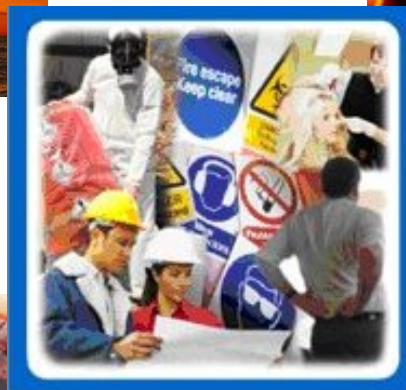
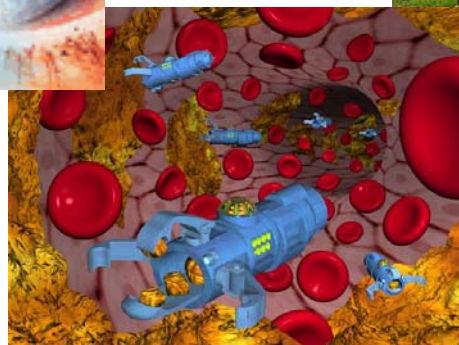


The Health and Safety Executive's response to the Office of Science and Innovation's Science Review



Science &
Research
Outlook



THE HEALTH AND SAFETY EXECUTIVE'S RESPONSE TO THE OFFICE OF SCIENCE AND INNOVATION'S (OSI) SCIENCE REVIEW

HSE's General observations

HSE welcomes the report of the OSI Science Review and appreciates the considerable effort the Government Chief Scientific Adviser has invested in its production. We are pleased that the Review has found our performance against the ten key attributes that underpin good practice in the use and management of science by Government departments to be good.

The Science Review started at the beginning of 2005 and took over two years. HSE has made many improvements to our procedures for the management and use of science during this period. Some of these were identified in a self-assessment we undertook at the beginning of the Review and others were prompted by its early findings. In particular, a Fundamental Review of HSE was undertaken during 2006 and this included an examination of how to make the best use of our investment in science. OSI helpfully made the emerging findings of the Science Review available to inform this work. Hence, action is well advanced in a number of areas to address the OSI recommendations

Main Findings and Recommendations

The Review has identified a number of areas of good practice that might be adopted elsewhere (either more widely across HSE or in other Government departments). These included:

- **Strengthening management systems for commissioned research:** The rigour of HSE's science procurement and governance arrangements has been increased by introducing new requirements to link the knowledge gap to be addressed with HSE's strategic and business needs, and identifying the responsibility and arrangements for monitoring and assessing the utility and impact of completed work. The recent introduction of an electronic commissioning system (PROMIS) should also facilitate improved project management and knowledge sharing across the organisation, by introducing electronic records that can be accessed by all staff.
- **Publication:** HSE has an open publication policy and, across the organisation, good practice exists on actively promulgating research results to wider audiences and generating scientific debate of findings. External stakeholders value HSE's research reports and other science publications and dissemination activities.
- **Challenging established orthodoxy:** Where appropriate, HSE is prepared and able to challenge established orthodoxy regarding the science supporting health and safety issues, both nationally and internationally. It develops, conducts and uses high-quality,

groundbreaking, well-reviewed scientific evidence to support its position, and engages in external debate of the findings and implications.

- **Use of scientific expertise:** A broad range of scientific and technical expertise exists within HSE and HSL, which is used to inform and add value to HSE work. Many of these specialists are world-class experts in their respective fields. HSE also makes effective use of external expertise (both national and international) to complement its internal resource.
- **Use of Advisory Committees:** HSE also makes extensive use of advisory committees – including Scientific Advisory Committees – to inform its work. HSE's establishment of Scientific Advisory Committees to address specific tightly framed questions is a highly efficient and effective process for the provision of guidance and advice.

The Review also identified some areas of weakness, which are outlined below. It was emphasised that these should be viewed against a background of generally good performance and in the spirit of improvement, rather than as a major criticism of HSE.

- **Scientific expertise:** HSE has access to a substantial resource of scientific expertise, both internally and through its in-house agency HSL. However, the size and balance of expertise across both organisations needs to be strategically reviewed on a regular basis so that changing needs can be accommodated more easily.

HSE faces considerable challenges in recruiting and retaining scientific staff, more so in some areas of expertise than others. Gaps in scientific expertise impact on HSE's ability to perform well against all criteria that underpin the good practice in the management and use of science in Government departments.

HSE is alive to the short- and long-term challenges it faces regarding the maintenance and development of its scientific expertise; however, the Review considered that the pervasive impact of this issue is such that HSE's focus on it should be intensified. In particular, the Review recommends that:

- Internal capacity in social science (e.g. human behaviour, human motivation) should be developed further;
- Specific plans should be set out for succession planning, including recruitment plans;
- HSE should consider and plan for the career development of scientists and, in particular, those specialists who bridge the gap between scientific and policy expertise, alongside the Professional Skills for Government initiative;
- HSE's scientific staff should continue to be deployed flexibly and in different configurations to make best use of resources available and share knowledge better across the organisation;

- HSE should explore innovative ways to maintain access to (internally or externally) specialist capability; and
- Future requirements for scientific expertise should continue to be reviewed in parallel with facilities.

HSE Response

The Making Best Use of Science project (MBUS) which began in October 2006 aims to establish the structures and processes that allows the HSE resource to evolve in a managed way to meet a wide and often unpredictable range of challenges.

The main aims of the 'Making Best Use of Science project' are to ensure that:

- *HSE's Science & Technology capability is focused on identifying and delivering HSC/E's current and future business priorities;*
- *we have the flexibility to adapt to changing business needs (both internal needs and external ones driven by our work with other stakeholders and in the wider health and safety context);*
- *S&T staff have straightforward and effective management arrangements which provide strong professional leadership and good career management and opportunities*

New governance arrangements are being put in place with a Science Subgroup of the HSE Board, with both HSE & non-HSE members, being established to provide strategic oversight of the total resource. The creation of the Science Subgroup will strengthen our Chief Scientific Advisor's links with the internal science resource and help create an environment within which the science resource can be managed in a rational way.

HSE recognises that conditions may dictate that it will become increasingly difficult to attract and retain science and technology specialists in some discipline areas. Traditionally HSE has recruited Chartered Engineers for some specialist inspectorial duties, but this is currently not an option. New approaches to development of the engineering capability have been considered and one such project has identified several viable candidates for specialist roles, mainly from within HSE's ranks of regulatory inspectors, and who, with the necessary training and careful mentoring, should attain the qualification and skill set required to fully deliver the specialist role.

Examples exist of staff migration within HSE, including moves from HSL. A number of internal specialist posts have been successfully filled in the occupational hygiene discipline, in ergonomics and in the noise and vibration specialism. Staff are provided with tailored training and further education to support their professional progression, helping them develop the skills and experience to become rapidly effective in a wide variety of roles. HSL has capacity to recruit staff at earlier stages in their career – and some of these

have taken internal opportunities to progress into the wider roles and responsibilities offered by HSE.

The market place for some disciplines, such as electrical engineering and civil engineering, presents particular difficulties for HSE in efforts to recruit quality candidates. Further, there are issues over discipline age profile and uncertainties introduced over retirement age. Deep topic specialists in specific sectors can be attracted but major political decisions, such as whether to begin nuclear new build, may impact on the ability to recruit and retain in these specialised areas.

The arrangements regarding centrally managed (across Government) staff such as economists and social scientists pose a difficulty for a small organisation like HSE as they result in such a rapid staff turnover that the complete team of economists can change (and has changed) over the course of a few months. This poses a challenge in maintaining a consistent approach in key and evolving areas such as regulatory impact assessment. The HSE Board has already agreed to the recruitment of two additional research staff to strengthen the Social Science Unit. Subject to the 2007-08 settlement, recruitment of further social research staff will be considered.

The outcome of the MBUS project will seek to ensure that the balance between HSE's disciplines is right for the business model of the organisation. Discipline management will be an important element of the process and HSE's Chief Scientific Advisor will play an important role in ensuring recruitment and succession planning are addressed to reduce our exposure to business risk.

The MBUS project aims to deploy the HSE science resource in a flexible manner but also ensuring key frontline resource is embedded within Operational Directorates. Checks and balances, along with a feedback loop to HSE's Chief Scientific Advisor will aim to address issues of imbalance and prioritisation of deployment of resource. The new Science Subgroup will be able to direct and arbitrate to ensure appropriate decisions are made, or escalated to the HSE Board if necessary, to optimise deployment.

New recruitment methods for some disciplines have worked and are innovative in that they have discovered dormant talent amongst HSE's current workforce. Programme working has investigated alternative ways to influence duty holders and used existing staff in different ways to help achieve long term goals. Specialist capability has been used to help develop novel ways of influencing through a variety of media and mechanisms. Although not strictly addressing the issue of maintaining access to specialist resource it is about making best use of it when scarce.

HSE is acutely aware of the need to ensure alignment with business priorities. Again, the MBUS project aims to enhance the partnership between HSE and HSL. The aim is to ensure that resource is deployed more efficiently and more effectively. The operational elements of HSE's activities and science delivery will be phased in whilst the short, medium and long term

needs of the organisation will be addressed. Improvements to the planning process will allow decisions to be taken over a three to five year continuous cycle. Resource can be grown or reduced in a planned and managed way.

- **Knowledge management:** HSE has a number of processes and initiatives in place to facilitate knowledge management within the organisation, most of which are working well. However the overall effectiveness of HSE's knowledge management was found to be impaired by:
 - A lack of standard policy or guidance for systematically reviewing scientific literature on issues relevant to HSE's work; and
 - Poor capture of science and of scientific advice and debate in some parts of HSE, with the result that knowledge sometimes resided in individuals rather than the organisation.

Weaknesses in knowledge management leave departments exposed to unnecessary risk due to gaps in knowledge that was either lost or never captured. HSE should therefore:

- Assure itself that it has (and will continue to have) sufficient systems in place to enable it to collate, critically appraise and update emerging scientific evidence consistently and appropriately across the organisation's range of interests; and
- Ensure that key knowledge is formally captured on an ongoing basis.

HSE Response

HSE recognises there are a range of knowledge management issues that either result in lost opportunity or leave us open to risk. The advent of widespread access to IT systems and the variable way in which individuals interface with them has determined that previous well-established mechanisms for collection and collation of corporate knowledge have become compromised. HSE has introduced corporate systems (e.g. the Corporate Operational Information (COIN) database) to capture some information from operational activities but this does not address the issue of capture of tacit knowledge.

Recent introduction of an electronic documents and records management system (EDRM, TRIM) will ensure that all written material and some email traffic are captured for re-use. It is too early to draw conclusions of the impact of this on HSE's capability to capture and reuse material of scientific significance in a sensible way. Explicit knowledge (reports etc) will be readily available but the tacit knowledge may not find its way into corporately available resource. HSE staff are in the early phase of adjusting to these new systems.

Some disciplines are aware of the need to capture tacit knowledge and are beginning to develop approaches to address the problem. Knowledge hubs have been created within the Process Safety discipline and others are recognising the advantages of the approach of having small teams responsible for key discipline areas. IT tools are being exploited to provide a

forum and collaboration centre for disciplines and these tools are also being used to engage with the wider community beyond the boundaries of HSE. As with all collaborative tools the trick is to raise the level of interaction and currently, though some communities of practice are lively they still suffer from a minority engagement.

Communities' software has been developed specifically for HSE needs but although it has great potential to benefit the business there are many barriers to achieving full advantage – not least cultural barriers and complexities in the management arrangements that make focus on knowledge management issues a low priority.

The MBUS project aims to ensure the corporate discipline focus can be prompted to develop better knowledge management arrangements, and that these can be audited via HSE's Chief Scientific Advisor.

HSE operates in a changing environment. It has always been difficult to predict what knowledge will be needed for future use and in what form. HSE has placed much reliance on the availability of experts to gather the necessary evidence to address issues. Programme working demands the production of evidence to support success in delivery of desired outcomes and a range of metrics can be used to provide that indication. It is recognised that, in some areas, HSE priorities and ways of working have changed - programme working has impacted on capture of data and intelligence from across a wide spectrum - to be replaced by a more targeted approach addressing specific issues within a specific timeframe.

- **Strengthening systems:** In addition to the knowledge management issues discussed above, the Review identified some weaknesses in HSE's systems for reviewing existing science, publishing research and seeking and recording scientific advice:
 - HSE has no standard policies or guidance for: reviewing scientific literature, peer reviewing its science, or obtaining scientific advice.
 - When publishing research reports on its website, HSE makes no distinction between the quality of the science and scientific advice presented. The Review considers that further thought should be given to the handling of poor quality or controversial research, as there remains a quasi-endorsement of published work by virtue of it being made available by HSE.

In order to ensure the quality of its use and management of science – and the perception of this by the outside world – HSE should provide open guidance:

- For systematically reviewing (and updating) scientific literature on issues relevant to its work;
- On what level of peer review is appropriate to particular circumstances; and
- For identifying and using scientific experts who are demonstrably up to speed with the existing evidence.

HSE Response

HSE has recognised, for some considerable time, the difficulty in establishing a single procedure for reviewing the science it commissions. Unlike the Research Councils, some other Departments or external bodies, HSE's prime responsibility is to ensure the Health and Safety of the workforce, not to commission research to enhance the U K knowledge pool. A considerable amount of HSE's commissioned science is related to answering specific questions that have arisen from work related activities. As such, this work is often a development of existing methodologies and not the creation of new or ground breaking science. However, this can still be very challenging for those undertaking the work.

HSE has established a process of formal review for all externally commissioned science which involves the final reports from such projects being signed off by a member of the Senior Civil Service responsible for the topic area. Further work is being undertaken, in conjunction with OSI, to increase the level of independent peer review and HSE is participating in a workshop being organised by OSI to share and develop best practice.

HSE has internal procedures for the quality assurance of the science it undertakes both for HSE and external customers. All reports are reviewed internally and comments are sought from the HSE customer or appropriate HSE specialists. HSE publishes about 100 papers a year in the peer-reviewed scientific press and conference proceedings. Papers appear in over 90 different journals covering a diverse range of subjects.

Findings and recommendations

The Report presents the following more detailed findings, conclusions and recommendations on HSE's performance against the ten attributes that underpin good practice in the use of science by Government departments.

1. Develop a clear, overall science and/or research strategy

The Review commends the requirement to update HSC annually on the implementation of the *Science Strategy*, and the steps HSE has taken to ensure a transparent, systematic approach is taken to science prioritisation and budget allocation. It further welcomes the recognition within the organisation of the *Science Strategy* as a helpful and accessible document. The Review welcomes the new ways of working with partner organisations, such as Local Authorities, identified in the *Science Strategy*, and HSE's stated aim to increase much-needed scientific expertise in social science, human and organisational behaviour, ergonomics, and statistics.

Recommendation 1:

The review notes the difficulties HSE has had in engaging its external stakeholders effectively. Recommendations are:

- **Engaging appropriate key stakeholders in a more philosophical discussion earlier in the development process. HSE should also make clearer to them who the Science Strategy is aimed at, what input is wanted from them, and what is in it from them.**
- **Identifying good (and transferable) practice on consultation and strategy from other Government departments (e.g. from the Ministry of Defence and parts of the Department for Environment, Food and Rural Affairs (Defra)).**

HSE Response

HSE put considerable effort into engaging external stakeholders during the development of the HSC Science Strategy 2005 – 2008 and was grateful for the helpful contributions received. These contributions, although few in number, were of high quality and they had a significant positive impact on the final Strategy. Other stakeholders have subsequently criticised the consultation process, arguing that it should have started at an earlier stage, made clear who the Science Strategy was aimed at, what input was wanted from them and what was in it for them. The importance of issuing personal invitations to comment was also emphasised as invitations addressed to their organisations might not reach them.

HSE welcomes the helpful advice aimed at increasing stakeholder engagement during the development of the next HSC Science Strategy. Work on this Strategy will start during summer 2007 and we will aim to engage appropriate stakeholders early in the process.

HSE is already taking steps to engage external stakeholders in our science planning. A pilot study is underway to draw up a three year science plan for three key health & safety issues – musculoskeletal disorders, slips & trips, and Chronic Obstructive Pulmonary Disease (COPD). This will include workshops to which key external stakeholders will be invited. The aim is to develop a methodology, which can subsequently be used to develop science plans across the breadth of HSE's programmes.

HSE is keen to benefit from good practice developed in other Departments and has already established a number of useful links. As an example, the consultant employed to help with the science planning pilot described in the previous paragraph had already undertaken similar work with Defra. In addition, HSL is a founder member of the Interlab Forum (ILF) alongside DSTL, CSL, VLA, HPA and CEFAS. The ILF steering group consists of the 6 Chief Executives of the Laboratories and is aimed at sharing best practice, realising synergies between the participating members and increasing the accessibility of other Government Departments to over 9000 specialists.

2. Horizon scan – to identify future science-related issues

The Review concludes that HSE deserves to be commended for its recognition and deployment of horizon scanning as a strategic resource within the organisation that will be used to inform strategy, prioritise research, and strategically develop capacity and capability.

In order to ensure maximum effectiveness and interaction with the horizon scanning system, HSE should ensure that its staff have a good understanding of horizon scanning and how it is used within the organisation.

HSE Response

HSE welcomes recognition of our work to establish in 2005 a structured process for scanning the horizon for developments that could have an impact on our future success in promoting and regulating Britain's health and safety. This system is based on a wide network of internal and external sources, including horizon centres from other government departments, Europe and the rest of the world. Notable products from the system to date include:

- *a list of emerging priority topics and cross-cutting issues for HSC/E and the rest of the health and safety system,*
- *a comprehensive report on population, workplace and social trends likely to impact on the health and safety system; and*
- *a groundbreaking external workshop in November 2006 that explored a set of scenarios of possible future worlds of work in 2017.*

The output of HSE's horizon scanning work is made available to the public at: www.hse.gov.uk/horizons/index.htm.

HSE is now giving priority to ensuring that effective use is made of our horizon scanning work in informing strategic planning. A key deliverable in the HSC Business Plan for 2007/08 is to:

- *Look at new ways of incorporating the results of horizon scanning to influence HSE's forward planning and priorities.*

3. Review and harness existing research and identify gaps and opportunities for future research

The Review concludes that knowledge evolves over time; the speed with which this happens varies from field to field. The Review identified examples of good practice in reviewing science within some parts of HSE, but found that HSE has no standard policy or guidance for systematically reviewing relevant scientific literature.

Recommendation 2

HSE needs to assure itself that it has (and will continue to have) sufficient systems in place to enable it to collate, critically appraise and update emerging scientific evidence consistently and appropriately across the organisation's range of interests. HSE might usefully draw on good practice already existing within the organisation (e.g. the Toxicology Unit in relation to COSHH) to develop guidance for systematically reviewing scientific literature on issues relevant to its work.

HSE Response

HSE recognises the importance of maintaining sufficient systems to enable us to secure and maintain a fit for purpose evidence base across the breadth of its interests. Failure to secure such an evidence base for policy making, forward planning and delivery and/or poor utilisation of that evidence is one of the identified Business Risks, on which the HSE Board monitors progress on a quarterly basis.

*HSE's Knowledge Centre subscribes to over 800 journals, both printed and online, which are circulated to those with interests in specific areas. HSE's Knowledge Centre offers a search service that can access large databases dedicated to specific subject areas and containing good quality references from reputable sources. HSE has access to hundreds of priced databases through the services of commercial information providers. Once a search has been done and there is a need to keep up-to-date on the same subject a **current awareness** profile can be set up. This will run on a regular basis and will generate new references on your topic of interest as and when they are published.*

HSE has already taken action on existing good practice within the organisation and has posted the following guidance on practice within our Industrial Chemicals Unit (formerly "Toxicology Unit") on our Internet site and drawn this to the attention of staff. The key aspects of undertaking critical appraisals of the toxicological profiles of substances (or of general toxicological issues) for use in a regulatory context are:

- Comprehensive, structured literature-searching arrangements, so that we are confident that we know what there is to know, by way of available data.*
- Assessment work and document construction is done by individuals with appropriate scientific background, working within an overall team and line management structure containing substantial experience and in-depth expertise in regulatory toxicology that actively helps and advises the author(s).*
- A practice of seeking input from external, cutting-edge specialist scientific experts in discrete fields whenever needed, recognizing that a*

regulatory authority cannot hope or expect to have such within its ranks.

- *Invariable use of an internal "scrutiny panel" approach, the accepted culture for which is that colleagues endeavor to maximise the quality of an assessment by finding and remedying faults in the draft presented to them; this ensures that the ultimate products are of a consistent high-quality standard.*
- *Making the version of each appraisal that is used for regulatory decision-making fully open and available; and, where possible, publishing it - with an attitude of positively inviting comments and a willingness to accept and learn from valid criticisms leveled at any assessment.*

Evaluation evidence

The HSE Board recently accepted a recommendation to make evaluation evidence about the effectiveness of its interventions quickly and easily available on the intranet. This evidence will be analysed and presented in three levels of detail. For each evaluation report there would be: an entry level (one screen) summary of the key points linking to a 2-3 page analysis that 'locks down' what the report tells us and how strong that evidence is. Finally there will be a link from the analysis pages to the full report (already held in the research projects directory). This will be supplemented by support from HSE's analysts to explain and apply the learning from these evaluations to HSE's strategy and interventions.

4. Commission and manage new research

The review noted that, whilst a significant proportion (around 70%) of HSE's Science Budget is spent with HSL, science is also commissioned from a variety of external providers, such as universities, research organisations and government laboratories.

The Review welcomes the increased rigour that has been introduced into HSE's science procurement arrangements, and notes the opportunity provided by PROMIS for better project management and for knowledge sharing across the organisation.

Recommendation 3:

HSE has clear science governance and procurement arrangements in place. However, it must assure itself that it has the appropriate expertise to project manage and evaluate work.

HSE Response

HSE has been reviewing the competence requirements for staff who will be involved in the management of science projects in the future. HSE together

with other organisations have found it difficult to attract the right calibre of individuals into science project management. This is due primarily to the lack of career progression as the tasks associated with research management are not seen as mainstream under PSG. HSE developed a training programme for new project officers some time ago and is current updating it and will be undertaking training needs analysis as part of the overhaul of Science Governance, under MBUS.

HSL has also undertaken a substantial review of its operating procedures and will, over the next 2 years, be enhancing its project management skills and installing project management software. HSL's main aim is to create a small group of trained project managers to work with the scientists and engineers to ensure that work is delivered to time and cost. Work will also be undertaken to strengthen HSL's quality procedures to reflect the need to properly document discussion and the outcome of any projects.

HSE's Chief Scientist has agreed with the HSE Board that in the future all projects should have clearly defined milestones and the outputs should be evaluated in terms of their utility in meeting business objectives. Progress towards these will be reported as part of the HSE corporate balanced scorecard. To ensure that senior management have the appropriate information upon which to make value based decisions a new computerised contract management system "Upside" has been procured. This will replace all current S&T management systems operated by HSE and will provide real time data on project costs and achievement of project milestones (available from March 2008). HSE will take this opportunity to review all of our procedures for commissioning, reviewing and evaluating external work, and where appropriate, simplify and make the procedures more robust.

5. Ensure the quality and relevance of the work they carry out and sponsor

The Review reports that clear science governance and procurement arrangements are in place. However, HSE must assure itself that it has the appropriate expertise to project manage and evaluate work. HSE should also monitor the new two-part evaluation process to ensure that it is being used effectively in practice.

HSE is generally conducting sound science, which is highly regarded by external stakeholders. In particular it has the ability to develop, conduct and use large-scale, groundbreaking, high quality research.

Recommendation 4:

HSE reviews the quality of its science in a variety of different ways and with varying degrees of rigour, but provides no formal guidance to its staff on which method should be used under particular circumstances. Guidance is required so that peer review activities are applied consistently and appropriately throughout the organisation.

HSE Response

HSE agrees with the recommendation. However, we have been working over a number of years to develop a methodology which fits our business model. Although there is no single approach adopted to peer review, in a number of instances those commissioning work also have knowledge of the subject area, and will be reviewing the work as part of their normal responsibilities. As part of the initiation procedure for larger projects the project officer is asked to identify whether formal peer review should be undertaken.

In the late 1990s HSE commissioned a series of extensive portfolio reviews and in 2001 an overview report was commissioned from Technopolis. The main findings of the review were that most of HSE's commissioned science was of high quality, but that it was not easy to link the outputs to future outcomes and improvements in health and safety. Work has been commissioned both with QinetiQ and HSL to establish a model for the prioritisation of new projects. Part of this process will be to ensure that there is a clearly identified end user for the outputs and that they have a plan for the utilisation of these outputs.

Recently, HSE's CSA has decided that the responsibility for the approval and coordination of all evaluation work in HSE should vest with our Economic Analysis Unit. This should ensure that the evaluations are robust and performed to a consistent standard. S&T work commissioned as part of an overall HSE programme strategy should be considered as part of the programme evaluation. This will complement the post project evaluation for individual projects at the time of their completion.

HSE has reviewed the processes currently used in OGDs for peer review. Exploratory discussions with the Royal Academy of Engineering have been held to establish how HSE might utilise Fellows from the Academy to review specific projects; this is an ongoing activity.

6. Use research and scientific advice, e.g. in formulating policy

The Review notes that HSE is prepared to challenge the status quo, and provide high quality, well-reviewed scientific evidence to support its position. HSE's inspectors know how, when and from whom to call on for scientific advice. They are confident about the advice and support they receive from HSL.

The inclusion of external expertise in the membership of investigation boards advising HSC on major incident investigations is recognised as good practice.

Recommendation 5:

HSE's arrangements for obtaining and using scientific advice generally work well. However, there does not appear to be a standard policy for identifying and using scientific experts who were demonstrably up to speed with the existing evidence; such guidance could be helpful to staff.

HSE Response – Links to Recommendation 4

HSE agrees that guidance on identifying and using scientific experts who are demonstrably up to speed with the existing evidence could be helpful to staff. HSE has previously drawn up a list of individual experts and professional bodies to assist staff seeking expert advice. However, the breadth of HSE's interests meant that the list was a long one and keeping it up to date involved a significant effort. It was eventually concluded that the value of the list did not justify the effort involved in maintaining it.

Many of HSE's specialist staff actively participate in their professional networks as part of their Continuing Professional Development, and they are well placed to advise as to who are the appropriate experts in their areas of expertise. HSE will consider what steps might usefully be taken to strengthen the present position.

HSE is considering establishing a peer review/specialist register at HSL. HSL have established, as part of their involvement in project work, an extensive network of international experts. These, together with expertise already based in HSL could provide the basis for a peer review college.

7. Publish results and debate their findings and implications openly

The Review endorsed HSE's policy of openly publishing its research. Whilst it was recognised that publication could be perceived by some to provide a quasi-endorsement of the quality of work, the prime consideration should be that of openness.

The Review found that research commissioned by HSE is generally published and debated openly and, across the organisation, good practice exists on actively promulgating research results to wider audiences and generating scientific debate of findings. However, the Review also found a limited number of examples where research had not been published, but where it would have expected it to have been.

Signposting the key findings and potential implications of research is important. The Review welcomes the introduction of links between the *Research Projects Directory* and the *Science and Research Outlook*.

HSE Response

HSE welcomes recognition of the considerable efforts we have made to make the results of our science and research portfolio available to stakeholders.

8. Share, transfer and manage knowledge

The Review commended the steps HSE had taken to facilitate knowledge management within the organisation, noting that this was an ongoing and universal issue.

Recommendation 6:

Scientific advice and debate was not always recorded sufficiently well. As a result, knowledge sometimes became embedded in individuals. HSE had recognised the implications associated with this (e.g. the potential for duplicating research), and was currently considering what should be done to ensure that key knowledge was formally captured on an ongoing basis. The Review emphasised this as being a high priority.

HSE Response

HSE recognises the need to properly document scientific advice and debate. We accept that in a few instances this has not been properly adhered to. As part of our commitment to the CSA Guidelines a series of audits/reviews are undertaken annually to establish, among other things, how scientific advice is used in policy making. The findings from these reviews are considered by HSE's CSA who takes forward the recommendations with the HSE Board members.

There was a particular issue raised as part of the OSI review concerning both software and the knowledge embedded in an individual. HSE, in conjunction with HSL are taking steps to ensure the situation does not arise again. This will involve an audit of HSL procedures for software development and project management, together with structural changes that are being undertaken in HSL. Over the next 2 years HSL are embarking on a major reorganisation of their internal management systems to reinforce their project management skills and process for project monitoring and evaluation.

There are other activities under the MBUS project which will also contribute to the development of better knowledge management and sharing of skills across HSE/HSL.

9. Implement Guidelines 2005 and the Code of Practice for Scientific Advisory Committees

The Review noted that HSE has developed a quality system to secure the effective implementation of the Guidelines within the organisation. Specific

issues identified in relation to how successful the Guideline's implementation has been across the organisation have been dealt with in other Sections.

Establishing Scientific Advisory Committees to address specific questions is a highly efficient and effective use of advice.

Recommendation 7:

The Review commended HSE's activities to share knowledge outside the organisation and its investment in communications research to further improve its effectiveness. It recommended sharing experience and learning on communications and sharing knowledge with organisations that also deal with safety and health issues, such as the Food Standards Agency.

HSE Response

HSE strongly supports this and has always seen the value in learning from other organisations. HSE has been in regular contact with OGDs and the Research Councils during the development of the Science & Research Outlook (SRO) and there is ongoing dialogue between the HSE project manager and interested parties. HSE frequently reviews the websites of other bodies, both nationally and internationally, with a remit to communicate their activities more widely, and to acknowledge and adhere to best practice. Internally, the project manager for publications and SRO is in regular contact with HSE publications and marketing team.

Recommendation 8:

HSE makes extensive use of a range of advisory bodies – including Scientific Advisory Committees – to inform its work. The Review noted that HSE sometimes finds it difficult to find experts to sit on these committees. Whilst some of the reasons for this are beyond HSE's control, the organisation should assure itself that the demands it places on Scientific Advisory Committee Members are reasonable.

HSE Response

HSE recognises the valuable role that our Scientific Advisory Committees play and is grateful to Members for their hard work. HSE is keen to identify any steps that could be taken to ease the burden on Members, e.g. ensuring that work is only undertaken if there is a real business need and providing papers early in a way that best suits them. The Secretariats of all Scientific Advisory Committees have been asked to satisfy themselves that the demands placed on Members are reasonable and to seek opportunities to reduce such demands.

10. Use, maintain and develop scientific expertise (including both capacity and capability building)

The Review welcomes HSE:

- Building capacity in social science (e.g. human behaviour, human motivation);
- Considering its future requirements for scientific expertise in parallel with facilities; and
- Deploying its scientific staff more flexibly and in different configurations to make best use of resources available and share knowledge better across the organisation.

Together HSE and HSL have a wealth of scientific expertise and resource to deliver HSE's work. However, the size and balance of expertise across both organisations needs to be strategically reviewed on a regular basis, at both an organisational and programme level, so that changing needs can be accommodated more easily. The Review welcomes HSE's recent work on this and the establishment of the Science Strategy Committee.

Recommendation 9:

The Review notes the issues faced by HSE in recruiting and retaining scientific staff in some specialist areas, together with a lack of career progression and succession planning in some parts of the organisation and recommends the following actions be taken by HSE:

- **Consider the career development of scientists, and people who combine science expertise with policy alongside the Professional Skills for Government initiative;**
- **Set out specific plans for succession planning, including recruitment plans; and**
- **Continue to explore innovative ways of maintaining access to (internal or external) specialist capability.**

HSE Response

Within HSL it is possible for science staff to develop their careers to an equivalent senior level via several routes. These are; science specialists where high quality scientists gain reward for increased national and international technical standing; project specialists for those who manage complex programmes of work; business development specialists for those taking a commercial route; and operational managers for those managing teams of specialists and taking responsibility for the financial management of their units. A new succession planning and competency development process has been put in place for their career routes.

Within HSE opportunity for career progression for scientists and technologists is rather more limited as senior specialist posts reduce. The Band 2

(Principal) Inspector is seen as a largely management grade and progression from entry grade to a more senior level through increased technical accomplishment alone is not the model currently adopted. Progression to senior levels within HSE remains elusive and more often specialist staff are managed by non-technical operational managers. The Organisational Delivery work stream of the MBUS project aims to seek out ways of career progression learning from the HSL model.

The HSE Board has already agreed to the recruitment of two additional research staff to strengthen the Social Science Unit. Subject to the 2007-08 settlement, recruitment of further social research staff will be considered.

Further Information

Robert J Simpson
HSE
Redgrave Court
Bootle
L20 7HS

bob.simpson@hse.gsi.gov.uk