homogeneous lump, and it would be helpful to understand what kinds of intermediaries are most effective in engaging with SMEs in different sectors. There also appears to be little information in the literature reviewed on what the features of an effective partnership are and how this might vary by
intervention or by sector. HSE has also worked to engage with employers on a traditional ‘health and safety’ agenda, but recent work on links between ‘wellbeing’ in the workplace and individual and organisational outcomes such as productivity and employee engagement may provide a broader framework in which to attract employer attention. It is also worth considering what the best methods are of working with employers innovatively and gaining data to explore the full impact of interventions.

**Intervention combinations** were reported by both the literature and HSE staff as an area of success with respect to the use of inspection to support messages from media campaigns. However, little evidence was available about the impact of combinations of other interventions. For example, is a combination of HSE guidance and inspection effective? Are intermediary partnerships using HSE tools effective? HSE may wish to consider whether there is scope for piloting or trialling more and different combinations of interventions.

Some sectors characterised by employment growth, the presence of ‘vulnerable’ workers and high hazard levels appear to have received less attention in the evidence base than we might expect. For example, there appears to be little evidence on ‘what works’ in some of the LA enforced sectors such as hospitality and catering. This sector both employs large numbers of migrant or immigrant workers and is composed of a relatively high proportion of small businesses relative to the UK economy. More broadly, there was little evidence on ‘what works’ in relation to wider developments in the labour market such as the growth of older workers and other demographic changes. In general, there remains a need to identify ‘what works’ for different sectors, different hazards and for organisations of different types/sizes.

A new evidence base is emerging on **interventions to prevent, control and manage risks of stress**. Longitudinal studies able to measure and account for other variables that affect both management practice and health-related absence would be beneficial to build the evidence base in this field.

Elimination of health and safety risks through **work process design** which substitutes or removes hazardous activity was mentioned as a potential area for investigation in a number of studies. However, there appears to be a need to identify how to undertake this in practice. This may relate to supply chain processes noted above.

**Targeting of interventions** by sector and size of organisation and predisposed attitudes of individuals emerged as a principle which was perceived to be beneficial, but there was little robust evidence of its effectiveness. Comparing the effects of targeted with non-targeted interventions may be helpful here.

Assessment of **intervention effectiveness** in terms of the value for money derived from different types of intervention appeared to be absent from most of the studies reviewed as this was not included in their remit. However, this is an important consideration for HSE. We are aware that HSE has commissioned a number of cost-benefit analyses from the perspective of organisations e.g costs and benefits of compliance with regulation to generate information on the ‘business case’ arguments for good health and safety management. It may be worth the HSE undertaking its own cost-benefit analysis of the relative impact of its different interventions. For example, given the limited resources available for inspection, where should it be targeted to yield greatest value for money for HSE?

### 7.4 IMPLICATIONS OF THIS REPORT: WHAT SHOULD THE HSE DO TO IMPROVE THE EVIDENCE BASE AND HSE INTERVENTIONS?

There are two main areas of activity that the HSE might wish to pursue to improve the evidence base: the first focuses on the contribution the HSE makes to developing and
generating evidence and the second focuses on how HSE uses evidence once it is produced. There is some degree of overlap between the two processes.

7.4.1 Improving the development of evidence and interventions

The first major opportunity available to the HSE as a key contributor to the evidence base is to exert influence to improve the quality of commissioned research and interventions. This could be done through establishing an improved commissioning process for both interventions and research, which was directly suggested by some HSE staff (see Chapter 6). HSE staff reported some doubt about the existence of a robust research commissioning process, although one is planned for use in HSL and we are aware that the HSE is currently implementing a new Science Planning Process. We suggest that the HSE may wish to consider two stages to a new system:

- A requirement for careful consideration of the evidence base in its broadest sense before interventions and evaluations are commissioned, involving consultation with colleagues, analysts, industry experts and wider literature. This might help to inform and influence the design and implementation of interventions and evaluations so that they address policy questions directly and are more likely to add new knowledge and avoid duplication of previous findings.

  At this stage, HSE could also strengthen the rigour of its comparisons of different policy options prior to implementation i.e. ex-ante policy appraisal. Staff pointed this out as an area of weakness, where HSE is limited by perceived conventions and reluctance to run the risk of perceptions that it is spending public money unwisely on ‘experimental’ projects. However, it is equally arguable that it is inappropriate to continue to commission and evaluate interventions where there is consistent evidence that they have little or no impact. Options for different types of intervention addressing the same issue could be assessed for likely effectiveness, and the two or three judged most likely to be effective could be trialled or piloted on a small scale. We acknowledge that the HSE may still need to engage in activities for which there is limited evidence of impact but may be strategically important in maintaining or raising its profile or meeting stakeholder preferences. However, greater selectivity in choice of interventions pursued may yield better value for money. HSE should at least have a clear understanding of its rationale for undertaking different interventions.

  HSE faces some difficult decisions here, since the most effective interventions identified in the literature appear to be resource-intensive ones such as inspection, although some ‘invisible’ risks are less susceptible to being tackled through these measures. HSE needs to consider carefully its use of proactive resources and how they best serve its policy priorities.

- A requirement that any research commissioned situates and grounds both its research questions and its findings in the broader literature. This would improve the likelihood that the research questions generate findings which add to the evidence base. A quality assurance system involving some form of peer review might be useful to indicate research quality to users.

This approach is likely to require policy and operational groups to have a closer relationship with analysts with the ultimate aim of them achieving the status of ‘trusted advisors’. HSE staff sought pro-active support from analysts to help them absorb information from lengthy research reports. They also wanted focussed evidence delivery, in small nuggets or bite-sized chunks, customised to the particular policy questions they wanted to answer. This suggests that analysts may need to engage in more face-to-face discussion to support and assist colleagues through supply and advice on use of evidence to inform policy
and programme development in the role of a ‘trusted advisor’. More use could also be made of analysts to act as ‘critical friends’ to scrutinise the design and the commissioning of research that is robust and fit for purpose by delivering answers to the policy questions posed.

In relation to research methods adopted, we recommend that HSE continues to make greater use of independent checks on behavioural change rather than relying solely on self-reported evidence, as this would substantially improve the evidence base through ‘person-triangulation’ (i.e. checking change by assessing evidence provided from two different sources). The HSE should continue to build in evaluation at the point of designing interventions to enable longitudinal data collection to take place for measuring the sustainability of intervention impact.

The HSE may wish to be more selective about which interventions it evaluates and consider adopting minimum evaluation standards which might vary by size and scale of intervention. It could consider undertaking fewer, more focussed evaluations and more small scale studies, secondary reviews or meta-analyses of ‘what works’. The Cochrane Review approach used in the health sector or a ‘realistic evaluation’ approach (Pawson and Tilley, 1997) may be useful models to consider here.

7.4.2 Improving the use of evidence

It may be helpful for the HSE to encourage discussion between colleagues from different methodological backgrounds to develop a common view or set of standards for what constitutes good evidence and why, particularly for different kinds of evidence (e.g. secondary statistical data, survey data, qualitative interviews of different kinds etc.). This might enable greater appreciation of different kinds of evidence and help staff to develop greater confidence in its use. Upskilling of staff would help to create ‘intelligent customers’ in line with cross-Government objectives.

Access to the evidence base could be improved in a number of ways. Whichever methods are adopted, an important principle would be to ensure that multiple channels for dissemination and access to evidence are used, since Chapter 6 identified the importance of individual preferences in accessing evidence. One approach would enable more flexible searching of the HSE internal databases, for example using keywords and organising reports according to sector, hazard and intervention. The provision of written summaries or short digests of key evidence findings through emails targeted by relevance to policy, programme or sectoral groups may also be helpful. The provision of a web-based resource containing summaries advising on good practice for using evidence in policy and programme design and guidance and support materials on evaluation may also be worth exploring. We also noted in Section 6.7 the need for more proactive face-to-face dissemination as well as seminars and workshops to feed bite size chunks of information relevant to policy questions and to explain implications for programmes to policy customers.

Presentation of commissioned research findings could be improved by requiring a short one page summary, an extended three page summary and a text-based main report, with detailed findings presented as technical appendices. A standardised format for executive summaries to reports could be introduced to ensure recommendations, links to key methodology data, major findings and conclusions/recommendations are always reported in an accessible format.

The HSE may also wish to review how it shares knowledge between colleagues in different parts of the organisation and develop appropriate mechanisms for capturing tacit knowledge. Interviewees showed considerable interest in sharing evidence through workshops and seminars. This may be particularly important because of the importance staff attached to
internal networks as sources of evidence and the HSE’s impending relocation may create a need for colleagues to form new networks. Greater emphasis on awareness training about available evidence resources and why evidence use and generation is important may be worthwhile for new staff or existing staff who move roles or policy areas. Limited use of evidence appears to be partly a cultural issue for HSE to tackle, as improving accessibility may be insufficient to change organisational conventions. This may be best done through face to face contact between policy staff and analysts, as analysts could challenge existing attitudes about the role of evidence in policy-making and engage in persuasive discussion with staff to stimulate behavioural change.
APPENDIX 1: DETAILED METHODOLOGY

In this section we provide further details of the methodological stages. These were:

- face-to-face interviews with HSE staff and board
- a systematic search phase using HSE website and electronic search engines
- a multi-step selection phase to identify relevant studies
- a review of selected studies using common questions.

SIFTING AND SELECTION PROCESS

| Search phase. |
| Cleaning and compilation of citation list for initial sift. |
| Initial sifting of articles/reports based on title/abstract against key questions. |
| Overview of potential evidence base and second sift against additional criteria. |
| Review of reports and articles against proforma. |
| Secondary reviews of selected reports if required. |
| Selection of final evidence base. |

ANALYSIS OF INTERVIEW DATA

A note about Atlas.ti

Coding documents consists of dragging and dropping codes onto selected pieces of text in the interview transcripts. Codes can be overlapping, and can apply to any part of a sentence or paragraph, or even several paragraphs. All quotes which relate to a particular code can then be reviewed by the author when writing the relevant section.

Analysts can also add memos as they go to capture emerging themes or issues. The process is similar to what one might do with a paper and pen, reading through transcripts, highlighting text and making notes. Using codes within Atlas.ti, however, had the advantage (over manual methods) of being able to easily retrieve the assigned text (quotes) in order to reference or illustrate the point whilst writing.

Codes

An initial list was produced by the team of researchers. This was then piloted but found to be too detailed to be meaningful and so codes were merged to create a simpler frame of 11 codes shown below.

- Code 1: Job role:
  Description of job and sectors worked in.
■ Code 2: Objectives:

Objectives in terms of job description: What are the goals and actions by which these are achieved?

■ Code 3: Teams/units worked with:

Description of whom and which teams within are worked with at the HSE and what the focus of these units are.

■ Code 4: Key example of an intervention or policy:

The example used to demonstrate an HSE intervention or policy, as personally worked on or experienced. Includes relevant key features of the intervention/policy.

■ Code 5: Outcomes or impact of example intervention or policy:

The impact or outcomes of the cited intervention or policy and relative strengths/weaknesses of these outcomes and the measures used to record them.

To what extent does evidence inform this judgement and what forms does evidence take in evaluating interventions?

■ Code 6: General sources of evidence:

□ weight given to various sources of evidence
□ reasons for using types of evidence
□ tacit/embedded knowledge, informal sources of evidence
□ accessibility/credibility of evidence.

■ Code 7: Big impact factors:

Identified factors with the biggest impact on improving health and safety at work:

□ 1. Particular features that make an intervention more or less successful
□ 2. Evaluation of intervention mixes (combinations approach)
□ 3. How known whether intervention successful.

■ Code 8: Barriers to using evidence:

What would prevent the proper use of evidence in designing a programme or in using intervention evidence effectively?

□ finding research
□ knowing what existing information is available
□ corporate knowledge management issues
□ time pressures
□ time and mismatch with policy timetable
□ fear of unwelcome results
lack of planning/knowing what is needed.

Code 9: Suggestions for improvement:

What can the HSE do as an organisation to enable better use of evidence in policies/interventions?

Code 10: HSE processes/dynamics:

Identified features that are believed to have an effect on research practice, eg:

- political issues within policy making cycle
- roles/conflict/analysts/policy makers.

Code 11: Good practice guide:

What is considered good practice and how can this be used in the development of a good practice guide?

Families

Each interview was assigned to one of the categories in each of these four variables.

- sector specialist/non-sector specialist
- ex-inspector/not an ex-inspector
- based in London/based in Bootle
- board member/analyst/operational.
APPENDIX 2: SEARCH TERMS/DATABASES USED

DATABASES

The following databases were interrogated to identify potential articles.

- Zetoc (Contains the British Library’s Electronic Table of Contents database of over 15 million article titles derived from the 20,000 most important research journals in the world).
- ABI/Inform (economics, business and management).
- Assia including Econlit (Applied Social Sciences Index and Abstracts which contains references from 650 key social science journals).
- Ingenta (online articles from 4,500 journals in all fields and abstracts from 20,000 journals).
- Web of Science (contains journal articles and comprises the Arts and Humanities Citation Index, the Sciences Citation Index, the Social Sciences Citation Index and the Index to Science and Technological Proceedings).
- OCLC Firstsearch contains a collection of indexes to books and articles in all subject areas, subgroups searched were ‘ArticleFirst’, ‘ECO’ and ‘Medline’.
- IBSS (International Bibliography of Social Science) which contains articles and reviews from journals and chapters from some books in economics, sociology, politics and anthropology.
- Westlaw (index to UK case law and legal journals, plus the text of legislation).

SEARCH TERMS

Two approaches to searching the databases were used, the first based on HSE activity and the second based on health and safety topics. The first was developed in consultation with the HSE project manager and the second was based on the topics used on the HSE website. Both approaches were overlaid with the key search criterion of whether the research related directly to HSE activity.

Initially, both search approaches were piloted, that is ‘HSE’ plus ‘activity’ and then ‘HSE’ plus ‘topic’. Results were compared to see whether the first method excluded any material that would be useful and which is found by the second. After reviewing the results of the first two databases the researchers decided to search under both activity and topic as neither approach produced citation lists which were fully inclusive of the other. The search strategy for the smaller databases or those with no facility to search using Boolean operators was simpler. In these cases, the researchers just searched for topic/activity and/or HSE or ‘Health and Safety Executive’.

Activity search terms

- ‘Health and Safety and Executive’ or HSE

AND/OR any of the following:

**Topic search terms**

- ‘Health and Safety and Executive’ or HSE

AND/OR any of the following:

- rehabilitation, occupational health, stress, mental health, asbestos, asthma, business benefits, chronic fatigue syndrome, compressed air, confined spaces, COMAH, COPD, corporate manslaughter, corporate responsibility, carriage of dangerous goods, CHIP, COSHH, disease reduction, drugs and alcohol, back pain, electrical safety, equipment at work, falls from height, fire and explosion, ergonomics, gas, GSE (government setting an example), human factors, infections at work, latex allergies, legionnaire’s disease, involving workers, land use planning, latex allergies, metalworking fluids, moving goods, musculoskeletal disorders, new and expectant mothers, noise, NONS, offices, pipelines, radiation, REACH, risk education, risk management, workplace transport, sickness absence, skin at work, slips and trips, societal risk, stress, temperature, workplace violence, vibration, welding, WHC, young people.

**Other parameters**

The following parameters were also observed where the database enabled complex searching:

- ‘Health and Safety Executive’ was capsuled where search engine/database allows. The acronym HSE had a large number of meanings, many articles not related to the HSE; these were excluded at the initial cleaning stage.

- Date parameters were restricted to post 2001 where possible. Again, where not possible to exclude dated articles through search parameters, these were excluded at the initial cleaning stage.

- Scholarly journals were selected as the main source where possible. It was found that even restricting the search to scholarly journals, however, allowed many unauthored ‘news’ pieces to filter through that did not report research. Anonymous articles were excluded at the cleaning stage and further non-research articles were excluded during the search phase.

- English only articles were selected where such an option was available.
Table A3.1: Potential articles identified using formal search of academic databases

<table>
<thead>
<tr>
<th>Database</th>
<th>No of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zetoc</td>
<td>298</td>
</tr>
<tr>
<td>ABI/Inform</td>
<td>127</td>
</tr>
<tr>
<td>Assia</td>
<td>11</td>
</tr>
<tr>
<td>Ingenta</td>
<td>132</td>
</tr>
<tr>
<td>Web of Science</td>
<td>328</td>
</tr>
<tr>
<td>OCLC Firstsearch</td>
<td>75</td>
</tr>
<tr>
<td>IBSS</td>
<td>21</td>
</tr>
<tr>
<td>Westlaw</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>*<em>1,046</em> (591)**</td>
</tr>
</tbody>
</table>

*Total of 1,046 includes duplicates which may have been identified across several databases. 591 is net of duplicates and anonymous articles.
APPENDIX 3: SIFT PROFORMA

The following criteria were used by the researchers in conducting a first sift of the reports and articles identified during the search phase.

CONTRACT RESEARCH REPORTS

1. Is the research published since 2002?

Anything published prior to 2002 should have been covered in last study. All reports should be from 2002 (approx 600 items).

2. Is it an evaluation, assessment or change measure of some type of intervention? An intervention may include campaigns, services (pilot or established), tools, models, guidance or legislation.

Exclude incidence reports, studies on causes of occupational illness, descriptive studies looking at the process of exposure to harm, assessment of research methods.

3. Is the intervention related to work-related health and safety within the ambit of HSE?

ACADEMIC ARTICLES

1. Is the research published since 2002?

2. Is it reporting on research? Exclude news items.

3. Is it an evaluation, assessment or change measure of some type of intervention? An intervention may include campaigns, services (pilot or established), tools, models, guidance or legislation.

4. Is the intervention related to work-related health and safety within the ambit of HSE?
APPENDIX 4: REVIEWING PROFORMA

ARTICLE/REPORT REFERENCE NUMBER:

Study title:
Authors:
Year of publication:
1st reviewer: Date of 1st review:
2nd reviewer: Date of 2nd review:

WHAT IS IT ABOUT?

1. Please indicate area of activity covered (there may be more than one area):
   a. information and guidance (eg messaging and communication)
   b. licensing and regulation
   c. safety reporting
   d. inspection
   e. investigation
   f. enforcement
   g. standards and recommended approaches (eg management standards)
   h. other, please specify

2. At what level is it trying to address risk? (there may be more than one level):
   i. is it to do with raising awareness of the risk generally?
   j. is it to do with assessing the risk?
   k. is it to do with preventing the risk (eg reducing the likelihood of an accident happening, reducing exposure to a toxin)?
   l. is it to do with controlling the impact of the remaining risk (eg protective clothing, minimising the consequence of a major hazard?)
   m. other, please specify
3. Is it sector specific?
   a. General
   b. Specific sector, please specify sector(s)

Agriculture □
Hunting and forestry □
Fishing, Mining and quarrying □
Manufacturing □
Electricity, gas and water supply □
Construction □
Wholesale and retail trade and repair □
Hotels and restaurants □
Transport, storage and communication □
Financial intermediation □
Real estate, renting □
Public admin and defence □
Education □
Health and social work □
Other community, social and personal services □

MINIMUM CRITERIA

To check whether the study should have got to the review stage, if any of the minimum criteria are not met (ie answer is NO to any of questions 1-4) then the study SHOULD NOT be reviewed as the inclusion criteria have not been met.

Relevance

1. Does the research examine health and safety issues within the area of the HSC/E’s concerns? (Health and safety in workplaces, including risks to public from other people’s workplaces)
   Yes □      No □      Not clear □      Can’t tell □
   If Yes, please provide details:

2. Does the research assess interventions and draw conclusions? (i.e. does the work go beyond descriptions and incidence patterns?) Literature reviews, meta-analyses, etc. which do not individually assess interventions should be reviewed using alternative proforma.
   Yes □      No □      Not clear □      Can’t tell □
   If Yes, please provide details:

Evidence base

3. Is a description given of the evidence on which the research is based? (eg direct measurements, survey data, interview and focus group findings, case-studies, diaries,
accident reports, document reviews, press citations etc.). Opinion pieces should be excluded.

Yes ☐ No ☐ Not clear ☐ Can’t tell ☐

If Yes, please provide details:

4. Does the research indicate where the sample came from (eg whole population, randomised, systematic, snowballing, other non-random and how was the sample achieved? (NB. Size and methods used are not in themselves grounds for exclusion, but they must be reasonably apparent for the research to gain inclusion in the review).

Yes ☐ No ☐ Not clear ☐ Can’t tell ☐

If yes, please provide details:

Inclusion in review

The study must pass ALL of the Evaluation Criteria (ie all of questions 1-4 have been answered ‘Yes’) then complete the Research Findings Form.

5. Is study to be included in the in-depth review?

Yes ☐ No ☐ Not clear ☐ Can’t tell ☐

If answer is no, or not clear, please supply any additional information that will help to explain why the study has been rejected:

REVIEW FINDINGS

Study aims and objectives

6. Please provide an overview of the study aims and objectives

7. Were these met?

Yes ☐ Partly ☐ No ☐ Not clear ☐ Can’t tell ☐

If ‘partly’ or ‘no’, please provide brief details of what the study did achieve:

Methods

8. What data is the research based on? In answering consider a) method(s) of data collection (eg secondary analysis of statistics, experiment, questionnaire, interviews etc.); b) sample size or numbers involved; c) response rates/numbers of achieved interviews; d) the time period and/or waves of data collection, eg whether the data is cross-sectional, longitudinal etc.
9. Are any problems or weaknesses in the data considered when interpreting the results and drawing conclusions, including the influence of potentially intervening variables?

   Yes ☐   No ☐   Not clear ☐   Can’t tell ☐

   If yes, please provide brief details:

Analysis

10. What form of analysis of the data is used? (eg types of stats for quantitative and types of content analysis, including coding details for qualitative data).

Results and conclusions

11. What were the results of the research? (Please consider in relation to key messages about ‘what works’ in improving health and safety in the workplace. Approximately half a page summarising the ‘what works’. Note that we are interested in messages in terms of process as well as outcome.)

Please report results about ‘what works’ under each of the following headings as appropriate and relevant:

   a. through information and guidance about:
      i. risk awareness raising
      ii. risk assessment
      iii. risk prevention
      iv. risk control
      v. licensing and regulation
      vi. safety reporting
      vii. inspection
      viii. investigation
      ix. enforcement
      x. incidence of harm
xi. other

b. Do the authors make any recommendations?
   Yes ☐ No ☐
   If yes, please provide brief details of these recommendations:

c. Are any knowledge gaps specified?
   Yes ☐ No ☐
   If yes, please provide brief details:

12. Studies may comment on the impact of multiple activities separately in the same report (eg information and guidance and inspection) or comment on the impact of activities used in combination with each other. Please note which approach is being taken:
   Individual ☐ Combination ☐

13. Are there any messages about transferability of the initiative or intervention (i.e. could it be replicated and if so, in relation to which areas of HSE activity or sector?)

14. In your opinion, were the conclusions of the research warranted by the results?
   Yes ☐ Partly ☐ No ☐ Not clear ☐ Can’t tell ☐
   Please provide details:

**Further comments**

15. Please provide any further information which you feel should be considered as part of the evaluation of this particular piece of work:

**Additional information**

16. Do you require the research to be reviewed by another member of the team to confirm your findings or clarify issues of confusion?
   Yes ☐ No ☐

Further notes:
PROFORMA FOR LITERATURE REVIEWS

Please remember we are reviewing the review, not the individual pieces of evidence which the report authors have reviewed. We are looking for the overall messages, gaps and recommendations identified by the authors.

ARTICLE/REPORT REFERENCE NUMBER:

Study title:
Authors:
Year of publication:
1st reviewer: Date of 1st review:
2nd reviewer: Date of 2nd review:

WHAT IT IS ABOUT?

1. Please indicate area of activity covered (there may be more than one area):
   a. information and guidance (eg messaging and communication) ☐
   b. licensing and regulation ☐
   c. safety reporting ☐
   d. inspection ☐
   e. investigation ☐
   f. enforcement ☐
   g. standards and recommended approaches (eg management standards) ☐
   h. other, please specify ☐

2. At what level is it trying to address risk? (there may be more than one level):
   a. is it to do with raising awareness of the risk generally? ☐
   b. is it to do with assessing the risk? ☐
   c. is it to do with preventing the risk (eg reducing the likelihood of an accident happening, reducing exposure to a toxin)? ☐
   d. is it to do with controlling the impact of the remaining risk (eg protective clothing, minimising the consequence of a major hazard)? ☐
   e. other, please specify ☐

3. Is it sector specific?
a. General □

b. Specific sector, please specify sector(s) □

Agriculture □
Hunting and forestry □
Fishing, Mining and quarrying □
Manufacturing □
Electricity, gas and water supply □
Construction □
Wholesale and retail trade and repair □
Hotels and restaurants □
Transport, storage and communication □
Financial intermediation □
Real estate, renting □
Public admin and defence □
Education □
Health and social work □
Other community, social and personal services □

**MINIMUM CRITERIA**

To check whether the study should have got to the review stage, if any of the minimum criteria are not met (i.e. answer is NO to any of questions 1-2) then the study SHOULD NOT be reviewed as the inclusion criteria have not been met.

**Relevance**

4. Does the research examine health and safety issues within the area of the HSC/E’s concerns? (Health and safety in workplaces, including risks to public from other people’s workplaces)

   Yes □   No □   Not clear □   Can’t tell □

If Yes, please provide details:

5. Does the study review assessments of intervention and draw conclusions? (i.e. does the work go beyond descriptions of interventions?)

   Yes □   No □   Not clear □   Can’t tell □

If Yes, please provide details:
Inclusion in review

The study must pass both of the Evaluation Criteria (ie all of questions 1-4 have been answered ‘Yes’) then complete the Research Findings Form.

6. Is study to be included in the in-depth review?
   Yes ☐   No ☐   Not clear ☐   Can’t tell ☐
   If answer is no, or not clear, please supply any additional information that will help to explain why the study has been rejected:

REVIEW FINDINGS

Study aims, objectives and scope

7. Please provide an overview of the aims and objectives of the literature review?

8. Were these met?
   Yes ☐   Partly ☐   No ☐   Not clear ☐   Can’t tell ☐
   If ‘partly’ or ‘no’, please provide brief details of what the study did achieve:

9. What literature is the study based on? In answering consider a) number of pieces reviewed, b) time period covered, c) type of literature (peer reviewed journals/government reports/ unpublished) d) any specific exclusions.

Approach

10. What type of approach was used? (eg traditional iterative; semi-systematic; fully systematic; re-analysis of pre-specified documents).

11. If available, please provide further details on how literature was:
   a. identified (sources, search terms…..)

   b. selected (inclusion/exclusion criteria, prioritisation decisions…..)
c. evaluated or rated (re methods/samples etc., relevance….)

12. In your opinion are there any problems or weaknesses in the literature review?

Yes ☐ No ☐ Not clear ☐ Can’t tell ☐

If yes, please provide brief details:

Results and conclusions

13. What were the results of the research? (Please consider in relation to key messages about ‘what works’ in improving health and safety in the workplace. Approximately half a page summarising the ‘what works’. Note that we are interested in messages in terms of process as well as outcome.)

Please report results about ‘what works’ under each of the following headings as appropriate and relevant:

a. through information and guidance about:
   i. risk awareness raising
   ii. risk assessment
   iii. risk prevention
   iv. risk control
   v. licensing and regulation
   vi. safety reporting
   vii. inspection
   viii. investigation
   ix. enforcement
   x. incidence of harm
   xi. other

b. Do the authors make any recommendations?

Yes ☐ No ☐
If yes, please provide brief details of these recommendations:

c. Are any knowledge gaps specified by the authors?

Yes ☐ No ☐

If yes, please provide brief details:

14. Studies may comment on the impact of multiple activities separately in the same report (e.g., information and guidance and inspection) or comment on the impact of activities used in combination with each other. Please note which approach is being taken:

Individual ☐ Combination ☐

15. Are there any messages about transferability of the initiatives or interventions (i.e., could any of them be replicated and if so, in relation to which areas of HSE activity or sector?)

Further comments

16. Please provide any further information which you feel should be considered as part of the evaluation of this particular piece of work:

Additional information

17. Do you require the study to be reviewed by another member of the team to confirm your findings or clarify issues of confusion?

Yes ☐ No ☐

Further notes:
APPENDIX 5: BIBLIOGRAPHY

Note on bibliography

The list below covers the potential evidence base identified by initial searching and sifting. A subset of the reports and articles below, provided evidence on which this report is based. These are indicated as follows:

* denotes the 110 reports which were put forward for formal review, of which 70 contributed significantly to the final evidence base

$ denotes ten documents which provided background material or informed the report in some other way


Antonelli A, Baker M, McMahon A, Wright M (2006), Six SME case studies that demonstrate the business benefit of effective management of occupational health and safety. HSE


Baldwin NJR and King ES (2003), Field studies of the effectiveness of concrete repairs. HSE


Bartlett DT, Etherington G, Smith JRH (2006), Review of the level of accuracy required and means of demonstrating that accuracy for approval of dosimetry services by the Health and Safety Executive. HSE

Belamy LJ and Geyer TAW (2007), Development of a working model of how human factors, safety management systems and wider organisational factors fit together *

Bell J and Healey N (2006), The causes of major hazard incidents and how to improve risk control and health and safety management: a review of existing literature. HSE *


BOMEL Limited (2003a), Falls from height - Prevention and risk control effectiveness. HSE

BOMEL Limited (2003b), Improving health and safety in construction. Phase 2 - Depth and breadth, Volume 4, Hand Arm Vibration Syndrome - Underlying causes and risk control in the construction industry. HSE

BOMEL Limited (2004), Evaluation of The Railways (Safety Case) Regulations. HSE
BOMEL Limited (2004a), Improving health and safety in construction, Phase 2 – Depth and breadth, Volume 5 - Falls from height. Underlying causes and risk control in the construction industry. HSE


BOMEL Limited (2004c), Improving health and safety in construction, Phase 2 – Depth and breadth, Volume 7 - Analysis of HSE Mechanisms. HSE

BOMEL Limited (2005), An evaluation of current legislative requirements for verification of elements critical to the safety of offshore installations. HSE *

BOMEL Limited (2006), Aircraft turnaround: the impact of HSG209 and emerging good practice. HSE *

BOMEL Limited (2007), Construction (Design and Management) Regulations 2007. HSE *

BOMEL Limited (2007), Improving the effectiveness of the Construction (Design and Management) Regulations 1994. Establishing views from construction stakeholders on the current effectiveness of CDM. HSE *

BOMEL Ltd (2006), Evaluation into the success of occupational health and safety regulators and organisations use of expert systems. HSE *

Boorman CJ (2006), Evaluation of the slips assessment tool (SAT) - analysis of user questionnaires. HSE *


Brazier A and Waite P (2003), Safety report regime - evaluating the impact on new entrants to COMAH. HSE *

BRE Environment (2003), Evaluation of HSC’s ACOP and Guidance ‘Legionnaires disease: Control of legionella bacteria in water systems’ (L8). HSE *

Briner RB, Amati C, Lardner R (2003), Development of internal company standards of good management practice and a task-based risk assessment tool for offshore work-related stressors. HSE *

Brown T and Rushton L (2003), The development of risk reduction strategies for the prevention of dermatitis in the UK printing industry. HSE *

Brueck L (2006), Orchestra pilot of the industry/HSE noise guidance. HSE *

Brueck L (2006), School pilot of the industry/HSE noise guidance. HSE *

Burton AK, Barty S, Wright IA, Main CJ (2005), Obstacles to recovery from musculoskeletal disorders in industry. HSE *

Cameron I, Duff R, Gillan G (2005), A technical guide to the selection and use of fall prevention and arrest equipment. HSE

Cameron I, Hare B, Duff R, Maloney B (2006), An investigation of approaches to worker engagement. HSE *

Chegini A (2005), Evaluation of FOD's Topic Based Inspection. HSE *


Chinien V and Cheyne A (2006), Trojan horse health and safety messaging. An assessment of the long-term and behavioural impact on construction site operatives. HSE *

Clift L (2004), Evaluating the performance and effectiveness of ladder stability devices. HSE


Cowling M and Bevan S (2007), Work and Enterprise Panel 2 Business survey. HSE *

Cox T, Randall R, Griffiths A (2002), Interventions to control stress at work in hospital staff. HSE *

Cummings R (2006), Expert Views on the Evidence Base for Effective Health and Safety Management (Phase 1). HSE *

Cummings R (2006), Expert views on the evidence base for effective health and safety management (Phase 2). HSE *

Daniels C, Binch S, Greaves D (2007), Exploring Awareness of the Health and Safety Law Poster Amongst Employees. HSE *


David G, Woods V, Buckle P (2004), Further development of the usability and validity of the Quick Exposure Check (QEC). HSE *

Davies R and Jones P (2005), Trends and context to rates of workplace injury


Davis C (2005), ‘Coping with stress…. Will the HSE’s new management standards help?’ Health and Safety at Work. Vol. 27, pp. 9-12

Davison J (2003), The development of a knowledge based system to deliver health and safety information to designers in the construction industry. HSE


Fairman R and Yapp C (2005), Making an impact on SME compliance behaviour: An evaluation of the effect of interventions upon compliance with health and safety legislation in small and medium sized enterprises. HSE *

Fenning N and Boath M (2005), Impact evaluation of the Control of Major Accident Hazards (COMAH) Regulations 1999. HSE

Ferguson E, Bibby PA, Leaviss J, Weyman A (2003), Effective design of workplace risk communications. HSE *

Ferreira J and Stanley L (2005), Evaluation of manual handling tasks involving the use of carry chairs by UK ambulance personnel. HSE *


Flook V (2003), A comparison of oxygen decompression tables for use in compressed air work. HSE

Flook V (2003), Development of the ANALOX Hyper-GasTM Diving Bell Monitor. HSE

Fooks G, Bergman D, Rigby B, International comparison of (a) techniques used by state bodies to obtain compliance with health and safety law and accountability for administrative and criminal offences and (b) sentences for criminal offences. CCR or HSE *

Ford N and Green L (2004), Evaluation and further development of the HELA national training co-ordination website. HSE


Ford NJ, Brown JM, Williams HJ (2005), Evaluation of the HELA Training. Co-ordination portal's ability to support communication and knowledge sharing between LA and HSE safety enforcement teams. HSE

Ford P, Pepper K, Reiger P (2007), Watch Your Step campaign evaluation. HSE *

Franks A, Whitehead R, Crossthwaite P, Smail L (2002), Application of QRA in operational safety issues. HSE *

Frazer-Nash Consultancy Limited (2006), Fork lift truck validation and trials. HSE

Geary W (2002), Risk Based Inspection - A Case Study Evaluation of Onshore Process Plant. HSE

Gervais R (2006), An Evaluation of Successful Communication with Small and Medium Sized Enterprises (SMEs). HSE *


Glass CR, Harrington PM, Mathers JJ, Smith SW, Cocker J, Akrill P (2005), Evaluation of field and laboratory effectiveness of whole body coveralls. HSE

Gobeau N and Zhou XX (2004), Evaluation of CFD to predict smoke movement in complex enclosed spaces. HSE


Goujon NS and Shepherd BWO (2005), Evaluation of CEN ultrasonic testing standards for in-service inspection. HSE


Hanson MA, Burton K, Kendall NAS, Lancaster RJ, Pilkinson A (2006), The costs and benefits of active case management and rehabilitation for musculoskeletal disorders, HSE *


Healey N and Greaves D (2007), A Review of Consistency of References to Risk Management Frameworks in HSE Guidance. HSE *

Hignett S (2005), Measuring the effectiveness of competency-based education and training programmes in changing the manual handling behaviour of healthcare staff. HSE


Hillage J, Tyers C, Davis S, Guppy A (2001), The impact of the HSC/E:A review. HSE $

Hillier J (2007), HSE Better Backs 2006: Worker involvement evaluation. HSE *

Hinde A and Ager R (2003), Benchmarking the competent person in manufacturing and engineering sectors. HSE *

Hodge SE (2003), Evaluation of the Health and Safety (First-Aid) Regulations 1981 and the approved code of practice and guidance. HSE *


Hopkinson J and Gavin F (2006), E-COSHH Essentials Guidance Sheets; User Consultation Exercise Phase IV. HSE *


Horbury C and Collier D (2002), The effectiveness and impact of the PABIAC initiative in reducing accidents in the paper industry. HSE


Howard M and Galbraith A (2005), Evaluation of the slips and trips roadshow seminars for government departments and the insurance industry. HSE *

HSC, Sensible health and safety at work: the regulatory methods used in Great Britain $

Hughson GW, Mulholland RE, Cowie HA (2002), Behavioural studies of people’s attitudes to wearing hearing protection and how these might be changed. HSE

Jackson CA (2004), The evaluation of occupational health advice in primary healthcare. HSE *


Jones BJ (2003), Use and effectiveness of mobile elevating work platforms (MEWPS) for tree work. HSE *


King S, Dyball M, Wright T (2004), HSC strategy to 2010 and beyond - consultations with hard to reach groups. HSE


Kinsman P and Lewis J (2002), Report on a second study of pipeline accidents using the Health and Safety Executive's risk assessment programs MISHAP and PIPERS. HSE

Knowles DJ (2006), Measuring the effect of health and safety advisers and roving safety representatives in agriculture. HSE *
Lancaster R, Ward R, Talbot P, Brazier A (2003), Costs of compliance with health and safety regulations in SME’s. HSE *


Lee D and Ferreira JJ (2003), Reliability and usability evaluation of the Manual handling Assessment Charts (MAC) for use by non-regulatory professionals. HSE *


Lindsay J (2005), Evaluation of HSE’s farm self assessment software. HSE *


Marlow P and Weyman A (2004), What Works in HSE? Exploring the Contextual Knowledge of Operational Staff. HSE *

Marsden S, Beardwell C, Shaw J, Wright M, Green N, McGurry B (2004), The development of case studies that demonstrate the business benefit of effective management of occupational health and safety. HSE

Mason S (2003), Development of a methodology for the assessment of human factors issues relative to trips, slips and fall accidents in the offshore industries. HSE

Mather J (2004), Evaluation of the impact of Field Operations Directorate interventions. HSE *


Melrose AS, Graham MK, Graveling RA, George JPK, Cowie H, Hutchison PA, Mulholland RE (2006), Assessing the effectiveness of the manual handling assessment chart (MAC) and supporting website. HSE *

Middle KV, Bussey R, Cusco L, Kerr D, Snee TJ (2003), Reaction Inhibition in the Control of Exothermic Runaway. HSE

Mulholland RE, Sheel AG, Groat S (2005), Investigating practices in communication and information exchange amongst CDM duty-holders. HSE *

Munns PA, Luong Y, Rew PJ (2002), Fire risk assessment for workplaces containing flammable substances. HSE *

Neal AC and Wright FB (2007), A survey of changes in the volume and composition of claims for damages for occupational injury or ill health resulting from the Management of Health and Safety at Work and Fire Precautions (Workplace) (Amendment) Regulations 2003. HSE *

Neal AC and Wright FB (2007), A survey of the use and effectiveness of the Company Directors Disqualification Act 1986 as a legal sanction against directors convicted of health and safety offences. HSE *
Neathey F, Sinclair A, Rick J, Ballard J, Hunt W, Denvir A (2006), An evaluation of the five steps to risk assessment. HSE *

Niven KJM (2004), Real time evaluation of health and safety management in the National Health Service. HSE *


Offshore Directorate (2007) Key Programme 3: Asset Integrity Programme. HSE. $

O’Hara R (2006), Evaluation of four pilot Safety & Health Awareness Days (SHADs) for motor vehicle paint sprayers. HSE *

O’Hara R, Davies T, Sandys V (2006), Evaluating the impact of the Pilot Bristol Safety & Health Awareness Day (SHAD) on motor vehicle repair bodyshops’ control of health risks. HSE *

O’Hara R, Williamson J, Daniels C (2005), Review of regulators’ approach to duty holders’ management of health and safety. HSE

Oliver S, Brown R, Bassett C (2007), HSE ‘Height Aware’ campaign evaluation. HSE *


Pearce B (2002), How the Courts are interpreting HSE guidance and health and safety regulations. HSE

Pearce J (2005), Attitudes, opinions and experiences of attendees at the ISMAUK stress workshops 2004. HSE *

Offshore Directorate of Hazardous Installations Directorate (2007), Key Programme 3: Asset Integrity Programme. HSE

Pidgeon N, Walls J, Weyman A, Horlick-Jones T (2003), Perceptions of and trust in the Health and Safety Executive as a risk regulator. HSE

Ponting L (2005), ‘Topic based inspection: it hasn't made things worse’. Health and Safety at Work. Vol. 343, pp. 6-8

Porter C (2005), Evaluation of the risk education website for secondary-aged students. HSE

Powell S (2007), Evaluation of the HSE slips and trips roadshows. HSE *


Riches D (2004), Preliminary investigation into the fall-arresting effectiveness of ladder safety hoops. HSE


Roff M (2007), Use of chemical protective gloves to control dermal exposures in the UV lithographic printing sub-sector. HSE

Rogers P (2007), National Enforcement Priorities for Local Authority Regulatory Service. Cabinet Office/Better Regulation Executive

Saunders CJ and Ivings MJ (2005), Natural ventilation of offshore modules. HSE

Semple S, Graham M, Cowie H, Cherrie JW (2007), The causative factors of dermatitis among workers exposed to metalworking fluids. HSE *

Shaw K, Haslam C, Haslam R (2007), A staged approach to reducing musculoskeletal disorders (MSDs) in the workplace. HSE *

Shaw N and Turner R (2003), The Worker Safety Advisors (WSA) pilot. HSE *

Shearn P (2003), Case Examples: Business Benefits Arising From Health & Safety Interventions. HSE


Simpson AT and Unwin J (2006), Assessment of Gloves for Use with Cleaning Fluids Used in the Printing Industry. HSE

Simpson GC and Scotney V (2002), Measuring the Health and Safety Executive’s Field Operations Division inspection effectiveness. HSE *

Sinclair A, Gifford J, Hunt W, Bust P, Gibb A (2007), Cascading messages through others. The effect on awareness of, and compliance with, the Duty to Manage Asbestos Regulations. HSE *

Smith T, Couper G, Donaldson W, Neale M, Carroll J (2005), Seatbelt performance in quarry vehicle incidents. HSE

Snodgrass R (2006), Slips and Trips Priority Programme: Baseline evaluation of awareness, knowledge and attitudes held by industry to inform the Slip and Trip Priority Programme evaluation. HSE *

Steel Construction Institute (2005), Trojan horse construction site safety messages. HSE *

Tasho W, Jordan J, Robertson I (2004), Case study: Establishing the business case for investing in stress prevention activities and evaluating their impact on sickness absence levels. HSE *

Technopolis Limited (2004), Evaluation of the small firms allowance scheme. HSE *

The Keil Centre (2002), Evaluating the effectiveness of the Health and Safety Executive’s Health and Safety Climate Survey Tool. HSE *


Tyers C and Sinclair A (2005), Constructing Better Health. HSE *


Walker D and Cheyne A (2005), Further development of a corporate health and safety performance management index for use by business, investors, employees, the regulator and other stakeholders: validating the index. HSE *


Wells D and Greenall A (2005), Evaluating the effectiveness of legislation, technology and working methods for reducing occupational exposure in the foundry industry. HSE *

White J and Snodgrass R (2007), Falls from Height: Evaluation of a Pilot Project to Address Falls in the Classroom. HSE *

White Queen Safety Strategies (2005), Enhancing chemical risk control for reducing exposure in the workplace through advanced risk messaging techniques. HSE *

Whitnell S (2004), Successful Interventions with Hard to Reach Groups. HSE *

Whysall Z, Haslam C, Haslam R (2005), A staged approach to reducing musculoskeletal disorders (MSDs) in the workplace. HSE *

Wilson S and Tyers C (2007), An evaluation of the local authority programme joint authorisation pilot project. Transfer of enforcement responsibilities in the motor vehicle repair and dry-cleaning sectors. HSE

Wiseman J and Gilbert F (2002), COSHH essentials: Survey of firms purchasing this guidance. HSE *

Worklife Support Limited (2007), Testing the effectiveness of the streamlined national well being programme at managing work-related stress in schools. HSE *


Wright M and Marsden S (2005), A response to the CCA report ‘Making companies safe: What works?’ . HSE *
Wright M, Antonelli A, Doyle JN, Bendig M, Genna R (2005), An evidence based evaluation of how best to secure compliance with health and safety law. HSE *

Wright M, Bendig M, Hopkins C, Gall B, Holmes J, Landles L (2003), The promotion of human factors in the onshore and offshore hazardous industries. HSE *


Wright M, Marsden S, Collier D, Hopkins C (2003), Identification of industry sectors in which employers perceive their business operates. HSE *

Wright M, Marsden S, Dimopoulos E, Holmes J (2006), Health and safety responsibilities of company directors and management board members. HSE

Wright M, Marsden S, Holmes J (2003), Health and safety responsibilities of company directors and management board members. HSE *

Wright M, Marsden S, Hopkins C, Collier D, Turner D (2003), Evaluation of the implementation of the use of work equipment directive and the amending directive to the use of work equipment directive in the UK. HSE *


Wright M, Turner D, Horbury C (2003), Competence assessment for the hazardous industries. HSE

Yorke J (2003), Deeper learning for safer diving: Using video scenarios to develop professional expertise in the application of the Diving at Work Regulations 1997. HSE

What works in delivering improved health and safety outcomes

A review of the existing evidence

This report consists of a literature review on ‘what works’ in delivering improved health and safety outcomes, using data published since 2002. It is supplemented by an analysis of how HSE uses and generates research-based evidence, drawing on data from interviews conducted with HSE staff. The report identifies knowledge gaps in relation to ‘what works’ where further research is required, discusses barriers to use and generation of evidence and makes recommendations for how HSE could improve its use of evidence and commissioning of both policy and programme interventions and their respective evaluations.

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