

**Responses to Consultation on the Draft Science Strategy 2005 - 2008**

<b>Which part of Strategy comment relates to</b>	<b>Comment</b>
<b>Alex Miller, HSE, NSD Research Unit</b>	
P16, Table 2	<p>We do not particularly like the words about the Nuclear Safety Research Programme on p16. May I offer an alternative?</p> <p>Programme of Nuclear Safety Research: HSE oversees a national programme that is run under guidelines from the DTI and agreed by the HSC. The guidelines require an adequate and balanced programme of UK nuclear safety research. In principle, the requirements cover all nuclear licensees, but HSE exercises its oversight on a proportionate basis, and concentrates its attention on operating reactors and nuclear chemical plant, and to a lesser extent decommissioning reactors and chemical plant. The programme is done in cooperation with the licensees, who commission the majority of it, and who also pay for the research commissioned by HSE. In addition, support contracts are used to provide additional support to NSD assessors, by access to specialist advice or expertise not available within NSD or HSE.</p>
<b>Graham Bennett, DNV Consulting</b>	
P9, Major Hazards	<p>Having reviewed the above consultation document, I have one major concern, and that is the inferred reduction in attention to research into Major Hazards.</p> <p>The document justifies this proposed reduction on the grounds that "these industries are mature " (but does not specify which industries) and "are well endowed with competent scientists and engineers". I would make the following points to refute these statements:-</p> <ul style="list-style-type: none"> <li>• Research by my own organisation indicates that industries such as refining and petrochemicals, whilst demonstrating admirable achievements in improving occupational safety and health in recent years, are not achieving a corresponding reduction in the frequency or magnitude of major accidents. In fact, we have seen evidence that diverting safety related expenditure to "trendy initiatives" such as behavioural based safety, has reduced real expenditure on major hazard identification and management. Over the last 20 years the frequency and consequence magnitude of major accident events has at best been static, and could even be demonstrated to be slightly increasing. The Atofina Toulouse incident shows that the industry still has some significantly unknown hazards, which can result in serious on and offsite consequences. This coupled with UK events such as those which occurred at ConocoPhillips Humber, and BP Grangemouth show that the major hazards industries still</li> </ul>

	<p>have to be extremely vigilant in the management of major accident potential. Our views are supported by research conducted by the Wharton Business School in the USA, which has seen no improvements in major accident frequencies in the USA, and by researchers in the Netherlands who, having analysed European data, demonstrate declining performance in the management of major accident hazards. Your strategy paper describes these industries as mature, but that is another way of saying ageing. There are few new/replacement facilities being built in the UK, and those that we have are in many cases over 40 years old, and operating well beyond their original design life. My organisation has been involved in helping many clients in the UK and overseas recover from the aftermath of major accidents, and we see many common features in those incidents arising from poor management of ageing assets. In my view, this is the wrong time to be reducing research or regulatory expenditure in this area.</p> <ul style="list-style-type: none"> <li>• Many developments in the understanding of major accident mechanisms, frequencies and consequences were indeed led by competent scientists and engineers in industry. The safety community has many things to thank the likes of ICI, Shell and BP for the groundbreaking work they did in the past. However, as the regulator has reduced its emphasis on major accidents in favour of occupational safety over recent years, so the major operating companies have dramatically reduced their expenditure on research into major accident hazards. The large groups of engineers and scientists that existed in organisations such as ICI have all but disappeared. We regularly receive requests for support and advice from ex ICI units such as Ineos and Huntsman, for major accident risk assessment, as they have no corporate group to call upon. We are also aware from our work within the industry that large operators such as BP and Shell are cutting back heavily in their Corporate SHE groups. As operators such as BP and Shell divest assets to smaller operators and move to new locations outside the UK, the smaller operators do not have the same interest in scientific research, and the research community continues to decline as a result. We are aware from our own recruitment efforts that many of the key scientists and researchers have either been made redundant, or have taken early retirement, and there is little new blood coming in to replace them.</li> </ul> <p>I would encourage you to rethink your proposals in this respect.</p>
<b>Ron McCaig, Norfolk and Norwich University Hospital</b>	
	<p>This document is welcome in that it sets out in one place, possibly for the first time the guiding principles behind HSC's use of science. It is very good at giving the 'Macro' picture, which will extend beyond the 2005-2008 time period, although much of this, in Table 1, is at the level of good intentions. It also gives an account of current priorities, in Table 2, much of which is likely to reappear in the Strategic Research Outlook for 2005-2006, and which very much represents the 'Micro' level of strategy as far as</p>

the Commission is concerned.

Where this document really falls down is in clearly identifying what are the overriding scientific issues that need to be addressed across the 2005 – 2008 time period to deliver the HSC's strategy. In other words what are the absolutely key issues that need to be addressed by the HSC to ensure the success of its overall strategy. This is largely absent apart from reference to WHASS, which is the one project that clearly fits into this 'Meso' level of strategy.

The production of the HSC Strategy was predicated on a number of issues for example the changes in the organisation of work within the economy. There is nothing specific within the Science Strategy which addresses this issue.

Let me give an example. Since leaving HSE I have had to come to terms with the extent to which 12 hour shift working has become common place within both the private and the public sectors. It is a normal working pattern within the acute sector in the NHS. What research does the HSC plan to address the effects of this change in work practice on both health and safety, outwith the major hazard environment?

Another 'meso' level issue which is likely to be relevant to a number of the micro level interest is the effect of change or reform within the public sector. Certainly within the central Norfolk health economy this is an important factor which directly impacts on individual health and sickness absence. It may be difficult to address some of the issues under 'Government as an exemplar' without objectively researching the context in which much of the public sector will be delivered in coming years, ie 'reform'.

This document would have much more impact if there were a number of key issues which truly run across the 2005-2008 period which could be flagged up as real strategic priorities. This is much more likely to capture the imagination of the external health and safety community than the existing list at Table 2. It would also be much easier to see whether these priorities had been achieved.

I have a particular concern about the lack of any 'meso' level analysis in relation to occupational health. It is true that there are several references to health projects within Table 2, in relation to construction, agriculture, government as an exemplar, as well as in the hazards programme. How are these various separate studies to be co-ordinated to ensure a consistency of approach? What is the HSC doing to develop conceptual models of occupational health, or of the occupational contribution to health? Many of the new occupational health issues are likely to be an extension of the concept of work relatedness rather than new distinct occupational diseases. How does the HSC integrate the workplace factors, which are its main concern, with the non workplace factors of gender, life stage, health and ability, and social deprivation? It will be very difficult to address issues of

	<p>sickness absence without some conceptual framework in which to address the balance between occupational and non occupational factors in the manifestation of ill health.</p> <p>The strategy presented for the 'Better Health at Work Partnership' programme is particularly disappointing and gives no confidence that the intended increase in activity, shown in Table 3, will actually be realised.</p>
P21, 7.3	<p>What is HSC/Es 'Scientific Advisory System'. (7.3 page 21) Now that the HSC's Occupational Health Advisory Committee has been wound down what arrangement does the HSC have to secure independent advice in the field of occupational health? It would seem that this would be important given the emphasis on occupational health in the HSC Strategy.</p> <p>Points of detail</p>
P9, 1 <sup>st</sup> para	<p>Page 9, there is no Table 4 in the document</p>
P11	<p>Page 11 research workshops. It would be welcome if the HSC would publish in advance the dates and agendas of research workshops so that those with an interest in the area, and who could not possibly expect to attend such events, could submit written comments to the HSC on the subject areas of the workshops</p>
P14, last line	<p>Page 14 Noise and vibration The reference to management of workers with noise induced hearing loss seems rather odd given that we now have the ability to detect NIHL at a much earlier stage and hopefully much more effectively to prevent the condition. Current medical management is within the NHS and seldom does NIHL affect employability. Clarification would be welcome as there are clearly new areas here that I am not aware of.</p>
P16	<p>Page 16 There are no priorities listed for railways. Does that mean that research has stopped prior to the move of Rail to ORR?</p>
P17	<p>Page 17 Better Health at Work Partnership Programme. A survey of OH provision in EU member states will be interesting and can build on the 'Campbell' and other reports already held by HSC/E. It is unlikely to be very helpful in designing programmes for the UK due to the cultural differences in health and the provision of health care between nations, and even between different regions in the same nation.</p> <p>There seem to be some missed opportunities here, for example using GIS to study the distribution of occupational health personnel in different regions of GB as well as using GIS to obtain a better understanding of the prevalence of occupational disease within discrete communities.</p> <p>It may be that the full research strategy for this programme</p>

	includes much more detail than is given in Table 2.
<b>Malcolm Birkinshaw, HSE, OSD5.2</b>	
P9	<p>The Science community in Offshore Division, HID has been consulted on the above draft and wishes to make the following comments.</p> <p><b>1 Major Hazards</b></p> <p>The statement in Section 4, Strategic Programmes on Major Hazards does not accord with our own perspectives, at least not in the offshore sector. We see no need to include such a statement in the document. We would agree that a gradual decline in needs might be expected in the future.</p> <p><u>1.1 Maturity</u></p> <p>Maturity is not a dynamic concept and changes with time as new methods and organisational structures are developed to extend the economic life of old assets. This brings many new types of challenges to HSE especially in multi hazardous workplaces such as offshore installations. A brief note on the nature of the life cycle of the offshore industry is attached as an Appendix for your information.</p> <p>The UK offshore industry has less than 40 years of experience from the earliest stages of offshore exploration. It was soon found that design practice, which had evolved in the more benign environment of the Gulf of Mexico, was inadequate for the severe environment of the North Sea. The mid 1970s saw rapid advances in technology, which enabled the development of oilfields in deeper water via large steel and concrete structures. These were designed and built using methods and criteria which were in their infancy at that time.</p> <p>Today these same structures remain in service. We have an ageing infrastructure of installations. Many are expected to continue operating well beyond their original design lives to enable development of the remaining recoverable reserves (which will become uneconomic to develop once the infrastructure is no longer available). The industry is therefore entering uncharted territory.</p> <p>At the same time, it is barely 10 years since the introduction of the safety case regime stimulated explicit consideration of accidental events and their potential consequences (e.g. structural response to explosion).</p> <p>We continue to see developments in areas such as:</p> <ul style="list-style-type: none"> <li>• Drilling equipment and methods</li> <li>• Development of deep, high pressure, high temperature reservoirs</li> </ul>

- Optimization of new designs (highly efficient structures)
- Deployment of mobile installations in deeper water, harsher environments
- Moves to reduce safety factors to enable more economic design or increase performance
- Life extension of structures, plant and equipment
- Pressure on operating costs, leading to reliability based maintenance strategies
- Development of novel, helicopter based, offshore rescue facilities

We also see problems arising from:

- loss of containment (frequency is steadily declining but remains significant)
- corrosion of structures, plant and equipment
- external threats such as ship collision and extreme weather
- issues associated with integrity degradation beyond design life
- issues associated with high temperature and pressure wells
- issues associated with skills shortages, cost cutting, new entrants and new forms of organizational structures

## 1.2 Standards and Guidance

Standards and guidance are the backbone of hazardous installation regulation as they provide the agreed measure and starting point of good practice.

Nearly 10 years ago HSE took the policy decision to revoke its guidance on the design and construction of installations in the expectation that this would be replaced by international standards (the major programme of international standards development for the petroleum and natural gas industries under ISO Technical Committee 67), and that any gaps would be identified and filled by the industry (as was the declared intent of the UK Offshore Operators' Association (UKOOA) at that time). However, the standards making effort has fallen well behind schedule due to resourcing difficulties.

Even the larger oil and gas companies have slimmed down their technical staffs to the point that participation in standards making is difficult to resource. The newer entrant oil and gas companies have little internal specialist resource, being highly dependent on consultants and contractors. For the oil and gas industry standards making, whilst supported in principle, is not seen as "core business".

In the mobile drilling industry, the approach to standardization has followed the maritime model, with installation owners looking to the Classification Societies and marine regulators to set

<p>Sections 2 and 4</p> <p>Section 2 and Appendix 1</p> <p>P9, 3<sup>rd</sup> bullet</p>	<p>standards via the International Maritime Organization (e.g. the IMO Mobile Offshore Drilling Unit Code).</p> <p>We are working with the standards making bodies, and need to commission work through the research and technical support programmes to provide the information necessary to support this. We are also working with UKOOA and the Energy Institute on a joint programme to map current guidance and standards, and identify and prioritize gaps.</p> <p><u>1.3 Industry Science and Technology Resources</u></p> <p>The offshore industry has been reasonably well endowed with competent scientists and engineers. However, this workforce itself is ageing and this resource is being spread increasingly thinly with the rapid expansion of offshore developments elsewhere in the world. The North Sea, which was once a focus for offshore technology, has lost its pre-eminent position, with much of the deep-water production technology being developed elsewhere. This has seen a drain of resources from the UK, made worse by the reluctance of young engineers to enter or remain in the industry in the UK, which is seen to be facing decline, and with more exciting opportunities (e.g. new design and construction) lying elsewhere.</p> <p>Increasingly, through lack of agreed standards (see 1.3) knowledge is being lost to the industry and this, accompanied with lack of corporate memory of original design and operational intent, presents an adverse safety picture.</p> <p><u>1.4 Future Resource Needs</u></p> <p>As far as research trends are concerned, we would see the gradual decline in expenditure experienced over the last decade or so continuing, but not to the extent of the 30% reduction from 2004/05 to 2005/06, with the promise of further reductions to come (Table 3).</p> <p><b>2. Other Comments</b></p> <p>2.1 The document mirrors the Science needs of the new overall HSC Strategy (preface). The new strategy is silent on 'major hazards'. This may account for why Section 4 does not accord with our perspective.</p> <p>2.2 Sections 2 and 4: Horizon scanning is jargon and may need expansion or referencing for many people. The same could be said of the overarching and underpinning research programme (OURS).</p> <p>2.3 Need to state that although HSL is our primary supplier it does not have expertise in all areas and other sources will be used where this is the case (Section 2 and Appendix 1).</p> <p>2.4 The statement that LAs will be funded to the extent of £4m</p>
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P5 and P11	<p>over the next three years ‘to investigate how they may make use of HSL...’ is surely not a Science strategy issue and could be seen as some form of subsidy to HSL.</p> <p>2.5 References to National Curriculum (Table 1) and Environment Agency (Section 6) are not applicable in Scotland and the equivalent Scottish bodies need to be mentioned.</p>
P21	<p>2.6 Section 7.3 addresses science governance and in particular that the arrangements in place are ‘endorsed across the organization’. We would disagree with this. There is particular dissatisfaction amongst the technical customers of the major hazards research programme arising from the bureaucratic and inefficient process and the disproportionate emphasis on the challenge function. This is causing professional staff to disengage from S&amp;T activity. What evidence is there that the arrangements are endorsed across the organization? To the best of our knowledge, there has been no evaluation of the current system or assessment of the extent to which the improvements and efficiency gains expected of it (relative to previous arrangements) have been achieved. The statement should be deleted if it cannot be supported by such evidence.</p>

**Tony Woodley, Transport and General Workers Union**

P4	<p><b>Worker involvement in health and safety</b></p> <p>The T&amp;G welcomes the commitment to exploit previous and ongoing research into worker involvement in health and safety and urge that you enter into dialogue with unions and the TUC on these issues. The T&amp;G has experience to share with you and indeed at present we are conducting our own research into roving safety representatives in conjunction with Cardiff University which is likely to be published later this year.</p>
P4	<p><b>Improving the provision of accessible advice and support.</b></p> <p>This is not just about small businesses but about inclusion of all workers. Equalities issues must be addressed and linguistic differences recognised to ensure accessibility to information. And we would urge that, while there are huge benefits in exploiting scientific developments to make information available on the web and by other electronic means, the HSE must not make assumptions that in doing this the accessibility issue has been solved as about half the population does not have access to a computer and many more may not have acquired the skills to exploit this medium effectively.</p>
P9, 1 <sup>st</sup> bullet	<p><b>Workplace health and safety survey.</b></p> <p>We welcome this development and urge that unions are consulted on how this is to be delivered.</p> <p><b>At-work road accidents</b></p> <p>There are, of course many aspects of workplace ill health and</p>

<p>P11, 5<sup>th</sup> bullet</p>	<p>injury for which proper data is not available. One particular example of this is at-work road accidents. We welcome steps being taken to remedy this, for example a new requirement that the police will collect some data when investigating road accidents, but we urge that a systematic approach is taken to collect this information. A very large proportion of workers are affected - not only those who drive for a living such as bus drivers and lorry drivers, but the many thousands of others who have to drive as part of their job such as local authority workers and health workers, and workplace transport is of course one of the HSC priority areas. We would urge the HSC to devise effective methods to collect this information.</p> <p><b>Shift work</b></p> <p>The T&amp;G would like to see more research into the health and safety effects of shift working. The HSE has already done useful work on this including the draft guidance on Managing Shiftwork which unfortunately has not yet been published. There is growing concern about this issue, particularly as increasing numbers of workplaces operate 24 hours a day.</p>
<p>P13</p>	<p><b>Back pain and stress</b></p> <p>These priority areas are of concern across the board, including the retail sector.</p> <p><b>Microwave Transmissions and health hazards</b></p> <p>This is an issue of urgent concern, as workers are increasingly expected to use equipment such as mobile phones in the course of their work and the sitting of mobile phone masts in sensitive locations such as schools. The health and safety issues need to be clarified urgently particularly as some studies suggest that there is a link between exposure and brain tumours.</p> <p><b>Asbestos</b></p> <p>The T&amp;G has recently been alerted to exposure to asbestos in textile workers arising from both the processes and the equipment. It would be useful to have more information on the incidence of asbestos-related illness in textile workers.</p> <p><b>Equality/Gender issues</b></p> <p>The T&amp;G has made this particular point in other responses.</p> <p>The T &amp; G represents women workers in a number of industries who do jobs which have been generally done by men. The T&amp;G is concerned that the standards set may not always be appropriate, or take account of, such issues as the differences between men's and women's bodies and requirements. A TUC survey of women safety reps published in 1998 showed that a significant portion of the sample - 25% - identified as a health and safety problem exposure to</p>

	<p>chemicals and biological agents. According to research carried out in Canada by Karen Messing in the late 1990s entitled <i>Combining the fight for equal rights with the fight for health at work: a Quebec experience</i> hospital workers (a large proportion of whom would be women)</p> <p><i>“...are exposed to “no fewer than 179 substances that irritate the eyes and and skin and to 135 agents shown to be carcinogenic or to affect the unborn child. Dermatitis is often observed among cleaning or kitchen staff.. workers in microelectronics, chemicals, agriculture, bars and restaurants all run a risk of developing cancer..”</i></p> <p>Furthermore, as most women have responsibility for unpaid work at home, they are likely to be doubly exposed - to a range of chemicals and other dangerous substances contained in household cleaning agents.</p> <p>You will no doubt be aware that the European Agency for Safety and Health at Work has been conducting research on this issue. Their report, <i>Gender Issues in Safety and Health at Work</i>, was published early in 2004. I attach a copy of their Fact sheet No 42 which summarises the report, and which gives some examples of gender issues including highlighting neglected areas such as reproductive health and suggests that women are more likely to have asthma or allergies which may arise from exposure to cleaning agents, sterilising agency, latex dust etc.</p> <p>We urge that the HSE Science Strategy include gender issues at work both in its methodology and with regard to the subject matter.</p> <p>The T&amp;G would make a similar point in relation to the employment of people with disabilities.</p>
<b>Bassam Burgan, The Steel Construction Institute</b>	
P9, Major Hazards	<p>The post Piper Alpha challenges were successfully tackled, with HSE acting either as a driver or as a catalyst for change. Whether in collaborative research and standards setting or in independent research to ensure that specialist inspectors had the requisite leading edge knowledge, HSE was instrumental in raising the safety standards in the North Sea during the 1990's. Today, however, the UKCS is a different workplace and it cannot be assumed that the job is complete. Three decades ago, when the North Sea oil fields were being developed, most experts thought the fields would be running dry sometime around now. The industry planned accordingly, building platforms and rigs meant to last 25 to 30 years in the gale-force winds and towering waves of the North Sea. But, instead of being on its deathbed, the North Sea is witnessing middle age. This has been made possible through advances in production efficiency and downstream processes which mean that marginal fuels can now be burned in plants that once could not use them, and refineries can process previously</p>

unusable feedstock into clean, usable fuels. Such advances have revived the fortunes of obsolete wells and fields, and have greatly extended both the lives of ageing extraction networks and the extent of economic reserves.

Allied to this, a “new” group of companies (e.g. Gaz de France, Apache, Talisman, Venture, Tuscan Energy, EnCana, and Paladin, to name but a few), is moving into the North Sea; companies with different economies of scale that can make a profit from assets steadily dropping on major operators’ list of priorities. These independents are scooping up assets deemed uneconomical for major operators and will likely provide even longer new leases of life to the “aging” North Sea for many years to come. However, many of these new players are small and without experience of operating on the UKCS. New technology is being introduced for which there is little or no operational experience. As a result, new challenges are emerging. Operation of large ageing platforms requires high levels of technical knowledge and expertise and are challenging to those who do not have the resources of the major international companies. This is coupled with a skills base which has declined over the past 5 years as companies rationalized, specialists reached retirement age and fewer people entered the industry. Against this background, we feel it is very important for the HSE to maintain the role it has played in the major hazards area. The challenges are different today. New standards, guidance and methodologies are needed to address the reassessment, use and maintenance management of ageing safety critical systems (whether structures or equipment). By having an overview of the safety performance of the industry through safety cases and inspections, the HSE is uniquely placed to provide information on risk, including those new risks associated with continued use of ageing platforms and how those risks might be managed. For the same reasons, the HSE is also uniquely placed to identify and define good practice. Collaboration and engagement with industry has in the past proved to be a very effective approach. We therefore firmly believe that the HSE has just as important a role to play in offshore major hazards as it did during the 1990’s and sincerely hope that you will take note of the above comments in finalizing your strategy.

**Lisa Morrison Coulthard, The British Psychological Society**

**General Comments:**

1. It is important whether the HSE intends to commission research on how HSE and local authorities and/or other stakeholders (e.g. DoH, DWP, NHS, DTI) can work better together and share knowledge. The documents makes a lot of two-way risk communication. Will research be commissioned around specific groups of hazards or sectors in this area. For example, psychosocial hazards or small businesses.
2. In general, both these points indicate that the contribution of psychologists to HSE science strategy is much broader than examining the frequency and impact of psychosocial hazards on

<p>P9, 2<sup>nd</sup> bullet</p> <p>P9, 1<sup>st</sup> bullet</p> <p>P13, Work Related Stress</p> <p>P14, Agriculture</p> <p>P18</p>	<p>psychological and psychosomatic health. Contributions could be made, for example, in the areas of risk perception and risk communication; knowledge management; and psychological factors contributing to faulty design of equipment in hazardous industries or in emerging industries.</p> <p>3. Similarly, under 'horizon scanning' (see e.g. p9), psychologists could contribute to the design and evaluation of formal methods for horizon scanning.</p> <p>4. In relation to the 'Workplace Health &amp; Safety Survey', it is important to ascertain how the HSE intends to commission expertise from outside of the HSE and HSL to contribute to the design of the survey and sampling, and how this expertise will be solicited</p> <p>5. On research on work-related stress, HSE recently has been commissioning much research with direct policy relevance to management standards. Does HSE plan to fund some more basic research into understanding the causal processes by which certain psychohazards contribute to well-being? For example, a good deal of evidence now indicates that in some circumstances support and work control might cause psychological harm - although the management standards indicate that work control and support need to be provided. Better understanding of how psychosocial hazards contribute to health and productivity will enable better information to be passed to managers on how work conditions can be tailored to suit individual circumstances.</p> <p>6. On research on agriculture, its seem research on stress in the rural economy is missing from the agenda. This can be in terms of the effects of running multi-faceted and complex businesses - often with small margins - that represent many modern farms. However, another relevant agenda would be examining the impact of economic changes in rural areas on occupational health in other areas of the rural economy.</p> <p>7. Finally, as outlined on p 22 - if 20% of research is to be allocated to HSL - is it necessarily the case that 80% of research will be contracted to other suppliers? We would welcome clarification in relation to this matter.</p>
<p><b>Martin Williams, Physical Environment Ltd</b></p>	
<p>P9, Major Hazards</p>	<p>The Strategy document apparently suggests that the maturity of the industry and the incumbent level of expertise give sufficient cause for a reduction in HSE research funding for this sector. It is our experience that whereas previously the industry may have been "well-endowed" with such expertise, the proliferation in recent years of small, independent operators has resulted in a distinct trend away from this situation. These new entrants operate within tightly controlled budgetary regimes and metocean matters are often perceived to be of secondary importance. These organisations do not employ metocean specialists and</p>

	<p>little funding is allocated to the types of research studies the majors routinely undertook in years gone by. Furthermore, the new entrants often acquire ageing infrastructure with apparently little motivation to research and update the design basis which, in some cases, was established decades previously.</p> <p>There is thus a compelling case for HSE actually engaging to a greater degree with the offshore industry rather than making the withdrawal that is implied in the Science Strategy document</p>
<b>Duncan Webb, HSL SCI3PPE</b>	
P2, Section 2	<p>1 Overall the tone is good. It is important to draw HSE needs together where this is sensible.</p> <p>2 But, from point 1 it may not always be practical or efficient to try and get a single HSE approach. There must be room for individual parts of HSE to have autonomy to drive science they need, even if this appears to conflict with overall HSE aims.</p> <p>3 In general, the value of science to HSE comes from knowledge, skills and experience.</p> <p>3a When science work for HSE is commissioned from outside HSE there is a danger that the knowledge, skills and experience will not remain available to HSE after the work is completed. HSE needs strong systems in place to fully absorb the knowledge, skills and experience from external bodies into HSE staff.</p> <p>3b The tendering process for science work should take into account the value of developing and expanding the knowledge, skills and experience of HSE/HSL staff. For example, knowledge gained in support and research can be applied to, and reduce the cost of, incident support.</p> <p>3c The retention of staff has a major effect on knowledge, skills and experience in HSE. Greater emphasis should be placed on adding to existing science staff's skills so they can transfer from lower priority areas into higher priority areas, rather than just recruiting fresh staff. Of course, pay (including pensions etc) plays a major role in staff retention.</p> <p>3d Many staff who might not be considered to fall under "science" have a considerable knowledge of science issues. In particular, HSE often fails to fully exploit its staff's knowledge of the practical problems and issues around a science topic due to poor internal communications.</p>
P5	<p>4 In Table 1 on page 5, under "An Interventions Strategy" the phrase "significant harm" is used. This is an ambiguous term - does it mean immediate injury or a contribution to longer term ill-health? The public will often take it to mean accidents/injury and miss the ill-health aspects of HSE's work.</p>
P9	<p>5 Occupational health and the Workplace Health and Safety Survey. These are mentioned a number of times. It is vital that such surveys include all the key factors, otherwise the data will misrepresent the true picture. I know that HSE data such as RIDDOR fail to describe PPE and human factors effects in situations where they played a part. For occupational health data</p>

P8	<p>human factors effects, including PPE, are vital for a full understanding of the true situation.</p> <p>6 The paragraph that crosses from page 8 to page 9 discusses Standards work. It is incorrect to generalize about how this supports SPs. Standards for PPE are very important in supporting SPs, especially those which are health related. PPE in Europe is made to the Standards, so getting an HSE preference into the Standard virtually guarantees that it is adopted across UK workplaces in time. There may be other areas where Standards have a similar effect.</p>
<b>Paul Rouse, Economic and Social Research Council</b>	
General	<p>We believe the social sciences have an important contribution to make to the Commission's efforts to understand problems and develop effective practical solutions to workplace health and safety. The Commission's recognition that targeted social science research to underpin policy making is money well spent chimes with the ESRC's efforts across a broad front and is welcomed by the Council.</p> <p><b>The scope of social science research.</b></p> <p>The strategy's aim of gaining recognition of health and safety as a cornerstone of civilised society and to achieve a world class record of workplace health and safety, is rightly recognised as a target which must be underpinned by world class research. The role of the social sciences in this must not be under emphasised. Impacts in this field can be made by social science in the areas of policy development and implementation, behaviour change, risk, health behaviours, education, social inclusion and understanding work related sickness &amp; its economic impacts at the organisational, regional and national levels. We are pleased to note all these areas are highlighted as priorities in the consultation document.</p> <p>Recognition of the impact new technologies will have in the future and in particular nanotechnologies is welcome. In addition to the natural sciences the HSC may wish to consider the contribution that the social sciences could make in this area. In particular in terms of public understanding of new technologies and how to frame interventions to promote and protect health and safety. The ESRC is, for example, currently funding work which is exploring the ethical, social, policy and environmental concerns about the potential toxicity of nanoparticles and the need for tighter regulation to ensure workers protection. The findings of such work may well be transferable to the HSC's wider range of activities in the area of nanotechnology.</p> <p>The HSC may wish to consider enhancing the contribution of psychology research in its proposed strategy. The understanding of psychological processes in relation to organisational culture; stress and anxiety; risk assessment; attention and memory; human computer interaction; and emotion have made significant advances in recent years. It may now be timely to consider</p>

<p>P9, Workplace Health and Safety Survey</p>	<p>applying this work to the HSC's particular areas of interest. In addition to applied research the HSC may wish to consider supporting some basic research in this area as well. The discipline could, for example, make to a useful contribution understanding the processes of knowledge management and engineering design at a more fundamental level.</p> <p><b>Areas of common interest.</b></p> <p>We were interested to note the intention to expand your evaluation work to include a more detailed exploration of the impact of the research you fund. This is an area which the ESRC is particularly interested in and we are currently actively engaged in reviewing our methods for doing this. The ESRC would welcome an information exchange with the HSC with regard to approaches to impact assessment in the future as the Commission and Council's expertise grow.</p> <p>The Commission's plans to undertake a large scale survey of the labour force during the planning period are interesting. The resulting data set will be a rich source of information which would be of great interest to a broad range of social scientists in the UK and overseas. In due course the ESRC would be interested in exploring with the Commission whether it might be possible to make the data available, in a suitably anonymised form, to the wider social science community for secondary analysis.</p> <p>Given the ESRC is actively funding research in some of the areas highlighted in the strategy we are in a good position to identify individual academics who are working in areas of particular interest to the Commission. If the Commission has an interest in engaging with this community the ESRC would be pleased to help identify appropriate researchers to facilitate this process.</p>
<p><b>Michael Topping, HSE, DR6</b></p>	
<p>General</p>	<p>It addresses all the issues I expected to see, but it is written in a very bland way. When I got to the end I wasn't left feeling enthused about the work HSE intends to carry out. In that sense I feel it undersells the potential of science to contribute to HSC's strategy. An upbeat executive summary would help.</p>
<p><b>Mark Piney, HSE, WMSW SG HEALTH</b></p>	
<p>General</p>	<p><b>Introduction</b></p> <p>The current Office of Science and Technology (OST) review of science is part of a more general assessment. The BSE or Phillip's report, is one of the reasons behind the review of governmental use and sponsorship of science. This report covers in detail the background behind, and the decisions made, during and after the BSE outbreak in UK cattle and subsequent infection of the human population. The report draws a series of "Lessons" covering a wide range of subjects including research and use of scientific advisory committees (SACs).</p>

Lessons, in the Phillips report, relevant to the Review include:

- Identification of gaps in research;
- determination of research priorities;
- the identification of the best sources of expert assistance and
- the need to keep the implications of any research “*under continuous and open review*”.

Lessons re SACs include:

- *“...areas of advice...should be identified as precisely as possible before the committee is set up.”;*
- *similarly for SAC terms of reference; composition...should include experts in the areas of advice that are likely to be required.*

As with Robert May’s 2000 Guidelines on science in government there is a code of practice for SACs which departments are supposed to follow

The OST lay out ten areas for comment (see Appendix). I will focus on two of these: Review and harness existing research and Commission and Manage new research.

### **Comments**

In summary I have comments to make on four issues;

- Firstly, there doesn’t appear to be an overarching strategy in the Consultation Document and there needs to be one, for clarity of policy and transparency of operation;
- Secondly, there doesn’t appear to be a clear, resourced and practical mechanism by which HSE takes advice from internal and external scientific/specialists to identify “*gaps*” and define “*research priorities*”;
- Thirdly, I recommend that HSC/E develop a clear, formal document describing the gaps in current knowledge and understanding and research priorities, as a stimulus to the Competition of Ideas. At the moment it isn’t clear how people inside and outside HSE can identify research gaps/priorities;
- Fourthly, there aren’t the appropriate SACs covering the priority programmes and some, such as ACTS, may need their remits and constitutions revising

### **1. HSE needs a clear science strategy**

Nowhere in the HSC document is there a clear description of HSC/E’s science strategy. There’s quite a bit of material on how HSE’s science and technology (S&T) is linked to HSC’s strategic programmes but that, by itself, doesn’t represent an S&T strategy. There are “Principles” on the strategic use of science in HSE, and how it should be used but, again, the lists of things HSE will (and won’t) do don’t add up to an overarching strategy. For everyone inside and outside HSE there needs to be a clear, concise description of HSC/E’s overall S&T strategy. The lists relating to strategic programmes etc are then the tactics to be used as part of fulfilling the strategic vision. In addition a clear overall strategy would inform the review of current knowledge and the identification of important gaps, in knowledge and

capability, (e.g. important to the delivery of the strategic programmes)

## **2. Setting S&T priorities, identifying gaps and overall governance**

Section 7.3 of the HSC Consultation document deals with Governance and says: *“Our governance arrangements have evolved during the past two years, and have reached a mature stage that has proved itself and is endorsed across the organisation”* Later, in the same sub-section, the Chief Scientist’s Unit (CSU) is described as *“...exercising an appropriate challenge function...”* and a new Project Record Form is mentioned.

Nowhere does the consultation document mention how HSE uses the knowledge and skills of internal or external scientists and specialists. And yet this is exactly one of the areas that Philip’s identifies as necessary to enable government to identify *“gaps”* and *“research priorities”*. Without the correct experienced and scientific/specialist advice HSE has no mechanism for identifying important gaps and agreeing research priorities. If internal and external scientists and specialist are not clearly and formally involved it is highly likely that the wrong areas for further research will be chosen and that research that is done will not be overseen or reviewed with the appropriate depth and understanding. In these circumstance it is quite possible that several scientific wheels will be reinvented and some will turn out to be square-shaped. The Chief Scientists Unit can check that procedures have been followed but is not in a professional position to judge the value of the research or whether it has actually filled a *“gap”* in the body of evidence and ideas in a particular area of S&T. It might be said that the CTGs and the COPIs will, somehow, oversee the S&T priorities and confirm the *“gaps”* but, as far as I know, there’s no clear arrangements for doing this. And there’s certainly no mechanism for involving and using the knowledge and experience of scientists and specialists in HSE in general.

It appears as if all S&T priority decisions will be made by a small group of people in policy and the CSU with almost no formal and systematic reference to S&T knowledge in HSE let alone outside HSE. It would seem that HSE is not following Phillips advice i.e. *the identification of the best sources of expert assistance.*

I recommend that HSE develop simple, practical, resourced mechanisms for using its own, and appropriate external, S&T resource to inform its S&T research priorities in line with government best practice a point reinforced in the 2000 Policy document: *“Departments should draw on a sufficiently wide range of the best expert sources, both within and outside Government.”*

## **3. Encouraging research ideas and innovation**

Once the *“gaps”* and *“research priorities”* have been developed by the arrangements suggested in Comment 2, or equivalent,

	<p>then the gap/priority analyses can be published. This would/could stimulate a clear market or competition in research ideas which could come from inside and outside HSE. Without a gap/priorities analysis the current Competition of Ideas (Cols) become almost a random process and potentially wasteful for all concerned. I recommend that HSC/E develop a clear, formal document describing the gaps in current knowledge and understanding and research priorities using the full breadth of scientific and specialist knowledge inside and outside HSE.</p> <p><b>4. Scientific Advisory Committees (SACs)</b>  Some SACs are clearly relevant to HSC/E's priority programmes, for instance the Advisory Committee on Toxic Substances (ACTS) should be relevant to the Disease Reduction Programme (DRP). But I don't know of SACs relevant to other HSC/E priority programmes. The Phillip's report Lessons re SACs are very clear (see Page 1 of this document) but it isn't clear that HSC/E is currently following them in that there aren't the appropriate SACs covering the priority programmes. Also, it isn't clear that, for instance, ACTS has been reconstituted to reflect the priorities of the DRP in which there is far more emphasis on improving control measures and far less on setting occupational exposure limits. I recommend that a minimum number of new SACs should be set up to inform the S&amp;T relevant to HSC/Es priority programmes and their constitution and remits are precisely drawn, as recommended in the Phillips report.</p> <p>I hope these comments help HSC/E develop an even more robust strategy on science so that HSE has the maximum impact on safety and health in the UK and, ultimately, drives down death, serious injury and occupational disease figures.</p>
<b>OST Scoping Study and the First Meeting of the Steering Group</b>	
<p>General</p> <p>P3, Section 3</p> <p>P21, Section 7.3</p>	<ol style="list-style-type: none"> <li>1. There was strong criticism that, in concentrating on HSE's immediate needs, the Science Strategy is not sufficiently forward looking and will not ensure the availability of internal &amp; external expertise in the longer term. We could probably make more of the horizon scanning work and its potential use to identify our future needs for S&amp;T expertise. We could also mention our intention to reconstitute the HSL Key Facilities Club Board so that it will cover key teams. However, we are still weak, especially with respect to external expertise.</li> <li>2. The SG expressed some surprise when Paul said that a key objective of the Science Strategy was to establish a proper evidence base to underpin delivery of HSC/E's strategic objectives. This is stated in the text but we need to bring it out more clearly.</li> <li>3. The section on science governance suggests that everything is working as intended when in practice there are significant weaknesses. We could mention the CoSAS lead contact point &amp; our commitment to strengthening the capability of the programmes to commission S&amp;T - although this will need to be worded carefully given sensitivities in the Policy Group!</li> </ol>

<b>Luise Vassie, IOSH</b>	
General	<p><b>General comments</b></p> <p>The strategy looks at how science can contribute to the work of the HSE in terms of policy-making and operational support. It presents the view that a mixture of in-house and contracted scientific work, directed at HSC business priorities, is the best way to gain value from the considerable scientific expertise HSE has to offer. In particular we note that the strategy:</p> <ul style="list-style-type: none"> <li>• focuses on health and human behaviour issues and signals a move away from major hazards research</li> <li>• signals the intention to contract out more research</li> <li>• highlights the need to adopt a wider collaborative approach</li> </ul> <p>We are pleased to see that the rationale for research interests is underpinned by an examination of the existing evidence base and state of knowledge. IOSH is committed to generating an evidence based for OSH policy and practice thought its research and development fund and through research activities in partnership with others. We welcome the measurement of intervention effectiveness for the Strategic Programmes (SPs) and encourage the development of suitable intervention–effect criteria, which take account of the challenges of confounding variables that are associated with the evaluation of organisational OSH interventions. The following provides brief comments under the key headings identified in the draft strategy.</p>
P2, Section 2	<p><b>Principles for the strategic use of science in HSE</b></p> <p>While we recognise that HSE has structured processes in place for the monitoring of the research projects, we consider that there would be benefits in seeking third party verification of the credentials of contractors in order to further ensure the quality of the research undertaken on behalf of HSE. Such processes are employed by other research funding bodies as part of their research procurement processes. In addition, we believe that all Contract Research Reports and Research Reports should be peer-reviewed before they are published and made publicly available by the HSE.</p>
P3, Section 3	<p><b>Contribution to strategic themes</b></p> <p><u>Developing closer partnerships</u></p> <p>The science strategy notes the need for an increase in collaborative working through joint projects with stakeholders, and some examples are described (page 11). Despite this HSL will be the primary supplier and joint projects with other government departments are the main projects or partnerships envisaged. Intergovernmental working can be very useful for joined up working; for example, in addition to this consultation there has been the recent ‘Science Review of the Health and Safety Executive’ by the OST. This said, the partnerships mentioned seem exclusive rather than inclusive and do not seem to differ greatly from current practice. It would be more innovative to include a much wider range of stakeholders from the many</p>

	<p>who have an interest in health and safety, for example Trades Unions and Professional bodies.</p>
P4	<p><u>Rising to the challenge of occupational health</u>  We would welcome research into the following areas:</p> <ul style="list-style-type: none"> <li>• methods for raising occupational health awareness in hard to reach groups, such as small and micro business</li> <li>• methods for raising occupational health awareness among primary healthcare workers such as GPs</li> <li>• the role and effectiveness of OH interventions and rehabilitation programmes</li> </ul>
P4	<p><u>Helping people benefit from effective health and safety management and a sensible health culture</u>  We welcome clarification on how the new Social Science Unit and Communications Directorate envisage communicating the moral benefits of health and safety through science. In addition, given the focus on human and organisational behaviour and social sciences research, we welcome an outline of the research programme of the new Unit.</p>
P4	<p><u><i>Focusing on our core business and the right interventions where we are best placed to reduce workplace injury and ill health</i></u>  The strategy indicates that HSE will continue to provide public assurance that risks in major hazard industries are properly managed (page 4) but later argues that these industries are mature and ‘should take greater responsibility for risk control research and standard setting’ (page 9). We recognise that such industries have access to a wide range of scientific and technical expertise, which could support risk control research and that passing the costs and responsibility of research onto mature industries could potentially allow HSE money to be directed to other areas that have received limited investigation. However, issues around the provision of public assurance would need to be addressed. We welcome clarification on how this alternative approach might be implemented, while addressing public assurance.</p>
P5	<p><u>Communicating the vision</u>  We welcome the philosophy of sensible health and safety and encourage the inclusion of health and safety knowledge and skills throughout the curricula from compulsory to post-compulsory education. In particular, we are keen to see that safety critical professionals, such as engineers and managers receive adequate education in health and safety risk management.</p>
P8, final para	<p><b>Strategic programmes</b>  We think it would be helpful if the statement on page 8-9 (see below) was clarified to explain which industries are likely to be affected and who the replacement provider of standards / guidance will be. There is also a typographical error, as the document does not contain a ‘table 4’ as referenced.</p>

	<p>“Finally, enabling and underpinning work, which cuts across SPs, will be undertaken to ensure HSE’s effectiveness. Elements of this work, largely provided by the Corporate Topic Groups (see Section 7.1, Appendix 1), deliver improvements to health and safety in the medium to longer term, for example through the development of standards and guidance in collaboration with industry. HSE has taken a strategic decision to cut back on such activities to ensure that our science resources are used to the best effect to support delivery of the SPs and the improvements in health and safety needed to achieve the strategic targets (see Table 4). The consequence of this is that other parts of the health and safety system may need to undertake more of this work if we are to retain the longer term improvements in health and safety that this work delivers.”</p>
<p>P9</p>	<p><u>National workplace health and safety survey</u>  We note that the HSE is to conduct a new ‘National Workplace Health and Safety Survey’ and would suggest a full public consultation on the draft questionnaire to determine its content. As part of the initial draft we would suggest inclusion of questions covering the prevalence of such issues as:</p> <ol style="list-style-type: none"> <li>a. Worker involvement and consultation on OSH matters</li> <li>b. Work-related road traffic accidents</li> <li>c. Work-related accident and ill health investigation</li> <li>d. Work-related violence, intimidation and bullying</li> <li>e. Employee hesitance to raise OSH concerns with their employers</li> </ol>
<p>P9</p>	<p><u>Horizon scanning</u>  The changing nature of work hazards, including the impact of new technologies and the impact of mental health issues requires iterative evaluation in order to ensure the relevancy of the research strategy. IOSH believes that systematic examinations, such as horizon scanning, are essential for effective risk control. We welcome the recognition of new and emerging areas of interest. Consideration of potential issues, which are at the margins of current thinking, should not be underestimated. We feel there is a need to maintain continuity in addressing issues already identified, while being responsive to critical events. We believe HSE should also explore (with the Environment Agency, Defra, etc.) the potential OSH implications of climate change.</p>
<p>P10</p>	<p><b>Science and risk communications</b>  IOSH recognises that appropriately designed and implemented research extends the evidence-base of OSH policy and practice and has a vital role in the formulation of policy. However, we believe that the results of research need to be appropriately interpreted, taking full account of the limitations and restrictions of the studies concerned. Results of research need to be fully and effectively communicated so that stakeholders understand how reliable, robust and transferable such findings are. We feel there is scope for HSE to more closely analyse how research results have contributed to the formulation of policy and initiatives. In so doing, this would identify the value of research projects and further assist in the identification of knowledge gaps.</p>

We are pleased to note that this issue has been recognised in the draft science strategy.

We welcome the HSE's new webpages *Science and Research Outlook (SRO)*, which provide an on-line, interactive resource and help to fill the information gap on HSE research progress between quarterly research newsletters. In addition, IOSH also welcomes and further encourages the approach of offering a short workshop or presentation to relevant stakeholders following the completion of research projects, which raises awareness of the research outcomes and provides early opportunities for feedback. We suggest the following could complement an overall communication strategy, although we note and welcome that the new SRO pages already offer: free SRO quarterly e-newsletter; notification of new articles in nominated topics; facility to comment on articles; and to collate articles for colleagues (<http://www.hse.gov.uk/science/hsesro.htm>).

- a. HSE fully disseminates to stakeholders the findings and interpretation of their research, making clear any limitations regarding reliability and transferability of results.
- b. HSE encourage / require their contract researchers (or other appropriate authors) to produce and submit for publication, academic papers based on the HSE-funded research study reports, as a further means of disseminating the information.
- c. HSE specifically alert trade / professional / research bodies to their relevant research findings.
- d. It would be helpful if the HSE gave some indication of how the findings from their research are used to inform policy or practice – perhaps by linking the on-line Research Report to an update page, where both HSE and others can record and share the uses that have been made of the research. Also, the HSE could indicate whether and why they would / not implement the research report recommendations and / or conduct further identified research.

P10

#### **Working with others**

We note the recognition of the importance of stakeholder involvement in delivering the science base for OSH and that a number of national and international links have been established. However, we are not aware of what processes are in place for the identification and active engagement of all relevant stakeholders, such as IOSH, in the formulation of the future research strategy.

HSE has commissioned numerous pieces of research, as evidenced by the number of Contract Research Reports and Research Reports that have been published, which cover a wide range of OSH issues. We encourage the evaluation of the work that has been carried out in order to establish areas of research that have been covered in depth and areas where limited work has been undertaken. In addition, we encourage the consideration, and where possible, the implementation of a synergistic approach to commissioning of research within, for example, the strategic research programmes. Developing synergies between research projects in particular areas offers the

	<p>potential to achieve a more coherent output. It is not clear from the draft strategy how HSE actively monitors relevant research activities in other UK organisations e.g. British Occupational Health Research Foundation, Building Research Establishment, Universities, etc. and other European countries, so as to avoid duplication and to maximise benefits.</p>
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