24 November 2003

Annex A to Paper B/04/004

A Human Factors Corporate Topic Group (CTG)
Final Report

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Summary

1. The aim of the Human Factors Topic Group (CTG) Project was to identify the need or otherwise for a CTG for this topic and to advise on a possible structure for the group should one be needed.

2. The objectives of the project were:
    a. To identify the key attributes of a CTG;
    b. To map:
        i. the current HSE specialist human factors activities,
        ii. their location,
        iii. the key stakeholders;
    c. To obtain the opinions of the major external human factors professional bodies on the direction of human factors in HSE;
    d. To review whether or not a Human Factors CTG should be created and what the requirements of implementation would be.

    HSL was included in the review.

3. The project process included a series of interviews with:
    a. Human factors specialists within HSE;
    b. The Heads of Divisions and Directorates;
    c. Human factors specialists in external organisations including DWP;
    d. Other stakeholders in HSE including Inspectors working in the field and in Sectors.

    (See Appendix I for list of interviewees) A workshop was held, involving approximately half the specialists in HSE and HSL, where the issues raised in the interviews were discussed and solutions sought.

4. The report describes the findings of the project, identifying a number of options for a possible CTG. It recommends that a CTG for human factors is formed, co-ordinating and developing the specialism, and concludes that the most appropriate model is a small, central group, based in an Operational Directorate, or in the short-term in CoSAS. The CTG would draw on the human factors groups within the directorates to provide centres of corporate expertise.

5. Within that model, the “Head of CTG” would, through a Community or Communities of Practice and Interest, identify issues for development. Some the CTG would lead, others would be sub-contracted to directorate groups through a programme of projects. These projects, cross-cutting in nature, would in the main fall within core work, though some would be driven by the strategic programmes. In effect, existing HF groups would

act as centres of expertise in different aspects of the topic, drawing on the knowledge and experience of their sector support.

6. During the project, several other issues were identified that were not directly connected with the question of a possible CTG for human factors, but were, nevertheless, very important. These include:

- The need for additional human factors resources across HSE, the most pressing need being in FOD.
- The lack of professional development plans or competency frameworks for the specialism;
- No recognised routes for registration or chartership with relevant professional institutions;
- Problems in recruitment of suitably qualified individuals, often related to higher external salaries;
- The lack of training in human factors for non-specialist staff.

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Human Factors in HSE

1. The importance of human factors and ergonomics in the reduction of risks to health and safety is recognised within HSE and is also acknowledged by some sectors of industry. The publication HSG 48 'Reducing Error and Influencing Behaviour' defines 'human factors' as:

   Human factors refer to environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety. A simple way to view human factors is to think about three aspects: the job, the individual and the organisation and how they impact on people's health and safety-related behaviour.

2. Specific topics that can be considered to be 'Human Factors/Ergonomics' in HSE include:
   - Musculoskeletal Disorders (MSDs), Ergonomics and Performance including display screen and call centre usage, shiftwork and fatigue;
   - Occupational health psychology including stress, violence, psychotropic effects, medication/mental health issues and neurobehavioural issues;
   - Impact on human reliability including organisational change, staffing levels and workload, training and competence, procedures, fatigue from shiftwork and overtime, integration of human factors into risk assessment and investigations, organisational culture, human factors in design and maintenance error;
   - Public behaviour and emergency evacuation of the public, social inclusion, ageing population, wider cultural issues and the social sciences.

   For simplicity this paper will use the term human factors as a global term covering all these areas of work.

3. However, human factors is broader than the four areas in paragraph 2 and has a boundary that overlaps with the social sciences. Diagram 1 attempts to illustrate these various aspects using a model of layers of influence:

   Layer 1 – Represents the interaction of the individual within the workplace. It includes:
   - The individual – personal attributes, skills, habits, personalities, risk perception, etc.
   - Job – task, workload, environment, display and controls, procedures, etc.
   - Organisation – culture, leadership, resources, work patterns, communications, etc.

   Layer 2 – is influenced by and influences layer 1, and is composed of:
   - Safety Management System of the whole organisation.
   - Safety Culture or Climate of the whole organisation.
   - Management structure e.g. contracturisation.

Layer 3 – represents influences external to the organisation e.g. changes in society including Government policy (e.g. Welfare to Work), ageing workforce, migrant workers, social inclusion, rehabilitation, etc.

Successful interventions using human factors tools must be able to address all three layers.

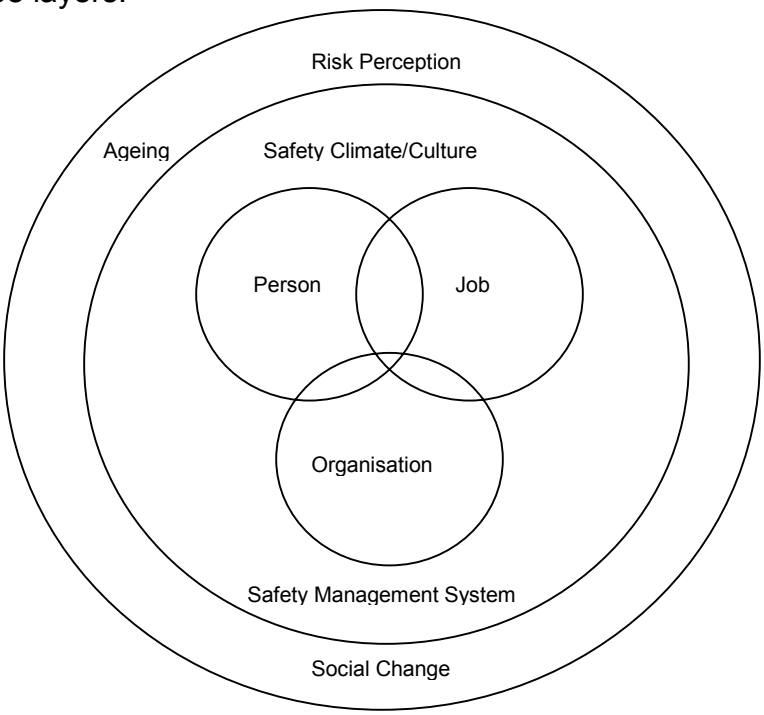

Diagram 1

4. Although the importance of human factors in HSE has been recognised for some time and many specialists are working in the area, different topics are understood to different levels of maturity. For example, we have a reasonable understanding of the cause, effect and avoidance of MSDs, but little of how best to change the behaviours of organisations to use this knowledge to reduce the resulting ill-health. Some research into social science issues but our understanding of broader societal issues, such as the ageing workforce and social change, is weak.

Why Human Factors?

5. According to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) figures, in 2001/02, 27% of injuries occurred whilst handling, lifting or carrying. Over the same period, according to the Labour Force Survey, an estimated 1 million people in the UK believed that they were suffering from a musculoskeletal disorder that was caused or made worse by the current or past work. An estimated 12.3 million working days were lost through these disorders.

6. The Labour Force Survey also shows that in 2001/2002 an estimated 0.5 million people believed they were suffering from work-related stress, depression or anxiety that was caused or made worse by the current or past work resulting in the loss of an estimated 13.4 million working days. These figures explain why MSDs and Stress are priorities for HSE, however, to drive down the levels of ill health will require a greater understanding of the underlying causes.

7. Other research carried out through the HSE has shown the impact of human factors on other sorts of accidents. For example, RR156 'Causal Factors in Construction Accidents,' which studied 100 construction accidents in detail, judged that worker actions, behaviours and capabilities contributed to 70% of the accidents. The study also found that HSE investigations generally focus on safety failures in the activity being undertaken, without capturing the upstream human factors influences on these.

8. In addition, HSE has published a number of documents illustrating the relevance of human factors issues in improving health and safety, including:

    a. CRR 393 'Effective Teamworking: reducing the psychosocial risks' explaining the effects on employee health and safety of working in different types of teams.
    b. 'The Changing Nature of Occupational Health' consisting of a series of papers by human factors specialists. One of the papers quotes research suggesting that 60% of work absence is due to stress-related disorders from sources such as increased workload and lack of job control.
    c. RR149 'The Promotion of Human Factors in the Onshore and Offshore Hazardous Industries'. One of the conclusions of this report is the need to create a distinct 'human factors' brand that distinguishes HSE advice and requirements from 'common sense'. Also, that change in organisations is brought about through regulatory expectations and major accident safety concerns because human reliability failures have been identified as significant causal factors in the majority of major accidents.
    d. The Climate Survey Tool that organisations can purchase to assess their own safety climate.
    e. HSG 65 - Successful Health and Safety Management describes the 'POPMAR' framework for safety management systems.

9. All the above suggests that HSE already recognises the potential contribution that human factors thinking and practice can make to our mission of protecting people's health and safety by ensuring that risks in the changing workplace are properly controlled. However, apart from some pockets of activity, we are not using this knowledge across the whole of HSE to inform how we provide organisations with appropriate advice and guidance, carry out inspections and investigations, or plan for future potential risks to health and safety.

Delivery of HSE's Vision, Missions and Aims

Changing World/Changing Workplace

10. The changing World and workplace require us to have knowledge of how organisations are now run. This incorporates both wider social issues and issues of culture within organisations. To understand these issues and influence the development of appropriate workplace cultures requires human factors knowledge.

11. The safety management systems of these newer organisations are often not aligned with our HSG65 model, so it is difficult to apply our current methods of audit to those organisations. In a traditionally managed factory, the responsibility for ensuring safety in the workplace can be traced through line management. The position differs in the service sector, e.g. in the NHS, responsibility for patient safety is jointly held by a variety of organisations and individuals. For inspectors to make meaningful interventions in these differing organisations, they need to be able to understand how human and organisational performance can differ depending on the employment circumstances and cultural influences.

Increase in Health Issues

12. With an increase in the numbers employed in service, financial and banking sectors, health risks from MSDs and work organisation/ environment factors increase; whilst traditional injuries have decreased through a parallel loss of manufacturing industry. Many of these employment sectors are not inspected by the HSE, but require support from HSE inspectors who need to understand the sector environment issues and be able to explain how risks can be controlled, for example by using ergonomics and task analysis and considering work organisational and psychosocial issues.

Working with Others

13. With Local Authorities enforcing many of the industry sectors that account for much of the new health issues, HSE inspectors will have to work much more closely with local environmental health officers (EHOs). We will need to codify more information so that the EHOs are confident in tackling the human factors issues that arise in these sectors.

14. Likewise, if organisations are to start thinking in terms of human factors, they will need guidance and encouragement to do this. Human factors knowledge is important in identifying the most appropriate methods for influencing others.

Addressing New and Emerging Work-Related Health Issues

15. Social changes, such as the effect of immigration and an ageing workforce, will have implications for health and safety. For example, risk perceptions of workers from countries with lower health and safety standards can impact on their behaviour at work, and likelihood that certain accidents will cause greater injuries to older workers than younger ones nneds to be taken into account in job design. To identify such issues, human factors specialists/social scientists will have to spend some time 'horizon scanning' and assessing the impact of these changes on health and safety so that early positive influences can be planned.

New Strategies and Tactics

16. Understanding human factors and the psychology of human behaviour will help us to understand the underlying reasons for many accidents and cases of ill-health. By developing and evaluating a range of influencing techniques that aim to change behaviours, HSE and LA staff will be able to tailor their interventions based on the management culture of an organisation. Human factors specialists can explain why certain influencing techniques are likely to work in some organisations, but not in others and when behavioural change programmes are appropriate and when they are not.

Building HSE's Capability in Human Factors

Current Human Factors Resources and Work Activities in HSE

17. Within HSE, there are approximately 58 human factors specialists, located in the following groups:
    - 9 in Better Working Environment Division;
    - 3 in HID Specialised Industries Division;
    - 4 in HID Offshore Safety Division;
    - 2 in Railways Inspectorate;
    - 3 in Nuclear Safety Directorate;
    - 1 or 2 in Field Operations Directorate (FOD);
    - 35 in HSL's Human Factors Unit comprising of:
        - 15 in Risk Assessment;
        - 13 in Ergonomics;
        - 7 in Work Psychology.

(N.B. This compares with the 150 mechanical engineers in HSE)

18. The work of the groups can be described in three levels; level 1 ('field' based, including site, or company, inspections, interventions and advice, training of other inspectors etc.), level 2 (sector based, including sector guidance, representations to sector-based bodies, etc.), level 3 (cross-HSE, including generic guidance, representations to professional and trade based bodies, horizon scanning, etc.).

19. Groups in Operational D/Ds carry out predominantly field-based work with some sector work relevant to their sectors. Those in BWED work mostly for the Priority Programmes of MSD and Stress, producing cross-HSE and sector-based guidance. In HSL, the specialists are involved in sector and cross-HSE research and guidance, as commissioned by the other groups, and in providing support for field inspectors, usually as part of an investigation.

The Gaps

20. There is little or no corporate rationale to the current provision of human factors specialists around the HSE. The major hazard directorates have built up groups, but FOD has very little resource. The study identified the following gaps in human factors provision, some of which are explored further under 'other issues' below:

    a. 'Major Hazards' strategic programme – most of the operating groups have some human factors expertise carrying out field and sector based work. However, RI requires additional resources to strengthen the impact being made in the sector.
    b. 'Health and Safety Hazards' strategic programme – the key areas of stress and MSDs have direct human factors support from BWED. However, none of the other key areas have such good access to human factors expertise, necessary if the targets are to be met.
    c. 'Sectors' strategic programme – the lack of human factors resources in FOD impacts directly on the ability of the programme to deliver the outcomes required.
    d. 'New Intervention' strategic programme – this programme depends on knowledge of appropriate influencing and communication methods. Human factors expertise can play a substantial role in the delivery of this programme.
    e. 'Local Authorities' strategic programme – the local authorities currently enforce in many of the industries where MSDs and work-related stress issues are predominant. HSE human factors specialists will need to work closely with the LA environmental health officers if we are to see a decline in these health issues.
    f. For field inspectors (both regulatory and specialist) to effectively provide support to the strategic programmes, they need appropriate guidance, training and support. This is patchy across HSE.
    g. The emphasis on improving safety management systems and safety cultures has diminished over time, particularly in FOD. This is partly due to the lack of specialist support for this work.
    h. No mechanism exists for identifying emerging issues ('horizon scanning'), agreeing their priority and providing resource to research them further.

i. In general, there are not enough human factors specialists to resource the programmes and the core work. As yet, no detailed analysis has been made of the numbers required, but some initial estimates are given in the final section of this report (paragraphs 46-48).

Other Issues

Recruitment, Training and Career Development

21. Most of the HSE human factors specialists are recruited with an ergonomics or psychology qualification. In addition, many are registered or chartered with either the Ergonomics Society or the British Psychology Society (BPS) and, in some cases, with both. However, HSE does not provide an obvious route to professional registration or chartership for younger recruits so retention, particularly in HSL where staff are recruited at Band 5 or 4, is a problem. In general, there is no continuing professional development plan or competency framework for the specialism and individuals do not often move between different parts of the organisation.

22. The operational directorates have found it difficult to recruit experienced human factors specialists and HSE's recent efforts were not well-coordinated with groups effectively competing against each other for staff. This was in addition to competing with other employers and other possible careers for individuals with ergonomics or psychology degrees. The pool of suitably qualified and experienced human factors specialists is small and individuals command high salaries, particularly those with knowledge of the high hazard industries, such as the nuclear industry.

23. The Department of Work and Pensions (DWP) has over one hundred psychologists and a BPS-approved route to chartership. We could work with the DWP, BPS and the Ergonomics Society to develop routes to chartership or registration for our human factors specialists. This would improve our retention of younger recruits and also provide an additional training route for existing staff working in other disciplines.

Training for Non-Specialists

24. There is considerable scope to increase the skill levels of those with regulatory functions, particularly amongst the regulatory and occupational health inspectors and possibly other relevant health disciplines. Some regulatory inspectors have gained knowledge from training courses or by working with HF specialists but this is patchy. A more consistent approach should be developed and consolidated into a training programme for all staff with a front line regulatory role and developing policy. Many occupational health inspectors already have knowledge of MSDs and could extend their range of skills to include other issues. This would give three levels of knowledge and skill within HSE. All staff involved in inspection, investigation, enforcement, policy and guidance writing would have a basic knowledge that would enable them to identify the relevant

issues. Some specialists providing frontline support (e.g. Occupational Health inspectors) could carry out more in-depth inspection and investigations and then Human Factors specialists could provide deeper topic knowledge in support of more complex cases and codify information and advice for the other groups to use.

Communications

25. Communications between individuals in different groups is good and some cross-divisional working is done, for example on shift work and fatigue issues. However, there is no formal communication system and cross-divisional working tends to rely on the individuals involved personally knowing each other and recognising common areas of interest between them. This system works well for small groups, but if the numbers of human factors specialists is to increase and they are to be distributed across the organisation, more formal communication methods will be required to enable them all to keep in touch with each other.

26. Within HSE, human factors specialists communicate with those with whom they are doing work, but others in HSE are unaware of what human factors specialists can do, for example FOD Service Group inspectors are unaware that human factors specialists could assist in NHS Trust safety management system audits. There are also no direct links with those producing standards and guidance not directly related to human factors.

27. Communications between HSE human factors specialists and the human factors professional bodies are good. However, there are no links with human factors specialists working for other enforcement bodies, such as those of other European countries. Also, links to industries not enforced by HSE, such as the aviation industry and through the Local Authorities, could be better.

28. The new Communities of Practice and Interest (COPIs) could help to improve communications between individuals and groups. Topic seminars, workshops and conferences would also help to increase communication and knowledge across HSE, including those with regulatory functions.

Knowledge Management

29. The various human factors groups in HSE have made attempts to devise a knowledge management system for the topic. However, these have been largely unsuccessful and there is no simple way to access the huge amount of historical knowledge in the organisation. Those specialists who have been in HSE for some time can often remember what work has been done and recorded, but newer recruits find it hard to find information that could help their work. This is an issue that many others in HSE face.

'Horizon Scanning'

30. Some interviewees identified topics that are not currently high priority in HSE, but may well become so due to Government targets and agendas, or through demographic changes. Many of these issues relate to the influences on the workplace of wider changes in society (e.g. ageing, immigration, etc.). HSE does not have significant expertise in these areas, many of which are the province of conventional social science researchers as well as the HF specialists covered by this report. Furthermore, there is now no mechanism in HSE for systematically considering these horizon scanning type issues and for deciding priorities for further work, etc. The Behavioural and Social Sciences Portfolio Research Group used to go some way to achieving this goal, but this last met in March 2001 when all the Portfolio Research Groups were disbanded as part of the S&I strategy review. (Appendix 2 lists some of the issues identified by this Group). This Group could be reconstituted as a COPI, although additional COPIs will be required to cover the full breadth of the human factors topic.

Links to Policy and Strategy

31. The work of some groups is directly linked to HSE's current Priority Programme, for example the work on stress and MSDs. However, for others the links are not well developed e.g. HID Chemical Division, have written a human factors policy for their Division or Directorate. It is important for human factors to be integrated into HSE's strategies and policies and not considered to be a separate issue.

32. It is currently felt, in the human factors community, that a certain amount of 'lip service' is paid to human factors and that it is considered to be a 'fluffy', unenforceable topic. The lack of central focus means that human factors issues are not treated consistently across HSE, either in terms of numbers of specialists or levels of enforcement.

Options for a CTG

33. There is a consensus within HSE staff regarding the gaps listed in paragraph 20 and the need for greater coherence and direction in the work of the HF community. It was acknowledged that many of the gaps could be filled by the formation of a CTG. However, the groups within the community were concerned about the impact a CTG would have on their autonomy and the control they have over their agenda. They were also concerned about losing their sector focus and expertise if drawn into a CTG.

34. External stakeholders were supportive of an improved human factors capability within HSE, but were not concerned about internal HSE structures.

35. A review of existing CTGs, and an analysis of their future functions in support of the strategic plan, has identified a CTG's major functions to be:

a. Developing the topic strategy for input into the main S&I strategy;
b. Providing leadership for the community;
c. Developing guidance (not necessarily in a traditional written form) and standards in support of HSE's strategic programmes;
d. Providing S&T evidence and advice in support of HSE programmes and projects;
e. Providing advice and technical support to operational directorates;
f. Horizon scanning to identify potential future issues for H&S;
g. Establishing and managing a Community or Communities of Practice and Interest for the topic;
h. Providing a head of discipline or topic focus;
i. Developing a competency framework and advising on 'continuing professional development' (CPD) and training for staff within the community.

36. These functions are necessary to support programme and project working, or as part of HSE Core Work. However, delivery does not necessarily need to be through the traditional CTG model of a single large group located in one operational directorate, or in the Policy Group. The new ways of project and programme working rely on accessing the most appropriate resource wherever it may be in the organisation at the time.

37. In the study, the following models were considered (See Appendix 3 for explanatory diagrams):

a. A small, centrally located group able to provide leadership to the HF community, drawing on the community to develop cross-HSE guidance and standards and to train inspectors.
   Pros
   i. Quick and easy to set up initially.
   ii. Group would be dynamic and responsive.
   iii. Use of non-CTG resources planned and time bound.
   iv. Would provide CPD for individuals.
   Cons
   i. Requires some of the existing resource to be allocated to work not currently being undertaken. This would leave groups unable to do all the work required of them by their D/Ds.

b. A virtual CTG, with a single person acting as the head of discipline and the CTG, using communities of practice and interest to agree the need for corporate guidance/training and to allocate projects to groups or individuals to lead.
   Pros
   i. Minimum disruption to existing resources.
   ii. Pushing the work out creates a sense of 'one HSE' by cutting across D/D boundaries.
   iii. Allows those with the knowledge to do the work.

Cons

i. Requires D/D to release resources to meet corporate needs – this may be undermined in time.
ii. Individuals have no incentive to do the additional work – all are currently fully occupied with D/D priorities.
iii. D/D priorities may take precedence, e.g. investigating a major incident, so CTG activities may become marginalised and dropped.

c. A large central group containing all the human factors specialists, providing 'dedicated' support to the directorates (via "desk officers") from a single point.

Pros

i. Would fit existing Directorate-based hierarchical structures.
ii. Careers moves can be planned within the group.
iii. Good fit with programme and project working with the CTG acting as a resource pool for all programmes.

Cons

i. Staff are more remote from the field, reducing their impact on duty holders and as part of inspection teams for major hazards.
ii. Priorities as perceived by the CTG management might not be those perceived by the D/Ds so conflict occurs.
iii. Potential for D/Ds to recruit their own staff and undermine the central group.
iv. Current structure would resist the change strongly leading to stress amongst staff.

d. Making one of the existing groups the CTG.

Pros

i. Requires little change in the current structure.

Cons

i. None of the current groups have a large enough spread of knowledge to be able to make the change without bringing in extra members. Likely that other groups would not want to lose members to the CTG.
ii. Risk that the chosen group would not have enough resources to do the extra work so this would effectively be dropped.

e. Distributing the CTG functions around the existing teams, but with no single lead.

Pros

i. Requires little change in the current structure;

Cons

i. Could lead to duplication of effort;
ii. Only topics of interest to the groups would be considered;
iii. Would not be clear why the work was being done and who the customers of the CTG outputs actually were

iv. Discipline leadership would be problematic.

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38. In making a recommendation on the type of CTG that would most suit the human factors specialism, the following criteria were applied:
    - The arrangements should be capable of delivering efficiently the functions listed in paragraph 35;
    - The level of human factors support to the stress and MSDs key delivery areas within the Strategic Programme should be maintained;
    - Arrangements need to be flexible in approach to better support the emerging strategic programmes and to meet the challenges of a changing workplace;
    - The views of staff in the HF community need to be taken into account;

39. Much of the core work that is not currently being undertaken, is best delivered by a central group of human factors specialists. This group could be small and would be available to other specialists in HSE to assist in particular areas.

40. All of the priority programme managers and the Strategic Programme directors see the need for more human factors specialists. An early role of the CTG will be to consult with the Strategic Programme Directors and Head of Directorates to identify the extent of the human factors resources needed for programme delivery. The CTG would then help to identify where this resource could come from. For some this may be straightforward, for example, the HF group in HID would provide HID with specialist support for safety report assessment. In other cases, the CTG may recommend buying in external specialist services for a short time to resource a discrete project. The CTG would also advise on the priorities and resources needed for important enabling work to be done in the 'core'.

41. Of the options considered, Options 'a' and 'b' are best able to meet the criteria in paragraph 38, though only option 'a' does this fully. For both options it is recommended that the BWED group be treated as a Topic Group focussing on MSD and Stress thus permitting the CTG to concentrate on delivery of support to the remaining strategic programmes and the core work. The CTG could be placed in an Operational Directorate, Policy Directorate, or in CoSAS. Placing the CTG initially in CoSAS, with the understanding that it will transfer to a different D/D in the future, would allow the CTG to be co-located with the group working on the S&T review. A key part of this review is the role that human factors will play in the overall HSE strategy.

42. Option 'a' requires the recruitment of a strong leader – probably at Band 1 level - and transfer of some experienced resource from the sector groups into the CTG. With the right spread of experience there would be some flexibility in the background experience of the Band 1, although they will need some knowledge of human factors. Of prime importance to the

successful delivery of that role is the ability to provide vision and leadership.

43. For Option 'b' to succeed, the Head of CTG would have to be an outstanding leader and experienced HF practitioner able to command the respect of the psychologists and ergonomists within HSE's HF community and to be seen as credible by external stakeholders.

44. For either option, the "Head of CTG" would, through a Community or Communities of Practice and Interest, identify issues for development, lead on some items using CTG resource and sub-contract the work to directorate groups through a programme of projects that she, or he, would co-ordinate. These projects could be part of core work, or via the strategic programmes. In effect, existing HF groups would act as centres of expertise in different aspects of the topic, drawing on the knowledge and experience of their sector support. For example, the NSD group could provide expertise on safety management systems, a topic they assess in nuclear safety cases.

45. All of the options require experienced sector resource to be put to cross-HSE work, e.g. developing corporate guidance, horizon scanning, training non-specialists etc. However, not all the resource needs to come from the operational directorates; HSL can provide some and some could be bought in from external consultancies. Shortfalls in sector support could be made good through external recruitment.

Levels of HF Resource

46. The formation of a CTG does not directly address the overall lack of HF skills and especially that within FOD relating to competence in ergonomic risk assessment/management. As suggested earlier in this paper, expanding the skills of occupational health inspectors and occupational hygienists could provide some additional resource. However this would only meet part of the known demand. An earlier study by FOD led to a request to recruit 4 ergonomists, one for each of the field specialist groups, with the future expectation of doubling that number. Realistically, for the various strategic programmes to make significant impacts on their targets, FOD will need to recruit human factors specialists, with a mix of work psychology and ergonomics skills, as well as build skills within existing SG staff. It is recommended that FOD, working with the H/CTG, reviews the numbers required and their disposition. If the current SG model is followed, and to maintain a critical mass in each SG, a minimum of 8 owould be required.

47. Experience from other CTGs suggests that operation of the CTG will take between 4 and 8 staff years of effort, with demand higher in the early years when the most urgent gaps in guidance are filled and training of non-specialist staff is done. Some of this resource could and should come from HSL, but some must come from experienced staff in HSE, with lost

frontline resource being made good by recruitment from outside. HSL staff will clearly be essential in resourcing horizon scanning and other project work.

48. All of the Major Hazard sectors could easily use more resource, for example, not all COMAH safety reports are assessed for human factors issues, yet all are assessed for mechanical engineering aspects. Railway Inspectorate sees the need for two more specialists. In large part this reflects the level of understanding and application of the subject within the industry, which is higher than most other industry sectors. This is a pointer to future resource needs if we succeed in embedding the application of human factors within industry.

Recommendations

1. That a Human fatcors CTG is formed modelled on Option ‘a’.

2. That the BWED group should be identified as the Topic Group working on MSD and Stress.

3. That human factors resources should be increased, particularly in FOD and RI.

4. That additional staff are recruited to make good the shortfalls in operational directorates caused by moving resources to the CTG.

Appendix I

List of interviewees

HSE Interviewees	Human Factors Specialists
Ron McCaig	BWED 7
Trevor Shaw	BWED 7
Penny Barker	BWED 7
John Wilkinson	HID CD3A
Peter Mullins	HID CD3A
Martin Anderson	HID CD3A
Claire Dickenson	HID CD3A
Craig Reiersen	NSD 3E
Jerry Williams	NSD
Margaret Berg	NSD 2F
Debbie Lucas	RI
Phoebe Smith	HSL SCI3WS
Mike Gray	HSL SCI3ER
Nick Dickety	HSL SCI3ER
Andy Weyman	HSL SCI3ER
Bob Miles	OSD 3.6
Simon Monnington	FOD WMSW SG Health
Sarah Tapley	FOD ESEEMAS

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HSE Interviewees	**Management, Policy and Strategy**
Lee Kenny	HSL SCI3
Brian Fullam	CoSAS CSKU
Paul Davies	CoSAS
Elizabeth Gyngell	BWED
Steve Coldrick	HID
Terry Rose	FOD SG
Justin McCracken	Deputy DG
Malcolm Darvill	BWED 1
Barbara Healey	FOD SG
HSE Interviewees	**Operational Inspectors**
Andrew Brown	FOD Manufacturing
Medani Close	FOD Services
Barry Clinch	FOD Services
Brian Fotheringham	FOD Construction
Graham King	FOD Manufacturing Sector
External Interviewees	
John Berman	Greenstreet Berman
Rob Cotrill	DNV
Andy Brazier	Entec
Margaret Hanson	Hutec
Mark Harrington	Hallamshire NHS Trust
Meg Galley	Ergonomics Society President
Martin Thody	Qinetq
Mary Dalgliesh	Chief Psychologist, DWP
David Stubbs	University of Surrey

Appendix 2

Five Research Topic Areas identified by the Behavioural and Social Sciences Portfolio Research Group:

1. **The science of regulation and the changing structure of society**
    a. HSE regulatory policies, strategies and outputs (including inspection activities and information).
    b. Political and economic trends:
        i. Privatisation,
        ii. Decentralisation,
        iii. De-regulation.
    c. Demographic and population trends:
        i. Changes in the workforce - ageing, more female workers
        ii. The nature of workers in different cohorts
    d. Employment sector changes:
        i. More services, more SMEs
    e. Changing employment and career patterns:
        i. Flexible working, tele/homeworking
        ii. More part-time/short-term/temporary employment
        iii. Multi-skilling/dual employment

2. **Attitudes of workers and the public**
    a. Risk perception & the development of opinions and attitudes about hazards:
        i. mental models, heuristics, cognitive biases
        ii. peer group relations, inter-group politics
    b. Risk-taking behaviour and risk homeostasis
    c. Risk communication
    d. Attributional styles

3. **Organisational structures and management methods**
    a. The process of organisational change and its management for effective health & safety
        i. Organisational culture
        ii. Communication within organisations
        iii. Corporate memory
        iv. Individual and group reactions and behaviour
    b. The effects of changing organisational structures (e.g. flattened, delayered, downsized, re-engineered) and adopting new management philosophies (e.g. TQM, new ways of working, learning organisation)
    c. Joint ventures and contractualisation (outsourcing and sub-contracting), homeworking and teleworking

4. **Individual performance characteristics and the physical and psychosocial work environment**
    a. Individual characteristics
        i. Personality
        ii. Skills and abilities (competencies)

iii. Age and gender
iv. Fatigue
v. State of mood (e.g. morale)
vi. Individual lifestyle, socioeconomic and employment status

b. The physical and psychosocial work environment
i. Thermal, visual, and other physical dimensions
ii. Relationship with colleagues (peers and those above and below)
iii. Organisational culture
iv. Organisational stability
v. Management style(s)

c. Communication of information

5. Psychosocial factors and behaviour in relation to ill-health

a. Socioeconomic differences:
i. Age, gender, ethnic origin
ii. Socioeconomic and job status, lifestyle
iii. Special groups (e.g. young people, pregnant workers, people with disabilities, ethnic groups, those with serious illness but working whilst receiving treatment etc).

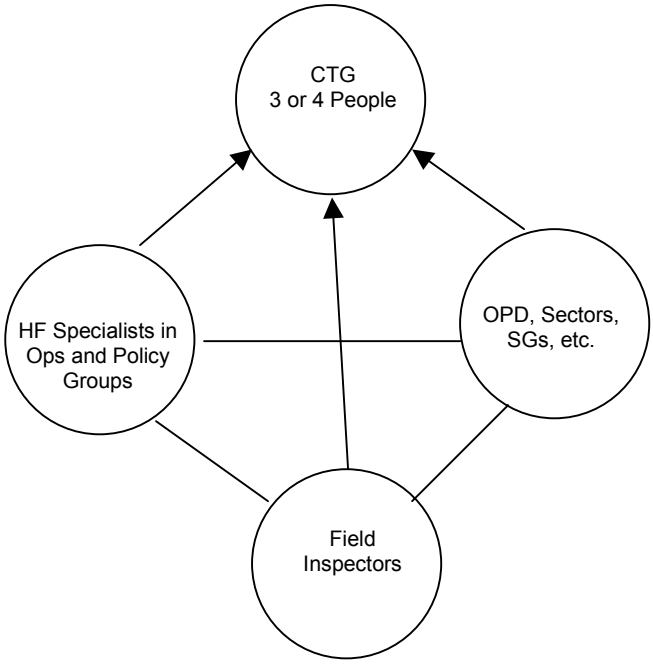
b. Individual differences:
i. in assessing the costs and benefits of taking a risk or being ill
ii. in responding to violent and aggressive behaviour
iii. in coping behaviour (including use of alcohol and drugs)

c. New ways of working and new technology (e.g. homeworking)
d. Social processes including the mass media and legal trends/precedents
e. Health problems such as musculoskeletal complaints, stress, sick building syndrome, other non-specific symptomatologies etc.

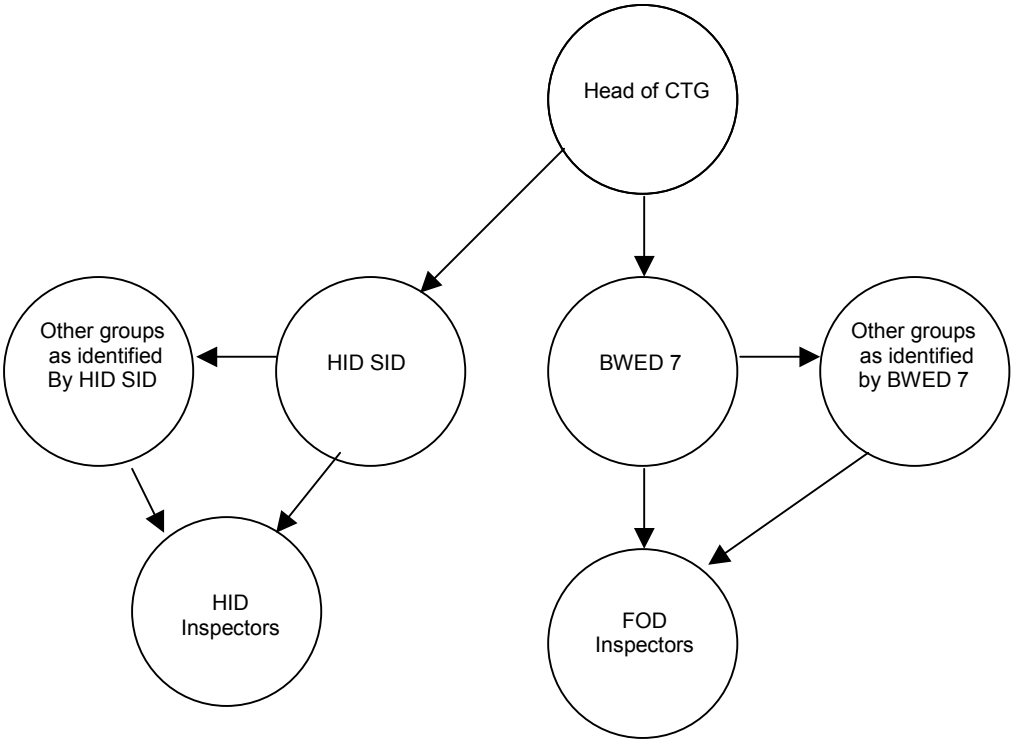
Appendix 3

Diagrams of possible CTG structures:

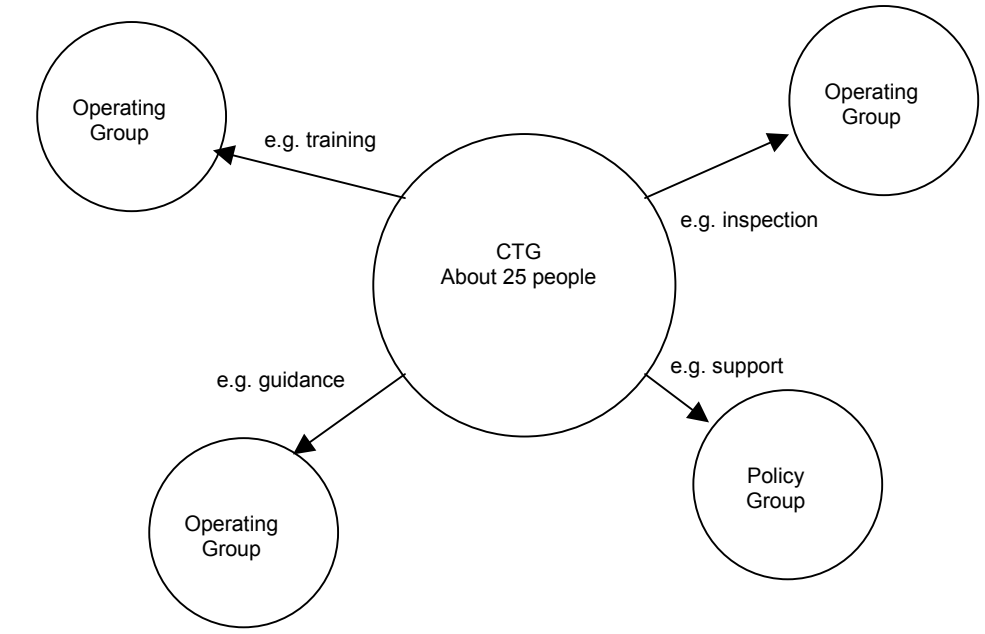
a. A small, centrally located CTG, drawing on the skills of the community to develop guidance and standards and to coordinate implementation programmes.



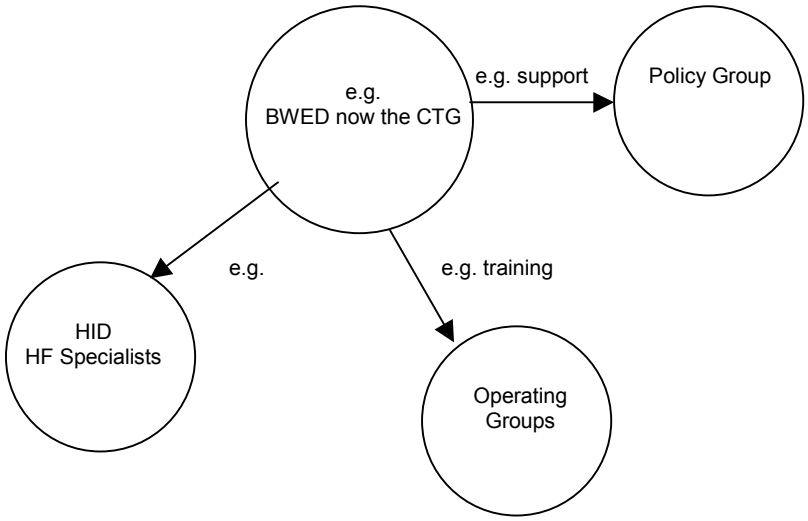
b. A virtual CTG, with a single person acting as the Head of Discipline and CTG, using communities of practice and interest to agree the need for corporate guidance and to allocate projects to groups or individuals to lead.



c. A large central group containing all the human factors specialists, providing support to operational directorates from a single point.



d. Make one of the existing groups the CTG.



e. Distributing the CTG functions around the existing teams, with no single lead.