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# Strategies for Occupational Health research in a changing Europe

Proceedings of a workshop in Brussels 10<sup>th</sup>-11<sup>th</sup> January 2000

*Peter Westerholm and Staffan Marklund (eds)*

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- chemical substances and allergens, noise and electromagnetic fields,
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#### ARBETE OCH HÄLSA

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## Preface

This issue of “Arbete och Hälsa” contains a condensed account of the proceedings of a workshop organized by the National Swedish Institute for Working Life (NIWL) in Brussels, Belgium on 10<sup>th</sup> and 11<sup>th</sup> of January 2000. The workshop, entitled “Strategies for Occupational Health research in a changing Europe”, was arranged as part of the NIWL Working Life 2000 programme in preparation of the Swedish six month presidency of the EU Commission beginning in January 2001.

The workshop addressed the overarching issues confronting the Occupational Health institutes of Europe in a work-life in a rapid change process and globalization of economy carrying important implications for research agendas and priorities in adaptation to a new horizon of societal expectations and tasks.

To the workshop had been invited researchers and research executives from institutes in Denmark, Finland, France, Germany, Italy, The Netherlands, Norway, Sweden, UK and representatives of the EU Foundation for the Improvement of Living and Working Conditions (Dublin, Ireland) and the EU Agency for Safety and Health at Work (Bilbao, Spain).

These proceedings have been edited to comprise, after an introductory address of the editors:

- Three key-note addresses (Amanda Griffiths, UK, Tage S. Kristensen, Denmark and Christer Hogstedt, Sweden) and one abstract of key-note address (Jorma Rantanen, Finland)
- Results of questionnaire survey on research priorities of participating institutes Staffan Marklund
- Presentations reflecting the current situation in participating countries and the European Agency for Safety and Health at Work:
  - Denmark – Ib Andersen
  - France – Jean-Claude André
  - Germany – Gunda Maintz
  - Italy – Antonio Grieco, Sergio Iavicoli
  - The Netherlands – Frank Pot
  - Norway – Tor Norseth
  - UK – Malcolm J. Harrington
  - European Agency for Safety and Health at Work – Markku Aaltonen
- General Discussion
- Core Conclusions
- Abstract

The workshop participants had been requested in advance to reflect on the specific questions to be addressed by the workshop. The meeting had not been prepared with a view to achieve a consensus of opinion on the issues discussed. There was at the end of the workshop nevertheless agreement that the central themes and the

general conclusions reflect well the joint views of the participants and the way occupational health researchers look at the world and Europe of today. There were also views expressed from many of the participants as to the relevance of the issues discussed and a distinct perception of agreement on the challenges facing our institutes and us as research professionals.

We hope to offer our readers inspiring and informative reading on how representative research professionals perceive the ongoing change processes and their implications for occupational health research. We also wish to convey our delight to find so much in common between ourselves as researchers and, accordingly, to see the potentials at our hands. We have much to contribute to the convergence of scientific efforts and collaboration aiming at the visionary goal of a Healthy work for All Europeans.

A letter addressed to the United Nations Millennium Summit held in New York, U.S. on 6<sup>th</sup> – 7<sup>th</sup> of September 2000, and dispatched by the International Commission on Occupational Health (ICOH) 2000 Congress in Singapore, and a statement on priority of occupational health and safety in a global perspective issued by the Secretary-General of United Nations, His Excellency Mr Kofi A. Annan, in 1997, are attached to the workshop proceedings report as appendices 1-2. The statement of Mr Annan was published in the African Newsletter on Occupational Health and Safety, Volume 7, number 3, Finnish Institute of Occupational Health 1997.

The Editors

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# 1. Strategies for Occupational Health Research in a Changing Europe

*The workshop was led by Peter Westerholm and Staffan Marklund, and held at the office of the Swedish Trade Unions in Brussels, 10<sup>th</sup>-11<sup>th</sup> January 2000*

## Introduction

**Peter Westerholm** introduced the workshop, attended by directors and senior staff of national institutes for occupational health. The background is given by the ongoing globalisation of economies of nations and enterprises, and new technology transforming life at work and the workplace physical and organisational setting. On a global and European scale this concerns hundreds of millions of people. The questions immediately arising for the workshop concern the implications for researchers and research institutions, with regard to roles and orientation, and how young researchers look at the world and the new occupational health horizon.

Most of the participants of this workshop represent state institutions and state interests in this new and confusing environment. Globalisation is making borders of national states more permeable, and traditional notions of sovereignty less sure. Recognising that the State is still arguably the most important concept in modern political theory, we have also seen how the forces of modernity put new burdens on national states to support large segments of needy citizens who are unable to cope with the speed of development.

The recent conference of the World Trade Organization in Seattle (US) gave a sobering reminder of the problems we face. The WTO convened a summit conference to strengthen networks of international trade and financial transactions governing the lives of humanity. During the course of this meeting at ministerial level there were manifestations of protest, and feelings of malaise in the streets of Seattle with the way things are going. The signal coming through from these demonstrations unmistakably indicates a perception of lack of transparency, closedness of societies and enterprises, and uncertainty of sense of direction. The world was given food for thought in decoding these messages. Computers and enterprises are simply not seen as capable of running the world independently from societies and people. Obviously, the role of the State is changing. Earlier, the prime concern of states was to raise money for warfare in trying to keep peace. Now, collaborative strategies are sought, and regional integration at the expense of nationhood. New alliances are being formed.

Where and how does Occupational Health Research fit into this new reality? Our answer is that we see occupational health research institutions as guardians of academic traditions in the service of humanity at work.

Pope John Paul II recently visited Uppsala University in Sweden. This university was founded by a papal decree from Pope Sixtus VI in 1477. In recalling this

important event in the Northern European country of Sweden-Finland, the present Pope elaborated in his speech on the responsibilities of academic institutions in upholding our European cultural heritage of respecting humanity and human beings in the spirit of rationalism and justice. Human dignity does not, as the Pope reminded us, depend on political and ideological systems. The institutions of academic knowledge have responsibilities to defend human dignity, and seek solutions to issues arising in world development. It is at this point proper to remind that Pope John Paul II had achieved a highly distinguished track record as a worklife researcher, before he came into his present position. This adds a special dimension – indeed a note of scientific authority to the views of Pope John Paul on the foundations of our role as researchers in confronting the issues addressed by this workshop.



## **2. Key-note addresses**



## 2.1 Changes in Working Life in Europe: The Implications for Occupational Health Research

*Amanda Griffiths*<sup>1</sup>

### **Introduction**

This paper attempts to address several issues of current concern to occupational health professionals. It briefly describes the nature of current and future occupational health problems and the implications for the substance of occupational health research. It considers the “rules” (the methods and paradigms) by which such research might be most profitably conducted, and it speculates on the knowledge and skills requirements of the next generation of occupational health personnel. In doing so, it adopts a systems-level approach with a focus on the prevention of problems.

### **The Changing Nature of Occupational Health Problems**

Work in industrialised European societies is becoming physically less strenuous and dangerous. Most occupational health problems are now likely to have their origins in the way people’s work is designed, organised and managed. These psychological, social and organisational factors are associated with important variations in health outcomes, both physical and psychological. Musculoskeletal disorders, cardiovascular disease and stress are prime examples. However, in many countries the extent of these problems is not reflected in the proportion of overall occupational health research funds allocated to them, nor in the amount of attention they attract from policymakers. There is also much variation between countries as to how far managers are aware of the importance of these psychological, social and organisational issues for their employees’ health and in whether they can translate this knowledge into action.

The origins of these changes in work design and management can be examined at three levels: (i) the socio-economic, political, technological and demographic forces that operate at national and international levels (eg. trade policies, or the introduction of information technology), (ii) macro-level changes at industry or company levels (eg. downsizing or outsourcing), and (iii) micro-level changes in the workplace (eg. workload, participation and support).<sup>2</sup> It is clear that these

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<sup>1</sup> Many of the arguments in this paper are further developed in: Griffiths, A.J. (1999) Organizational interventions: facing the limits of the natural science paradigm. *Scandinavian Journal of Work, Environment & Health*, 25, 589-596.

<sup>2</sup> Tetrick, L. (1999) Organization of work: implications for safety and health and research direction. Poster presented on behalf of the National Occupational Research Agenda

issues are multifactorial, complex and largely unpredictable. For centuries, many have commented that the only certainty in life (apart from death and taxes) is change. And working life is no exception. It will continue to change, possibly even faster than before.

Thus, other than being certain about the fact of change itself, it is difficult to predict long-term needs with any certainty at all. Nonetheless, broad predictions are commonly offered about future trends. For example, in the next ten or twenty years, the virtual office and virtual meetings may become more commonplace, there will continue to be an increase in what is usually termed “knowledge work”, older workers will need to stay in work longer, we will see more temporary work and more flexible working. It is also thought that organisations will need to be increasingly client- and consumer-focused in order to maintain a competitive edge and satisfy increasing expectations. All these needs will require changes in the design, organisation and management of work and in the knowledge, skills and abilities of the workforce. The emerging picture suggests a need to be better prepared for change itself and for more expertise at the process of change management.

To summarise so far, three important features of contemporary working life have been identified: (i) the psychological, social and organisational origins of many occupational health problems, (ii) their complexity and unpredictability, and (iii) the speed of change. In turn, these features have at least three implications for *what* we need to be researching and *how* we do it. First, there is an important role for surveillance. Second, the importance of context specificity should be recognised and the mediating mechanisms between work organisation and health explored (not just the start and end points). And third, there is a need for a better science of evaluation for examining organisational change and interventions; current favoured methods and paradigms alone are likely to prove inadequate.

## **Surveillance**

Given this backdrop of constant change in important factors associated with employee health, there is a need for regular surveillance of general trends in employment practices, in new organisational structures and processes, in job characteristics, in occupational health service provision, and in employee health. There is much variation between countries as to how far advanced they are in this respect. Some have routine monitoring systems in place, but many do not. It is however, possible to catch a glimpse of emerging trends by piecing together data from various sources. In the U.S., for example, insurance company claims show that temporary workers make far more compensatable claims than permanent workers in the same sectors and (in some sectors) temporary workers have much more sickness absence than permanent workers. Insurance company data also

show that the second biggest predictor of lost time injury or illness is average hours worked per week (the largest predictor was size of organisation). Working hours are reported to be increasing and are now longer in the US and Japan and the UK than they are elsewhere in Europe.<sup>3</sup> More workers than before are reporting working very fast and very hard. One explanation for this might be that when jobs are eliminated, work is often simply transferred to remaining employees.

There has been a recent explosion of conference papers and publications on the adverse effects of downsizing – on employees who worry about losing their jobs, on employees who do lose their jobs, on so-called “survivors” and, more recently, on the unimpressive evidence that downsizing alone achieves its goal – improving productivity.<sup>4</sup> A further example of recent work organisation changes is provided by teleworking. There are now suggestions that far from being the expected panacea, if badly managed, teleworking can present a health risk for some individuals. Yet another cause for current concern, particularly in the UK, is the proliferation of call centres: the media have named them the “new sweat shops”. Thus, in many countries, there is an increasing recognition in certain quarters about the potential health problems associated with various new forms of work unless they are carefully managed. And yet, such new forms of work continue to appear with little apparent consideration or awareness of the importance of work design and management for employee health.

The research to date that examines the relationship between work design, management and health is largely epidemiological. It uses very general, standardised measures that can be applied to many different types of job. This work provides information about the broad work characteristics that might damage or improve employee well-being.<sup>5</sup> Identifying these broad dimensions is one matter. But using this knowledge to good effect in one particular organisation, at one particular moment, and designing an intervention to improve things, is quite another.

### **Context Specificity and Mediating Mechanisms**

The reported associations between poor health and lack of “control” at work provides a good example. The measures used to tap this construct are robust

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<sup>3</sup> Sauter, S.L. (1999) *Work and health at the turn of the century: the case for occupational health psychology*. Invited keynote paper to the First European Workshop on Occupational Health Psychology, Lund, Sweden, November.

<sup>4</sup> Cascio, W.F., Young, C.E. & Morris, J.R., (1997) Financial consequences of employment-change decisions in major U.S. corporations. *Academy of Management Journal*, 40, 1175-1189.

<sup>5</sup> Ganster, D.C. (1995) Interventions for building healthy organisations: suggestions from the stress research literature. In L.R. Murphy, J.J. Hurrell, Jr., S.L. Sauter & G. Puryear Keita (Eds.), *Job stress interventions* (pp. 323-336). Washington DC: American Psychological Association.

enough to reveal broad associations with various dimensions of worker health (coronary heart disease, musculoskeletal disorders and minor psychiatric disorders). Control can concern workers' ability to make decisions about tasks or conduct during the working day (such as influence in the planning of their work activities or ability to choose rest breaks). It can also refer to wider organizational participation (such as in setting targets or the development of organizational policies). Control can be exercised at many levels; over the task itself, over the working environment, over the organisation and management of work, over the planning and achievement of career goals, or over other people. There has been a phenomenal concentration of effort over the last 20 years to establish associations or causal connections within the job demands/job control model (and then to re-establish them in various exclusive occupational sub-groups all over the world). Continuing to publish such broad brush examinations without any exploration of the actual mechanisms involved, and without effectively translating this research into practice, will not contribute much to improving the quality of working life.

For example, knowing that employees are experiencing low levels of "control", that such a thing is "bad" does not provide enough information in itself to effect improvements. Such an "off-the-shelf" approach has advantages for researchers, but is not so good for practitioners and managers. It asks broad questions, but does not facilitate practicable answers. Perceived lack of control (or any other undesirable aspect of work design and management) is likely to be a result of context-specific factors unique to each organisation at any one moment. To effect positive change, context-specific, local information is required.

We also need to ask, what exactly does it *mean* when people report dissatisfaction with their working conditions, in terms of their feelings, decisions and behaviour? Exactly *how* do such factors translate into psychological and physical health outcomes? For example, it has long been established, both in work and outside, that social support can reduce ill-health and psychological disturbance, but there is a lack of studies which examine the possible mediating mechanisms.<sup>6</sup> How does support influence well-being?

Understanding the principles that underlie the relationship between work characteristics and health is a crucial next step in our understanding of organisational change. These principles will be generaliseable. Knowledge about mediating mechanisms and crucial causal processes can be transferred to new contexts for application. This is particularly important where change is a constant feature. It is this knowledge which may ultimately facilitate the better design and management of work. Rather than observing the impact of new ways of working as they emerge, we might be able to predict some of their health effects at the design stage. Cook and Shadish<sup>7</sup> quote a neat illustration:

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<sup>6</sup> Thoits, P.A. (1995) Stress, coping and social support processes: where are we? What next? *Journal of Health and Social Behaviour*, Extra Issue, 53-79.

<sup>7</sup> Cook, T.D. & Shadish, W.R. (1994) Social experiments: some developments over the past fifteen years. *Annual Review of Psychology*, 45, 545-580.

“Knowledge that flicking the light switch results in light, is the type of descriptive knowledge about manipulanda (variables) that experiments promote; more explanatory knowledge requires knowing about switch mechanisms, wiring and circuitry, the nature of electricity, and how all these elements can be combined to produce light. Knowing so much increases the chances of creating light in circumstances where there are no light switches, providing one can reproduce the causal explanatory processes that make light in whatever ways local resources allow”.

This principle, the exploration of mediating mechanisms, is important and may be instrumental in maintaining the credibility of occupational health as an overarching discipline in the foreseeable future.<sup>8</sup> Thus armed, it can make a meaningful input to policy decisions and to provide useful guidance to employers.

### **Methods and Paradigms**

One of the most significant challenges facing occupational health research, particularly occupational health psychology research, is the need to evaluate the outcomes of various types of organisational change within organisations. We find ourselves, for historical reasons, addressing this problem within the natural science paradigm. The basic assumption of this paradigm is that lay persons’ ways of doing things, being based on custom and belief, are not to be trusted, and that action based on anything but scientifically valid knowledge is based on ignorance or error. This belief has certainly been evident in applied psychology, and perhaps in other applied sciences, from the very beginning and it holds, perhaps a trifle arrogantly, that only the

“scientific elite should play a central role in organising and managing society [and that] with the growth and application of scientific knowledge, chaotic, inefficient and inhumane organisations can be transformed into efficient, productive, and humane ones”.<sup>9</sup>

In the search for scientifically valid knowledge about the health effects of change at work, researchers have traditionally tried very hard to look upon the process of change as if it were an “experiment”. Experiments were designed to discover whether or not desired changes occur as a result of the manipulation of some important variable or the introduction of a particular treatment – a test of cause-and-effect. This method originated largely as a laboratory-based exercise, where establishing temporal priority, control over important variables and random allocation of subjects to treatment or control groups are generally feasible. These

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<sup>8</sup> Griffiths, A.J. (1999) Organisational interventions: facing the limits of the natural science paradigm. *Scandinavian Journal of Work, Environment & Health*, 25.

<sup>9</sup> Colarelli, S.M. (1998) Psychological interventions in organisations: an evolutionary perspective. *American Psychologist*, September, 1044-1056. (p.1046)

are the minimum necessary requirements for establishing causal connections and represent the principles against which experiments are judged.

But in organisations, of course, we are dealing with *social* interventions, where laboratory-style conditions do not apply. Causal relationships are not simple; they are complex and embedded within uncertain systems. Interventions are not isolated, sterile technologies which we implant surgically into organisations.<sup>10</sup> Organisational change usually involves a cluster of interventions, with intended and unintended effects, some functional some dysfunctional. Furthermore, when working within the operational constraints that characterise organisations, random allocation of subjects to intervention or control groups is virtually impossible. After all, researchers are guests and managers have much more important things to do than to satisfy their guests' whims. And control or comparison groups *themselves* can represent threats to causal inference, influencing the apparent outcome of organisational interventions, because of people can and do react to *being* in a control group.<sup>11</sup> Various ingenious and complicated research designs (quasi-experiments) have been suggested which deal with many threats to causal inference in field settings. But in time it has become clear that quasi-experiments are rarely used.<sup>12</sup> While possible in many fields of social science (such as community health promotion), within functioning organisations they are extremely challenging.

Another problem with the experimental approach is that it focuses on outcome, not process. Careful examination of the process of implementing change is crucial. In the absence of such documentation about the integrity of an intervention, even positive results do not make it clear what role even the *intended* processes played.<sup>13</sup> And exactly to what can "no-difference" findings between experimental and control groups be attributed? Was the analysis of the original problem wrong? Was the design of the intervention inappropriate? Was implementation deficient? Did the intervention reach the intended number of people? Did people comply with what they were asked to do? Establishing the extent to which the change or intervention is the *only* systematic difference among the groups under study (providing internal validity) is fraught with difficulty. And the harder one attempts to maximise internal validity, the more likely it is that external validity (the degree to which the results of this intervention are applicable to other contexts) will be compromised.

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<sup>10</sup> Colarelli, S.M. (1998) Psychological interventions in organisations: an evolutionary perspective. *American Psychologist*, September, 1044-1056. (p.1053)

<sup>11</sup> Cook, T.D. & Campbell, D.T. (1979) *Quasi-experimentation: design and analysis for field settings*. Chicago: Rand McNally.

<sup>12</sup> Cook, T.D. & Shadish, W.R. (1994) Social experiments: some developments over the past fifteen years. *Annual Review of Psychology*, 45, 545-580.

<sup>13</sup> Cook, T.D. & Shadish, W.R. (1994) Social experiments: some developments over the past fifteen years. *Annual Review of Psychology*, 45, 545-580.



With the benefit of hindsight, and despite much effort, it is clearly unrealistic to expect the natural science paradigm to explain highly complex, constantly changing systems such as organisations and to predict their specific effects on individual behaviour and health. This paradigm is really better suited for the natural world, for physics or for single cell activity, where it produces very reliable results. But applying its technologies within the social sciences is resulting in undermet expectations or outright failure. It is highly unlikely that the complexity of human life will ever be fully understood in such terms. As Edgar Schein, a respected commentator on organisations, has noted, we have ignored important organisational phenomena because they are too difficult to study with the traditional methods available.<sup>14</sup>

Questions about the limitations of the natural science approach and its dominant methods of enquiry, and about the futility of “physics envy”, have been recently noted by many distinguished academics from several disciplines in the social sciences. This is not just a matter that concerns occupational health. For example, the anthropologist Clifford Geertz, describing the development of ideas over the last two decades among his fellow social scientists at the Institute for Advanced Study in Princeton, New Jersey, noted,

“we are all suspicious of casting the social sciences in the image of the natural sciences, and of general schemes which explain too much. [...] Human beings, gifted with language and living in history are, for better or worse, possessed of intentions, visions, memories, hopes, and moods, as well as of passions and judgements, and these have more than a little to do with what they do and why they do it. An attempt to understand their social and cultural life in terms of [...] objectivised variables set in systems of closed causality, seems unlikely of success”.<sup>15</sup>

Similarly, the psycholinguist Noam Chomsky proposed that our verbal creativity may prove more fruitful than scientific skills for investigating human behaviour. He considers it possible that

“that we will always learn more about human life and human personality from novels than from scientific psychology. The science-forming capacity is only one facet of our mental endowment. We use it when we can but are not restricted to it, fortunately”.<sup>16</sup>

There are many types of knowledge. Whilst scientific knowledge is important, and in some senses better than others, there are sources of knowledge that have little to

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<sup>14</sup> Schein, E.H. (1991) “Legitimizing clinical research in the study of organizational culture.” MIT Working Paper No. 3288-91-BPS. (p.2)

<sup>15</sup> Geertz, C. (1995) *After the fact*. Cambridge: Harvard University Press. (p. 127)

<sup>16</sup> Chomsky, N. (1988) *Language and the problems of knowledge*. Cambridge, Mass: MIT Press. (p.159)

do with science but which nonetheless remain useful: historical facts, literature and “common sense” - that ordinary knowledge, based on learning from experience and on speculation, which we all rely on to get through everyday life. These more qualitative types of knowledge may be “good enough” truths, and certainly better than nothing. They enable us to manage well enough in incredibly complex realities. And in our attempts to understand people's reactions to changes in the world of work, “ordinary” knowledge should not be dismissed. Again, to quote from two very highly respected authors in this field,

“if our aim is to explain behaviour as it occurs in ordinary life there is no escaping the ordinary description of behaviour and experience. Certainly causal mechanisms and structures discovered by experimental psychology or other sciences apply to such behaviour, but by themselves they do not provide sufficient explanation, and they certainly do not enable us to dispense with ordinary language and to substitute a pure language of behaviour.”<sup>17</sup>

Even highly respected methodologists in the established (quantitative) research community have proposed that the qualitative methods of historians, ethnographers or journalists have a place.<sup>18</sup> Nonetheless, they also admit that such advice is likely to fall on deaf ears.<sup>19</sup>

There is considerable reluctance in the academic community to use qualitative methods. But science too is embedded in social context.<sup>20</sup> Research funding agencies, for example, play a major role in shaping scientific knowledge, as do the editorial policies of journals, as do the values inherent in appraisal systems in universities and research institutes. Qualitative methods are not as highly valued by the current, natural science dominated, research establishment as are quantitative approaches, even when quantitative approaches come close to mindless empiricism. For example, as Stan Kasl has pointed out, the constantly proliferating number of publications and conference presentations about the psychometric properties of various new self-report measures of the work environment (without actually *using* them in any way to provide external data) seem unlikely to provide a useful contribution.<sup>21</sup> Methodologically diverse intervention studies, on the

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<sup>17</sup> Manicas, P.T. & Secord, P.F. Implications for psychology of the new philosophy of science. *American Psychologist*, April, 399-413. (p.410)

<sup>18</sup> Cronbach, L.J. (1982) *Designing evaluations of educational and social programs*. San Fransisco: Jossey Bass.

<sup>19</sup> Cook, T.D. & Shadish, W.R. (1994) Social experiments: some developments over the past fifteen years. *Annual Review of Psychology*, 45, 545-580. (p.575)

<sup>20</sup> Gorman, M.E. (1996) Psychology of science. In W. O'Donohue & R.F. Kitchener (Eds.) *The philosophy of psychology*. London: Sage Publications.

<sup>21</sup> Kasl, S.V. (1999) “Plenary speech. Presented at the APA/NIOSH Work, Stress & Health 99 Conference.” Baltimore, Maryland, USA, March.

other hand, take a long time to do, and are difficult to publish. They do not advance the careers of researchers in academic communities where performance is judged, and promotion awarded, largely on number of publications.

Qualitative methods, based on peoples verbal utterances or written reports, are interpretative in nature and seek to identify the meaning of events in the real world. In essence, they ask “What is it like?” rather than “How much of there is it?” These methods are poorly understood and little used by most researchers interested in the implications of work organisation for employee well-being and performance. But they may provide a useful addition to traditional quantitative approaches for at least three reasons. First, they are useful as a stand-alone technique to examine the richness and significance of people’s experience. Quantitative methods fail to capture the richness of the meaning of organisational interventions. Second, grounded in rich data, they are helpful in the generation of *new* theories. Quantitative methods have been criticised for their over-emphasis on testing existing theories.<sup>22 23</sup> And third, qualitative methods are useful in the early stages of problem analysis and project design. One can adapt the data they generate for use in quantitative techniques.

The acknowledgement of these challenges represents a plea to researchers, journal editors, funding agencies, practitioners and policy-makers alike for more realistic expectations, more appropriate criticism and a greater awareness of complementary approaches. Researchers should acknowledge the unavoidable constraints of their designs against ideal “experimental” principles, and attempt to explore some of the challenges in interpreting outcomes by other means.

### **Education and Training**

Given the developments outlined above, it is important to consider the knowledge and skills requirements of the next generation of occupational health personnel. There is an important role here for expert institutes, universities and other centres of excellence in occupational health in passing on these developments. Occupational health personnel clearly need more knowledge about psychological, social and organisational issues. Systems-level thinking needs to be more firmly in occupational health than it has been before.

But in addition to knowledge, researchers and practitioners will need new skills. Researchers need to develop process and practice skills. And practitioners need to be better researchers in order to understand and evaluate change at work. The traditional barriers that separate these two functions are not helpful. Further, since there are many stakeholders in functions relevant for occupational health, often

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<sup>22</sup> Henwood, K. & Pidgeon, N. (1995) Grounded theory and psychological research. *The Psychologist: Bulletin of the British Psychological Society*, 8, 109-110.

<sup>23</sup> Greenwood, D.J. & Levin, M. (1998) *Introduction to action research: social research for social change*. London: Sage Publications.

with different and conflicting agendas, and since they will operate against a background of constant change, occupational health personnel need to be familiar with change processes and skilled at conflict management. Conflict, should not be dismissed, for example, simply as “resistance to change”. It can be functional, stimulating creative solutions to intractable problems.<sup>24</sup> And because these various stakeholder groups use different languages, occupational health personnel will need excellent communication skills. Finally, there remains much to be done to pass on this body of knowledge to the people who would find it most useful – managers.

## Conclusion

It is clear that much current occupational ill-health concerns psychological, social and organisational factors. The emergence of the discipline of occupational health psychology bears witness to this.<sup>25</sup> But partly as a result of pressures from the natural science establishment, those of us attempting to explore the relationship between work design, management and health, may have sometimes put methods before problems, and prediction before understanding. Whilst traditional scientific methods are often necessary to understand people’s thoughts, feelings and behaviour at work (and their implications for health), they are not sufficient. Forty years ago, reviewing the contribution of psychology to date, Sigmund Koch wrote, “from the earliest days of the experimental pioneers, man’s stipulation that psychology be adequate to science outweighed his commitment that it be adequate to man.”<sup>26</sup> It could readily be argued that this criticism still holds true. We should be careful that the burgeoning discipline of occupational health psychology protects itself from this accusation. In studying real, changing organisations, we cannot ever expect to arrive at the definitive picture. We deal in only in probabilities and uncertainty. Understanding complex systems demands more than the natural science paradigm can provide. It requires knowledge and acceptance of a variety of methods. This is by no means an argument for abandoning traditional methods, but an additional, fresh perspective may enable us to understand far more about *how* changes in the design, management and organisation of work affect the health of employees and their organisations. And armed with this knowledge, occupational health as a discipline will be well placed to enrich organisations’ capabilities and options and assist them in the process of maintaining an adaptive response to changing demands.

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<sup>24</sup> Colarelli, S.M. (1998) Psychological interventions in organisations: an evolutionary perspective. *American Psychologist*, September, 1044-1056.

<sup>25</sup> Rosenstock, L. 1997, Work organization research at the National Institute for Occupational Safety and Health. *Journal of Occupational Health Psychology*, 2, 7-10.

<sup>26</sup> Koch, S. (1959) *Psychology: a study of science*. Vol 3. New York: McGraw-Hill. (p. 783).

## 2.2 Work Life of Europe in Transition – Implications for Scope and Orientation of Occupational Health Research

*Tage S. Kristensen*

In this paper a number of trends with great potential implications for work and health in the European societies will be discussed. These developments are:

- Flexibility and the global market
- Inequality and health
- Disintegration and marginalisation
- The family-work interphase
- Individual life style and health promotion
- The new class structure

These and other tendencies in the European societies could lead to a deterioration of the social integration of society and to an increase in the burden of ill health and psychosocial problems. It is the main point of the paper that the traditional paradigm of occupational health (OH) research is too limited and should be abandoned. In the future it will be necessary to include the whole working life, the structure and function of the labour market, the family-work interphase, the individuals' life style and background, and the class structure of society in the research on work and health. If the scope of OH research is not widened, this research will lose importance and relevance for the European societies in the future.

### **Flexibility and the Global Market**

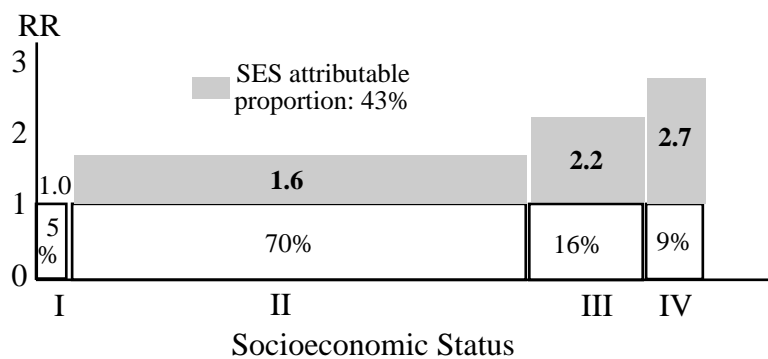
The global market and the quick technological changes have created new conditions for companies all over the world. The consequences can be seen most clearly in some of the quickly expanding industries such as information technology, communication, and marketing, and they seem to be profound for the individual as well as for society. In his book: *The corrosion of character* (1998) Sennett has analysed a number of these consequences. First of all, the workers have to be more flexible. This means that the employees have to work longer hours, without fixed working hours, without established requirements for qualifications or salary, and with increased job insecurity. Secondly, the social networks tend to be loose and temporary, the reward structure is unpredictable, and the qualifications, experience and competence of the employees quickly become obsolete. Thirdly, the strain on the family increases because of the long working hours and the lack of a clear distinction between working and leisure time. As one woman employee put it: "I always seem to leave my work too early, only to discover that I get home

to my children too late”. The lack of lasting commitments on the part of the employees as well as the companies lead to selfishness, poor sense of direction and lack of meaning. Hence the title of the book *The corrosion of character*.

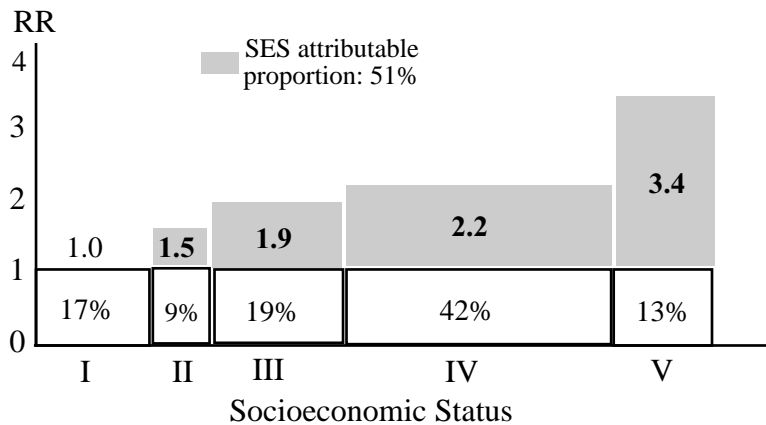
Seen from a health point of view, the lack of predictability, poor social support, lack of meaning, long working hours and many deadlines, and high degree of job insecurity constitute a combination of risk factors, which could have serious consequences for the employees in the future. At the present, most of the employees in the sectors of information technology, communication, and marketing are rather young, and the “exposure time” has been short. Therefore, we have not been able to study the long-term consequences of this type of flexible work.

### Inequality and Health

Social differences with regard to health and mortality have always existed, and the normal picture has – not very surprisingly – been that the rich were healthier than the poor. The surprising fact is that socio-economic differences with regard to morbidity and mortality seem to *increase* in a number of European countries, and that these differences seem to be more pronounced in the Northern European welfare states (such as the Scandinavian) than in Southern Europe (Mackenbach et al, 1997; Kunst et al, 1998). Figures 2.2.1 and 2.2.2 show research results from the UK and Denmark. The two prospective studies show remarkably similar results: In both countries the risk of ischemic heart disease was approximately three times as high in the lowest socio-economic class as in the highest, and in both studies a stepwise increase in risk was found. Also, in both studies the SES attributable proportion was close to 50 per cent. This is the proportion of the disease cases that would not have occurred if all the social classes had the risk of the highest class. (The dark area of the two figures).



**Figure 2.2.1.** Relative risk of ischemic heart disease mortality in the Whitehall I Study from London, UK. Results from ten years of follow-up. (Marmot et al. *Lancet* 1984;I: 1003-6).



**Figure 2.2.2.** Relative risk of ischemic heart disease in the Study of Copenhagen Males. Results from 17 years of follow-up. (Hein et al. *J. Intern Med* 1992;231:477-83).

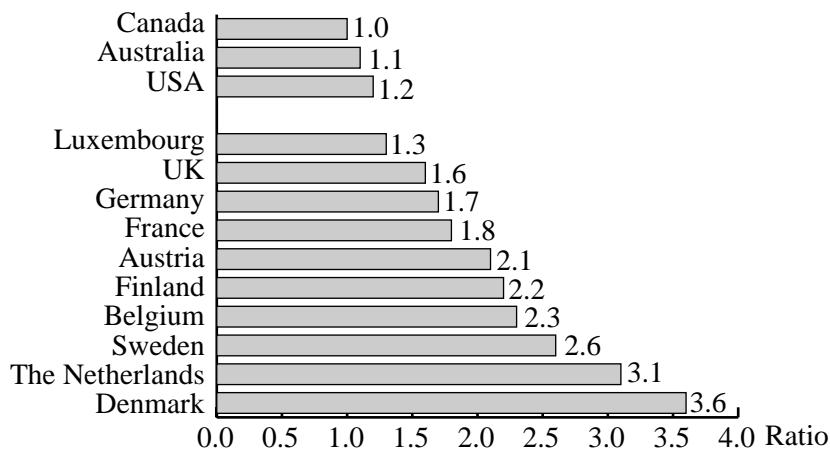
These and similar results have stimulated research on the possible pathways and mechanisms, which might explain the socio-economic gradient with regard to health. Three main mechanisms have been identified, and they all seem to contribute substantially to the gradient: Differences in living conditions in early life, in adult life style, and in work environment. With regard to the latter, it is now well documented that the lower socio-economic classes have lower levels of control and skill discretion at work, more repetitive work, higher levels of ergonomic, physical and chemical exposures, higher job insecurity, and higher accident rates. With regard to life style, most studies have found that people in the lower strata eat a more unhealthy diet, smoke more, are more physically inactivity, and more obese. Furthermore, the life style and the work environment factors seem to be connected in a number of ways so that persons with more control and higher skill discretion at work find it easier to change their life style in a healthy direction. Thus, the research in health inequality seems to indicate that a combined effort of work environment improvements and life style health promotion might have a positive effect on the health of the population and at the same time reduce the social gradient in health.

### **Disintegration and Marginalisation**

Disintegration, marginalisation and social exclusion have become major problems in most European countries since the middle of the 1970's. This problem has manifested itself in a number of different ways. First, large groups of adult persons have been unable to find stable jobs. The highest unemployment rates have been registered for young persons, women, persons with health problems, and immigrants. Secondly, a substantial number of employed persons have been forced to leave the labour market before the normal age of retirement due to poor health or to a poor match between qualifications and the needs of modern work-places. Thirdly, a sizeable proportion of the workforce have been forced into temporary jobs and/or jobs with very low job security.

This disintegration and marginalisation of millions of Europeans has a number of negative consequences. First of all, the economic and social consequences have been considerable for the unemployed/underemployed as well as for their families. Secondly, we know that marginalisation has negative consequences for health and psychological well-being. Thirdly, marginalisation has serious consequences for social cohesion, social stability, and social integration in society. A low level of integration in the European societies will result in higher crime rates, social unrest, political instability, and conflicts between social groups.

Statistics from the OECD (figure 2.2.3) show that disintegration of immigrants is a much more serious problem in the European countries than in North America and Australia. While unemployment rates in the latter countries are about equal among immigrants and native born, the unemployment rates of immigrants in Europe are from 30 per cent to 260 per cent higher than among the native born. Problems with integration and disintegration cannot be solved by the workplaces alone, but require changes in labour market structures and laws.



**Figure 2.2.3.** Unemployment of immigrants compared with unemployment among native born in OECD countries. A ration of 1.0 indicates the same level of unemployment in the two groups. Source: OECD Statistics, 1999.

### The Family Work Interphase

Families are under great strain due to the increasing working hours of parents and to the increasing divorce rates. In particular, the dual career families with (young) children face a number of problems, which do not seem to have any easy solutions. Perhaps the strain due to the long working hours and the demands at work are felt more by the children than by the parents. Traditionally, work has been considered the source of stress while the family provided rest, support and recreation. This picture has, however, been challenged by Hochschild in her book *The time bind* (1997). According to Hochschild, work has become the “home” for many employees, while at the same time family life is increasingly regarded as “work”. Many families with two working parents have to apply the methods of industry (such as time management, outsourcing, quality time, and strict division



of labour) in order to cope with family obligations. Moreover, many parents feel incompetent as parents and that family life is tense, unpleasant, and without many rewards. Work, on the other hand, offers rewards, support, meaning and comprehensibility, and a sense of competence. (The work studied by Hochschild was not modern flexible work, but more traditional production of goods.)

Most countries in Europe offer very poor solutions for working parents with children. Periods of paid maternity leave are usually very short, institutions for children are too few or do not exist, and the care of sick children is often very problematic. These problems are even more pronounced for single parent families. The conflicts between the needs of the workplace and the needs of the families result in reduced psychological well-being, discrimination of women, and social and psychological problems with children and young persons. Changes in labour market and social welfare laws are necessary in order to reduce these problems.

### **Individual Life Style and Health Promotion**

As already mentioned, the individual life style has great impact on morbidity and mortality in society as well as on the social gradient with regard to health. For instance, smoking alone accounts for approx. 30 per cent of all cardiovascular diseases and about the same proportion of cancer. Public campaigns have had some impact on the life style of many people but vigorous marketing from industry has often had an even stronger impact, which can be observed in the drinking, eating, and smoking habits of young people in Europe. It has been suggested that public campaigns should be supplemented with health promotion (HP) at the work places in order to reach the segments of the society less likely to be influenced by the public media.

It should, however, be acknowledged that workplace HP programmes have a number of serious limitations: First, employed individuals are healthier than unemployed individuals, and these persons are not reached through work-site programmes. Secondly, workplaces with HP programmes usually have better working conditions and healthier workers than workplaces without. Thirdly, the less healthy tend to have a lower participation rate and a higher drop-out rate than the more healthy in workplace HP programmes. Fourthly, very few programmes have been systematically evaluated. And fifthly, in those cases where effects have been evaluated, the results have not been very convincing. For these reasons, a number of experts in the field have suggested that the best results of workplace HP might be attained by combining HP with physical and psychosocial working environment improvements. Recent studies have supported this idea.

### **The New Class Structure**

The traditional class structure has been based on the ownership of the means of production, the income, level of education, number of employees or subordinates, and occupational position. The lower classes had the hardest work, the longest working hours, the lowest income, and the poorest health. In modern post-

industrial societies a new class structure has emerged with very different features. This structure is shown in figure 2.2.4. The figure shows five strata of society: the permanently excluded, the marginal labour force, the traditional wage earners, the career life form, and the self-employed. In most European societies each of these strata comprise about 10-30 per cent of the adult population between the ages of 20 and 60 years.

	Working hours per week
Permanently excluded from the labour market	0
Marginal labour force. Temporary workers	0-40
Traditional wage earners	35-40
The career life form	40-70
Self-employed	40-70

**Figure 2.2.4.** The new class structure. Each of the five groups comprise 10-30 per cent of the adult population in most European countries.

The permanently excluded receive public or private pensions/benefits or they are supported by the family. The marginal labour force has paid work during periods of life and many persons earn salaries doing “unofficial” or “black” work, or they have jobs receiving subsidies from the state. The traditional wage earners work according to the general agreements and laws, in most countries between 35 and 40 hours per week. Overwork is usually paid, and a large proportion of the workers are unionised. The career life form is characterised by longer working hours, unpaid overwork, low adherence to agreements and laws, and a high level of commitment to work. (For the traditional wage earners “real” life is outside work, while the career workers realise themselves through their work.) Finally, we have the self-employed class.

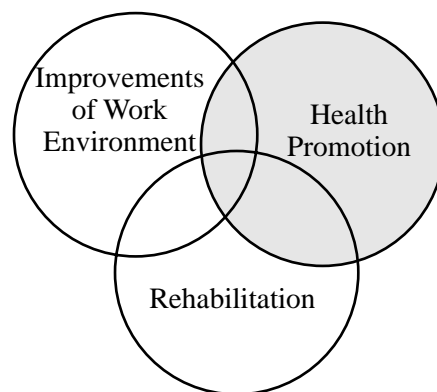
It is interesting to note that in the traditional society the lower classes worked long hours while the upper class was a “leisure class”. Today we see the opposite trend: The socially excluded at the bottom of society have no jobs, while the career workers and the self-employed people work up to 70 hours per week or even more. Another important point relates to the focus of traditional OH research. Most published studies in occupational medicine focus on traditional wage earners with fixed working hours and highly structured working conditions. These workers comprise a smaller and smaller proportion of the adult populations in the European societies. This means that OH research is unable to describe and analyse the factors influencing health for the majority of the population in modern society. Only research transcending the limits of the traditional OH research will

be able to provide useful theories, models and empirical results, which can establish the basis of evidence based prevention and health promotion.

## Conclusions

Traditional OH research has focused on the possible harmful exposures at work. Factors outside this limited paradigm of occupational exposure and health have been considered irrelevant or – at best – treated as “confounders”. This paradigm was useful during a period with specific and very noxious exposures at the work-sites. Today the paradigm has turned into a limiting straitjacket. In order to understand the important factors influencing the health of the adult populations of the European societies, research has to be much broader and to be interdisciplinary. It is necessary to include the total life course, the life style of the individuals, the individual personality and coping potentials, the work-family interphase, the gender and family roles, the structure and function of the labour market, the impact of the global economy, the health effects of the ambient environment, and the (new) class structure.

Prevention at the work-sites will still be important in the future, since the working conditions in the European societies are still very far from perfect. It is, however, important to consider how the preventive effort can be integrated so that the different approaches supplement each other. In the last figure (figure 2.2.5) an integrated prevention strategy for the workplace is suggested: The traditional approach of working environment improvements will still be a very important cornerstone of public health in the future. In particular, the ergonomic and psychosocial factors present important challenges for continued research as well as prevention. The work-site health promotion strategy can supplement the environmental approach by focusing on the individual’s life style and resources.



**Figure 2.2.5.** An integrated prevention strategy at the workplace.

Finally, work-site rehabilitation and employee assistance programmes for workers with health-related problems are of vital importance for reducing the social exclusion of persons with limited resources. In many countries laws, regulations

and traditional structures prevent this model from being implemented in practice. For instance, the three strategies shown in figure 2.2.5 may belong to three different ministries (work, health, and social affairs). Thus, active and dynamic implementation of research results in the future requires not only a new way of thinking but also new structures in the European societies.

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## 2.3 From Occupational Health Research Institute to Working Life Research Institute – Experiences from Sweden

*Christer Hogstedt*

The creation of the Swedish National Institute for Working Life in 1995, through a merger of research institutions under the Ministry of Labour: the former National Institute of Occupational Health, NIOH, the smaller Institute for Working Life Sciences and parts of the Work Environment Fund, could be regarded as logical in the context of developments in the labour market during the previous ten years in Sweden.

During the 1980's and early 1990's the labour market in Sweden underwent major, interlinked changes related to globalisation of the economy. A rapid and drastic increase in the unemployment rate resulted from continued rationalisation of heavy industry, serious cuts in the public sector and substantial immigration. Employment and training became prime issues. Part-time and temporary jobs as well as "self employment" and overtime increased. Costs for sick-leave, pre-retirement, and worker's compensation increased dramatically, when people with some handicaps, such as mature age, were no longer as attractive as they had been during the 1980's. Women achieved roughly the same employment rate as men during the 1980's and inequality in salaries and position raised gender issues. Sweden joined the EU in 1995.

Such major social changes could hardly occur without influencing the research agenda for the labour market sector. The NIOH mainly produced research results within the classical occupational safety and health fields, including ergonomics and psycho-social issues. The smaller institute, better known as the Working Life Centre, had political scientists, economists, sociologists, law researchers and behavioural scientists but only about 30 post-doctoral researchers while NIOH had about 90. The resources for research on conditions for employment, industrial relations, work organisation issues, learning at the workplace and regional development were much smaller than those for occupational safety and health.

There was also certain disappointment with health prevention results after the strong expansion of occupational safety and health resources during the 1970's and 1980's, as rehabilitation and exit from the labour market increased rather than decreased. New approaches to prevention, with more focus on integration of ergonomic conditions with work organisation and management involvement, were required.

Developments during the 1990's did not make all OSH research on chemical and physical factors unnecessary but it became obvious that they had to be complemented by new questions like:

- How can work environment aspects be integrated in development processes of enterprises and organisations?

- Which health effects are created by short and long-term unemployment for different groups, ages and sectors?
- Which health effects will arise from different work schedules and how will they effect tiredness and sleep quality?
- What are the combined health effects from work environment, living conditions and lifestyle factors?
- How much increasing health inequity can be explained by work-related factors?
- How does work environment influence ageing?
- Which work organisation supports, and which threaten, sustainable work ability?
- What stops the preventive actions for a safe work environment when the necessary knowledge is available?
- Which competence and organisation should occupational health services have?
- Are laws, internal control, quality control or continuous improvements the best procedures for work environment management?
- How is health and health behaviour affected by different systems for social insurance and worker's compensation?
- What is the economic impact of a good or bad work environment for the enterprise and for the society?

### **The Swedish National Institute for Working Life**

The new institute was given the task of examining Swedish labour market policy, and how conditions and opportunities on the labour market have changed since Sweden joined the European Union (EU). Work organisation and marginalisation of groups on the Swedish labour market were included in the Institute's broadened scope of operations. Occupational health remained an area of high priority.

The government's instruction for NIWL for the year 2000 was:

- to perform research, development, knowledge transfer and education in order to contribute to the renewal of working life, increased access to the labour market and an improved work environment with decreased risk of ill-health and accidents.
- to perform and promote sustained growth in knowledge and competence in and about working life issues.
- to perform multidisciplinary research with relevance for problems and development tendencies in working life.

The Institute has a staff of more than 500 persons, of whom the majority is located in the Stockholm area, and 80 persons are employed at our regional institute in Umeå in the north of Sweden. During 1999 four more regional institutes have been established each having 10–20 employees and an expected growth to 20–30 staff members in each institute.

At present, we have 35 full professors, 35 associate professors, another 100 post doctoral researchers and 140 doctoral students tutored by researchers of the Institute (of whom 70 are employed at the Institute).

The Institute's budget for 1999 was roughly 55 million Euros, whereof 40 millions for research, development and training, including administration. 15 million Euros are transferred to the trade unions for training and salaries for regional OSH representatives supporting employees in small enterprises. In addition to government funding, 2–3 million Euros are achieved annually through grants and other types of external financing.

1999 the institute was reorganised from half a dozen large departments to 21 programmes with various contents. Some are basically mono-disciplinary, like toxicology, dermatology, musculo-skeletal research, industrial hygiene and labour law research, while others are multidisciplinary programmes, e.g. ergonomics and the programmes for gender and organisational development. Some programmes concern regional development in different parts of Sweden. Several programmes concern special sectors like the work and culture programme, the programme for conditions in human service work, work organisation in schools and for industry and human resources.

The Institute has a strong emphasis on international collaboration and has initiated a number of activities for the presidency of the in the European Union during the first six months of 2001. It collaborates with the European Foundation for Improvement of Living and Working Conditions, as well as the European Agency for Safety and Health at Work. The Institute also runs a collaborative programme for research on working life issues from a European perspective and in the interests of the employees together with the three Swedish trade union confederations, the so called Saltsa programme.

## **Development and Training**

The Institute wants to systematically integrate research with learning, international collaboration and various development projects, to enhance the flow of knowledge between theory and practice. Development work is seen as a bridge between research and the real world. With its resources and competence, the Institute can participate in development work together with regional universities, the business world, the public sector and labour market organisations. With its research competence, the NIWL is expected to participate in, and investigate the conditions for, successful development projects that in the long run contribute to a sustainable working life for society as well as citizens.

The Institute is responsible for specialist training of all types of personnel in occupational health services in Sweden and specialised health and safety representatives. Research training is integrated in research activities. The Institute also organises training in occupational health and safety practice for participants from developing countries and from Eastern Europe. Training activities are planned to be broadened and, for example, include employers with small enterprises, trade unionists and teachers.

## Effects of the Transformations

The Institute has not undergone full evaluation since 1995. The opinions expressed here are therefore purely based on the author's experiences as deputy director general 1995-1998 and as a senior research co-ordinator and member of the executive committee since 1999.

The task, from the parliament and the government at the initiation of the new institute in 1995, was to increase research and development on labour market and work organisation issues. If necessary, resources for this had to be taken from the occupational safety and health fields. The development of the composition of personnel in the different institutions from 1995 to the three main areas by the year 2000 is displayed in table 2.3.

**Table 2.3.** R & D personnel in 1995 and in the main areas by the year 2000.

Year 1995	NIWL year 2000		
National Institute for Occupational Health	350	Labour market, gender issues and regional development	100
Institute for Working Life Research (Worklife Centre)	60	Work organisation and psychosocial issues	100
Work Environment Fund	15	Safety and health, incl. ergonomics	200
		Administration and central support	100
<b>Total</b>	<b>425</b>		<b>500</b>

The new institute has had to carry out several time-consuming reorganisations, lay-offs due to budget cuts, and reorientation for many researchers. The number of publications, as well as the training capacity, seems to have diminished, although no attempts have been made to calculate exact numbers. On the other hand, our appearance in the Swedish mass-media has become much more frequent and probably quadrupled between 1995 and 1999 due to our increased relevance and expertise in a variety of contemporary issues, such as stress, new forms of labour, call centres, electromagnetic fields, computer ergonomics and skin problems.

While co-operation with the trade unions has continued to be excellent, contacts with the private employers' organisation have been much more limited. This is partly due to the policy from the private employers that the central organisation no longer participates in any government boards, and that as many decisions as possible are referred to the local level. The strong links between NIWL and the trade union confederations may possibly contribute to the policies chosen by the private employers organization on this issue. There are many contacts with small enterprises and local enterprises in a large number of projects.

The major achievement for the Institute is that it has survived, expanded and regionalised its activities. The basic budget remains the same, although considerable portions of "saved money" have been taken back by the government. To



some extent this has been compensated by regional co-financing for new regional programmes from county councils, townships and regional universities.

Some concentrations of resources have been made, particularly in prevention of musculo-skeletal disorders including mechanistic research, diagnostics, rehabilitation, evaluation methods and work organisation aspects. Significant resources have been allocated to doctoral training, particularly in the fields of industrial relations and work organisation in schools. The new regional programmes have their emphasis on defined priority areas, such as integration, small enterprises, workers in human services.

The earlier favourable financial situation for researchers at the institute, with substantial permanent funding, has led to relatively few EU-research applications. In the future, there seem to be less possibilities for external funding for research, and greater involvement in EU-networks is warranted.

The concept of development has caused a number of problems, balancing applied research on one hand, and investigations on the other. There are three aspects of development that seem to have been most applicable: traditional development of new methods and workplace improvements, such as in ergonomics and industrial hygiene, action research in regional networks, and research on development processes. Regional programmes have a more natural integration with the local enterprises and organisations. The emphasis on more development activities has naturally led to less emphasis on more basic research oriented problems and theoretical analysis, such as on health consequence analysis, work environment economics, policy and management analysis.

The new priorities have decreased resources for occupational safety and health research and also caused uncertainty for the future of the remaining areas. So far, this reduction in OSH-research has been partly compensated by long-term contracts with some universities, such as concerning chemistry and genetic toxicology. It is not obvious that those contracts can be renewed to the same extent.

The quality and quantity of occupational health services seem to have deteriorated severely during the 1990's, due to the economic depression, the withdrawal of financial support from the government for these services and the employers' rejection of a continuation of central agreements with the trade union confederations on those matters. It has not been judged to be a high-priority task for the institut to organise a research and development centre for the occupational health services, although training activities have continued.

The institute shares the problem of an ageing staff with the rest of society and academia in Europe. In spite of this, the institute so far lacks major research projects on work and ageing.

## **Final Comments**

The comprehensive evaluation of how successful the integration of the former institutes, the broadening of the scope to include development, and the increased emphasis on labour market and work organisation issues has been remains to be done. The measures of success will depend on political priorities, the need for

independent knowledge in the different sectors and the ability of the Institute to make adequate knowledge available at the right time. The role for the Institute must also be related to other resources for similar research, inside and outside Sweden, such as university institutions, institutes and possibilities for research funding.

The general management of research in Sweden is presently undergoing reorganisation and there are concerns that resources for occupational safety and health research will be further diminished. The two former institutes and the present NIWL have all been placed under the Ministry of Labour (now the “Superministry” of industry, employment and energy) and must therefore primarily serve knowledge needs for this sector, rather than primarily for the health sector. This means different priorities compared to those occupational safety and health institutes that belong to the Ministry of Health, such as in Finland or the U.S. If resources for work-related health issues become too small within the labour market sector, then corresponding increases for such resources within the public health research sector must become available. Otherwise this type of research, including work environment management and occupational health service research, will deteriorate.

The reorientation of NIWL has meant new resources for labour market and regional development research, some multidisciplinary programmes with basically social and behavioural scientists, and also for the area of ergonomics and musculo-skeletal disorders. The extensive number of positions for doctoral students in all fields that have been filled during the last years will provide an excellent basis for future recruitment of working life researchers.

The strikingly increased interest from mass media in experts and activities of the institute indicate that our relevance is high. Much attention must now be put upon increasing the quality, as well as the quantity, of the research results, such as books, publications, doctoral theses, conferences and EU research grants.

Recently, extensive internal as well as external hearings on a comprehensive R&D strategy for NIWL and the next five years have been initiated. The results will be important for increased relevance, further integration among disciplines and quality improvements.

## 2.4 Work Life in Transition – Changing the Finnish Institute of Occupational Health from Within

*Jorma Rantanen*

Great challenges for occupational health research are set by the rapid changes in the world of work as a consequence of globalization, introduction of new technologies, ageing and other demographic changes of the workforce, changes in enterprise structures and new types of employment, fragmentation of enterprises and working contracts, high time pressures at work, and high demands for learning new skills. The occupational health problems are of two types; the persistent and re-emerging old problems of occupational injuries and diseases (type 1), such as poisonings, musculoskeletal disorders and pneumoconioses by mineral dusts and accidental injuries. The new challenges to occupational health come from psychological stress, musculoskeletal disorders by computerized work, cognitive ergonomics in information-intensive work, the work ability of aging workers, and new trends in occupational allergies (type 2).

Globally the major problem is the enormous inequity of the working conditions, safety and health between North and South. This inequity is mainly due to the continuing existence of type 1 problems among the majority of the workers in the Third World. The globalization of the world economies does not seem to constrict the gaps but the opposite is reported by the UNDP and the ILO.

The European work life is developing slowly towards the harmonization of the working conditions. There are, still, great differences which prevail between exposures, risks, control measures and services, and infrastructures for prevention. The EU has set legal obligations to undertake actions which equalize the working conditions in the EU through Directives setting the minimum requirements for health and safety. Due to the growing internationalization of the work life also the European research on occupational health becomes more international. The European research institutions have in addition to national and regional responsibilities a moral obligation to support through research the equalization of the working conditions world-wide and particularly in the Eastern European and in the Third World countries.

The three challenges from work life to research, a) improvement of knowledge, b) improvement of understanding and c) support of development of working conditions in practice, all call for new initiatives in occupational health research. The strategy of continuous improvement and development of work and working conditions implies a never ending mission of research in occupational health. The priority order of these roles may vary in different parts of the world.

Systematic occupational health research was started in Finland in connection with the foundation of the Finnish Institute of Occupational Health in 1945. The research orientation was originally disease-oriented focusing on the diagnosis and

treatment of carbon monoxide and trinitrotoluene poisonings. Gradually also ergonomics, work physiology and psychology, industrial hygiene and toxicology were added to the research profile during the course of the 1950's and 1960's.

In the 1970's an important reorientation was made for strengthening of the preventive approach, orientation to the work environment and assessment of risks from various physical, chemical, biological, physiological and psychological factors and risks of accidents. In the 1980's the spectrum was added with work organization research aiming at smoothly functioning work teams, participation, equity and collaboration between workers and employers. The 1990's has brought along again a new approach for the promotion of the development of human resources and enterprise as a whole through combining all the elements of health, work environment, work organization and competence building together.

In the process of transition from a monodisciplinary medical institute to a multidisciplinary research and development organization the FIOH has followed the following principles:

- surveying, fact-finding, listening to and observing the trends in the global, regional, national and local environments.
- making an independent scientifically-based analysis of the future needs with the help of information from international scientific community and Institute's own research
- ensuring the support of the stakeholders, government and the social partners through strategic alliances
- ensuring sufficient government funding and working hard for own income to sustain the present and new activities
- carrying out intensive and continuous strategic planning and setting distinct priorities
- steering practical activities to strategic priority areas with the help of nation-wide action programmes
- putting great emphasis on the dissemination and implementation of research in practice through providing a scientific basis for norms and standards, training, advisory services, development interventions, and supporting the development of occupational health and safety infrastructures, including safety inspection and occupational health services
- evaluation the practical impact of Institute's research on the Finnish work life and internationally.

In the course of such development the orientation of the Institute has been changed from curative and corrective approach through risk assessment and prevention to comprehensive promotion and development approach.

### 3. Questionnaire Survey on Research Priorities

*Staffan Marklund*

A few months ahead of the workshop all participants were asked to fill in a form concerning views on present and future research and development priorities. They were asked about the view of their institution, rather than their personal view, and they were asked about the present situation and an assessment of the situation in a five year perspective. The questionnaire used had the following format inspired by the Delphi study on Occupational Medicine Training in Europe by Macdonald et al. (2000). The respondents were also invited to give free comments, addressing the issues of Research and Development (R&D) priorities.

#### Questionnaire

<b>Research and development area</b>	<b>Current situation (1998/99) (rank between 1 and 15)</b>	<b>Future situation (year 2003) (rank between 1 and 15)</b>
Chemical health hazards at work		
Environmental (non-occupational) health issues		
Physical health hazards at work		
Work place accident risks		
Work place ergonomics		
Work place health promotion		
Health services research (including Occupational Health Management)		
Health economics		
Work organisation and management (including working hours and shift-work)		
Ageing and work capacity/disability		
Young workers and labour market entry		
Psychological and social work place factors including work overload		
Rehabilitation and vocational training		
Unemployment and labour market research		
Ethnicity and cross/cultural occupational health		

All but two participants responded. The results were presented at the workshop for a discussion and reflections.

There are large individual variations in the answers, thus the results as presented here in terms of averages should be taken with some caution. Further, the material is too small for any more grounded conclusions, and it is not possible to know to what degree the individuals have been affected by their personal views, rather than by the views of their institutions. Individual interpretations probably affect opinions about future priorities more than opinions about the current situation. There was no specific definition of each research and development area, neither was the list complete or fully logical in its various dimensions. The interpretation was left to the participants, but it should be mentioned that similar lists and concepts have been used frequently in other surveys of similar nature.

**Table 3.1.** Research priorities of 14 representatives of European Occupational Health Institutes 1999. Low value means high priority.

<b>Research and development area</b>	<b>Current priority</b>	<b>Future priority</b>	<b>Change</b>
Chemical health hazards	2.6	4.7	↓
Psychological and social work factors	4.4	3.4	↑
Work place ergonomics	4.8	4.0	↑
Work organisation and management	5.0	3.8	↑
Health services research	6.7	4.4	↑
Physical health hazards	5.4	5.9	↓
Ageing and work capacity/disability	7.4	6.2	↑
Health economics	8.0	7.1	↑
Work place accidents	7.3	8.6	↓
Work place health promotion	7.9	9.0	↓
Environmental health issues	8.8	9.3	↓
Rehabilitation and vocational training	10.0	10.3	↓
Young workers and labour market entrance	10.5	9.6	↑
Unemployment and labour market research	10.3	10.1	↑
Ethnicity and cross cultural occupational health	12.1	11.9	↑

At the top of current research and development priorities is chemical health hazards. According to our panel, the priority of this area will decline somewhat in the near future. Psychological and social work factors are given high priorities now, and even higher in the future; this category is seen as the most important for future research and development. Close to this area is work organisation and management. This area is closely linked to that of psycho-social work factors, but is more generally involved with how work can and should be organised to minimise health hazards, and the focus is more on contexts than on individuals. This may be reflected in the observation that health service research is given higher priority in the future. It may imply that health service research is seen as an instrument of preventive actions.

Ergonomics are also seen to have a high and growing priority among this panel. This is interesting since there has been a growing concern with the high risks for musculo-skeletal disorders and their ergonomic origin.

At the other end of the list of priorities there are some areas that may be seen as "social" or even external, from a traditional work environment point of view. This panel does not seem to be enthusiastic in defining present or future work in relationship to particular groups of employed.

It is also worth noticing that the panel ranks ageing and disability higher than young workers and labour market entrance.

It is obvious that some traditional areas of research and development that are currently top priorities will remain important areas. This is true for psycho-social work factors, ergonomics, work organisation, and health services research. Only two of these areas have a lower priority in the future: chemical hazards and physical hazards.

Most of the areas that presently have lower priority will also have low priority in the future: this is true for research on ethnicity, unemployment, rehabilitation and problems related to young people's work.

In conclusion, one may say that the respondents are rather conservative as a group. There are no very dramatic shifts in research priorities. Individual answers show a higher willingness to change priorities.

As a second conclusion, also based on speculation rather than knowledge, one might say that research is seen as more important than development. This is based on a feeling that the most prioritised areas are research oriented, whereas areas such as work-place health promotion and rehabilitation include stronger elements of development and intervention.

A third conclusion is the lack of interest in defining research and development in terms of specified target groups such as the young, the old, the unemployed or ethnic minorities. This is contrary to the way that national governments as well as European political bodies regard the problems. Political research priorities are very often made in relationship to vulnerable groups or parts of the populations that are seen as suffering more. If this interpretation of the opinions of our research panel, and the political views, are correct there may be a problem in developing a joint agenda of research priorities.

## **Reference**

Macdonald E.B., Ritchie K.A., Murray K.J. & Gilmour W.H. (2000) Requirements for Occupational Medicine Training in Europe – a Delphi Study. *Occupational and Environmental Medicine*, 2000; 57: 98–105.





## **4. Country reports**



## 4.1 Danish Developments

*Ib Andersen*

### **Background**

Occupational health research in Denmark is in the fortunate position, that the Danish Parliament in 1994 agreed upon an action plan “A Clean Working Environment 1995–2005”. In the action plan there are seven broadly backed and supported visions for minimising or avoiding

- fatal accidents caused by factors in the working environment
- occupational exposure to carcinogenic chemicals and occupational brain damage due to exposure to organic solvents or heavy metals
- occupational injuries to children and young people
- injuries caused by heavy lifting and occupational diseases resulting from monotonous, repetitive work
- damage to hearing due to noisy work
- damage to health caused by psychological risk factors at work
- diseases or serious problems because of a poor indoor climate at the work place

Further the minister of labour in 1999 pointed out ten occupational groups with exceptionally high risk at work with the purpose of intensifying the preventive measures in these groups

- domestic helpers and assistant nurses/social workers and health assistants
- semi-skilled workers within the construction industry
- welders
- drivers
- smiths
- slaughterhouse workers
- railway and shunting workers
- wood workers
- steel and foundry workers
- semi-skilled workers within the chemical industry

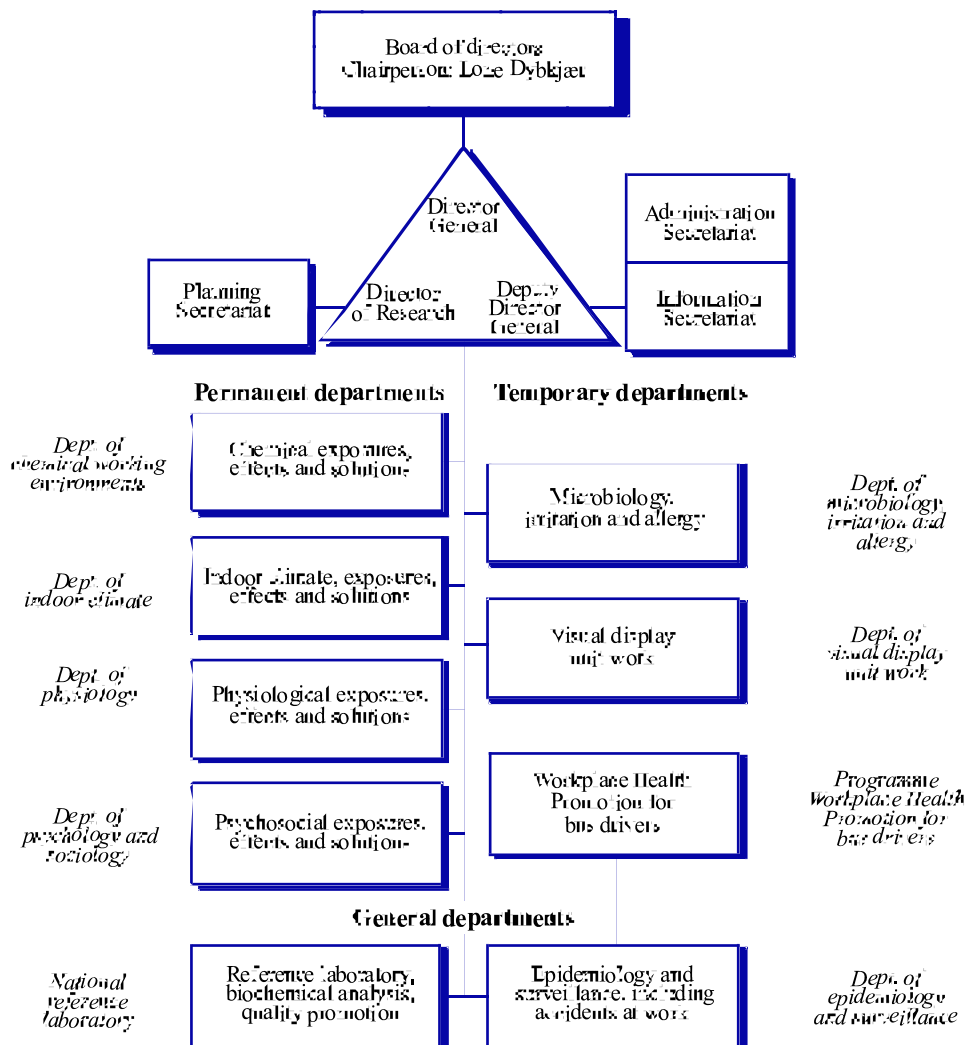
Finally the Danish governments’ ten year plan from 1999 on national health promotion has work place health promotion as an important ingredient.

## Development of the Danish National Institute of Occupational Health (NIOH), in Danish AMI

From 1946 to 1997 AMI was a part of the National Work Environment Authority.

From 1997 AMI has been an independent governmental research institute under the Ministry of Labour. The institute has a board of directors with representation of the social partners and academia.

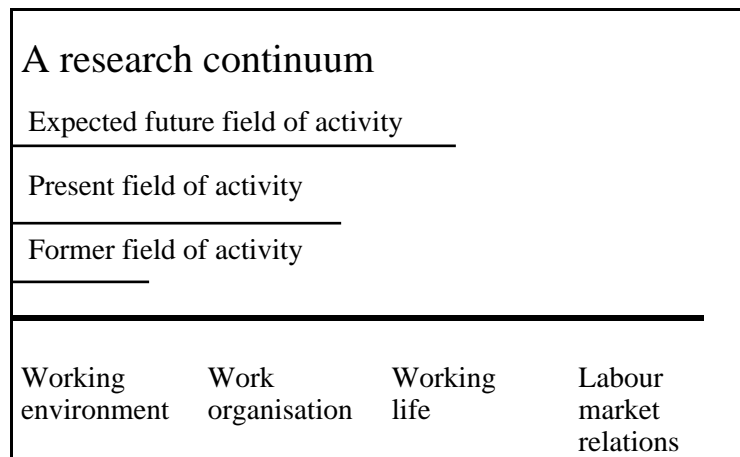
In 1997 the institute was reorganised and the discipline oriented departments were broken up and new problem oriented departments were created. Four of those were vision oriented and should take care of all aspects in the vision in question – exposures, health effects and solutions. Further two general departments were erected – a national reference laboratory and a department of epidemiology and surveillance (incl. work place accidents). Further two temporary departments were set up for a four-year period – one in microbiology, irritation and allergy and one in visual display unit work.



The institute has developed a strategy for 1999–2002 focusing on multi- and inter-disciplinary research.

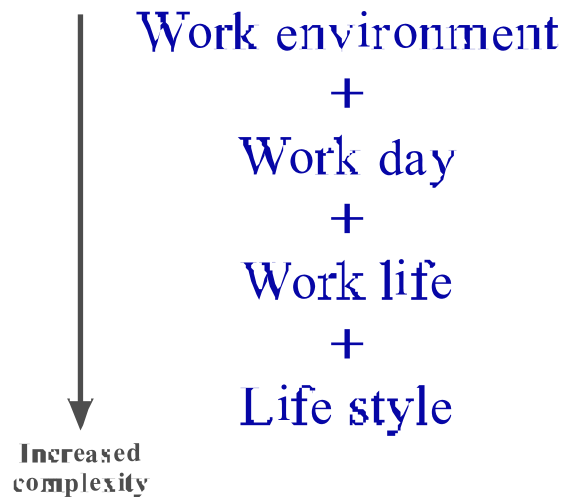
In year 2000 a new strategy will be developed and finalised by the board ultimo 2000. The strategy work is therefore still in progress.

The institute considers work environment, work organisation, working life and labour market relations as a research continuum.



Until 1997 the institute only covered the working environment, but slowly we are moving to the right side of the continuum putting more and more resources in work organisation and working life. Labour market relations are taken care of by other Danish research institutions for which reason that will not be included in the future development of AMI. An important issue in the future development is the balance of research in classic work environment issues and in the new issues – work organisation and work life.

Without doubt there is a great need for research in work organisation and working life, and without doubt these areas will be more and more important in the future information society. Still however there are great health problems, especially for the lower social classes, due to the more classic working environment factors – chemical substances (especially new chemical substances), noise, dust etc. Therefore it is only possible to move minor resources in an institute with a staff of 150 from the classical areas to the new areas. Otherwise the research capacity in the classic areas will be lower than the critical mass for a research unit of international quality. This expansion of the research agenda for occupational health institutes is also a reality in other respects. Stakeholders of the institutes expect today not only professional knowledge about work place exposures and health effects, but also knowledge about the effects of interventions in the work place. The latter is a new research arena. It is also a complex research arena as there are many possible interventions in the work place. This means that intervention research is very complex.



In the strategy 2001-2004 it will be decided if the institute shall cut away some research areas to be able to allocate the necessary resources to the prioritised areas or if more funds for occupational health research should be allocated.

### **National Surveillance**

National surveillance of the working environment and of the health of workers at occupational branch level will be an important future issue. This is due to the increased emphasis on work place health promotion for reduction of work related disease and premature retirement. Work place health promotion has to be tailored to the special needs of each occupational branch.

### **Dialogue with Stakeholders**

An important task in the development of a new strategy in occupational health is an intense dialogue with the social partners, the Working Environment Society, the occupational health services and clinics and academia.

This dialogue is necessary if international research quality and national relevance has to be achieved simultaneously.

## 4.2 Developments in the World of Work on Future OSH Research Activities – France

*Jean-Claude André*

### **Summary**

The rapid change in the world of work requires permanent revision of research strategies in the field of occupational risk prevention. These must take the following factors into account:

- technological development and development of linked organisations,
- the reinforcement of the relations between individuals and their “bodies”,
- the shift from the causal to the probable not to say the possible with regard to increasingly multifactorial occupational risks,
- exploration of the effects of standard deviations (and not only statistical averages) on the harmful consequences of work,
- links between work and the environment,
- etc.

In a context of increasing societal complexity, research strategies must adapt in such a way as to be as close as possible to health at work concerns. Research requires the development of networks enabling different levels of negotiation between company partners in a relatively uncontrolled system bringing together technology, employment, salaries, ethics, social insurance, culture(s) and so on.

It has been thought for some considerable time that the position of the nineteenth century French economist, J.B. Say, was realistic. This is to say the belief that supply creates its own demand. “No sooner is a product created than it represents an outlet for other products amounting to the whole of its value” [1]. Such a framework supposes an endless virtuous circle of growing production and consumption. This is somewhat removed from the Marxist conception of a transfer of work from the worker to capital due to mechanisation which in turn leads to unemployment and social alienation. As is often the case, the real state of affairs is no doubt to be found somewhere between the two extremes. For the moment, most countries in Europe must deal with a difficult economic conjuncture brought about by levels of unemployment affecting tens of millions of individuals.

It should be noted that Europe has shifted from a predominantly agricultural society (cf. figure 1) to an industrial society directly influenced by energy sources such as coal, oil and now nuclear power in roughly a century. It did so whilst developing ever more advanced technologies such as computers and modern

communication networks, genetic engineering, “intelligent” automation, etc. [2]. Blue-collar workers have been replaced by white-collar workers and by a significant proportion of marginalised individuals. As R.L. Heilbroner points out in the preface to Rifkin’s book [2], “we are in the process of constructing a relation between machines and work which goes beyond the uncomfortable compromise which has prevailed for the last two centuries”.

Rapid technological development is not always understood and assimilated by operators in an increasingly complex work context. This leads to an uneasy, collective feeling of impotence, guilt and anxiety.

“What sort of society is it which no longer distinguishes itself from its environment? Sociologists are pulling out their hair over this and no longer see anything but ambivalence and complexity where in the past social conscience occupied a position of dialectical opposition”. [3]

Technological changes are accompanied by organisational changes : part-time work, fixed-term contracts, re-engineering, neo-Taylorism, teleworking, computerised system management, age related management, multiple, skills, etc [4] [5]. These different elements make it impossible to treat production processes whether material or not (information) as an idyllic relationship between employer and employee. This is due to the high social and human costs involved despite clear improvement in working conditions, operators’ qualification levels, working hours and, to a lesser extent, salaries.

Social change is taking place at an alarming rate. In this context, anxiety also arises in connection with poorly understood market constraints, the growing interdependency of economies – Europe and the rest of the world – international trade, trade agreements etc. The result is a sense of a loss of bearings.

These social anxieties are also fuelled by potentially irreversible technological decisions whose full long-term consequences have not yet been properly established. In these cases, control and correction mechanisms are probably inadequate to the task of fully ensuring consensual correspondence between collective interests and the pressure deriving from the interests of those in power.

“Never in the history of the world has competition been as intense as it is at the end of this century.” [6] All the same, as D.S. Landes [7] points out

“global industrialisation goes ahead for better or for worse. If there are people in the developed world who are revolted by the cult of material achievement this is because they are fortunate enough to be able to allow themselves a critical attitude whilst the vast majority of the world's inhabitants can but dream of material affluence.”

At the same time, life expectancy for the inhabitants of western countries is constantly increasing.

Beyond the general context of the company is to be found the human being. During the nineteen-twenties, he or she discovered fashion and how to discriminate between different brands. Advertising came into being. To begin with, he or she became a consumer [2]. Against this backdrop, the separation of mind and



body represents one of the ruptures introduced into modern life by R. Descartes. [8] In effect, the idea that we have a body at our disposal reflects the notion that our body is socialised, that it is inviolable and inalienable. It is the material support for our existence and the object of ever greater self-concern [9].

If the body has a social existence, this is not just a question of appearance but because social existence is also a matter of accidents (at work, on the roads, etc.) and diseases. There are, in fact, two dimensions to the awareness that we have of our body, firstly, an individual conception allowing freedom of choice in what one does with one's body and secondly, a collective framework imposing constraints. Ethical perspectives today tend to centre on a socialisation of the body as a facet of self-concern, effectively narrowing the scope of public debate. [10] [11]

The general social concern with the self means, in fact, that the balance between individual risk and imposed risk swings in direct relation to the extension of the right of human beings to do as they wish with their bodies. Aversion to imposed risk is the counterpart to the taste for individual risk. Hence, attitudes to risk increasingly centre around the idea that life at work or, for that matter, in society (environmental problems in particular) is not profitable enough to justify taking a risk [12]. It follows that as soon as the body is socialised risk evaluation loses any balanced and rational character it might have had. A sharp change in the social acceptability of risk follows from this observation.

The exaltation of the self is also illustrated by the fact that the private sphere and the family unit are less and less conceived as a locus in which individuals are socialised [13].

The search for a safer society, whether at work or not, leads to the requirement that technological developments be evaluated. This is coupled to a desire for monitoring technical and organisational change (alongside a desire for increased spending power and availability of products resulting from technological innovation, etc.). Recent media coverage supposes that those actively involved in the transformation of society consent to public debate. Such public debate will turn around those changes the world at work should undergo in order to bridge the gap between the complex aspirations of society at large and the likely effects of transformations of company structure. An exchange in point of view should take place between technocratic and "democratic" interests ...

In the current socio-economic environment, where confidence has dissolved, this debate remains to be undertaken in a difficult framework. The publicity surrounding asbestos and mad cow disease brings up the difficulty of long-term anticipation of the consequences of technical change. Indeed, how is it possible to foresee the pernicious, unexpected or undesired effects so as to single out only the positive consequences of socio-technical change? [14].

Another subject for reflection is to be found in connection with innovation. Innovation is only "innocent" for the engineer who produces it or for the economist who works out the figures. In the United States, the four per cent of employees constituting the knowledge producing class – now the main factor in the country's economic equation – earn as much as the 100 million employees who make up the remaining 96 per cent [2]. They represent an element of central

importance to the performance of companies for whom a rapid return on investment is a constant preoccupation. Such innovation perturbs those who are subjected to it, dramatically altering social organisation and giving rise to new worries and a sense of having been dispossessed [15].

Indeed, pressure on production costs can lead to neglecting some of the least easily identifiable elements. This gives rise, in turn, to a certain imbalance in the information available to producers, operators and buyers. This lack of certainty is linked to the processes themselves, the complexity of the production system being beyond the full control of the company.

For some this means that it is advisable to apply principles of precaution (linked to a certain financial prudence) marked by an excessively optimistic vision of the ability of scientists to supply quick and needless to say “definitive” solutions allowing for the elimination of risk [15]. A double aspect to science thus emerges. On the one hand, science drives innovation and, on the other, responds to social needs. Unfortunately, this is generally not enough to help society to define the truth [16].

Against such a background, scientists have responsibilities which they assume in a very imperfect manner. This is due to the fact that they give approval to the technical projects that they enable. On the one hand, they rarely adopt an “integral” approach to their activity, little concerning themselves with the complexity of phenomena, and occupy disciplinary spheres that are excessively independent from each other [17] [18]. The result is that it is difficult to supply information to society correctly. Moreover, as A.G. Slama reminds us, “the intellectual no longer fulfils his or her role if he or she claims to be right and even more so if, being right, he or she imagines that reason can be made to triumph by using the means available to reason”. [3]

On the other hand, scientific discourse has little place in the ordinary language of the media which is by nature succinct and pertinent. The spectacular is privileged over the informative. The media constantly anticipate “crises” that scientists do not always have the time or the means to neutralise. [19] [20]

On the one hand, development of company performance and, on the other, an increasingly precariousness and refusal of risk! This refusal leads to a media controlled system of constant guilt. Indeed, the absolute necessity for responsibility is scandalous by comparison with the removal of personal responsibility. The likely result is either legal proceedings or entropy. [8]

Moreover, individualism is translated into a loss of the distinctive characteristics of social classes, leading in turn to a loss of political impetus, to temporary coalitions between different groups and different “sides” concerning a given subject or to pragmatic alliances with regard to multi-faceted disputes [16]. Such are the consequences of those ephemeral organisations, found in the press, engendered by media encouragement of collective anxiety.

Indeed, as I. Levai puts it [21]; “the company, like society in general, is tempted to resign itself to its fate”.

Given what has now been said, a number of elements linked to the fundamentals of social insurance might now be discussed as they allow for the

development of solidarity between workers, companies and society at large. On the one hand, the social aspect is a “filter which reduces the spectrum to what can suitably be done and said”. [3] This context aims to attain the true, the just and the good and hence, in principle, the “socially correct”. The problem does indeed consist, therefore, in decisively defining and determining these elements. [22] With respect to the above mentioned speed of social change, these notions appear unstable, the good being tied up with what is desirable, the collective framework having been left to one side to a considerable extent.

“Insurance is the compensatory payment made by an insurance fund arising out of the effects of chance organised according to the laws of statistics. It does not eliminate chance but puts it in its place; it does not make loss disappear but minimises the feeling of loss due to the fact that the loss is shared.” [23] [24]

Social planning linked to insurance attributes a monetary value to human life [25] in keeping with social and economic reality. [24] Using basic statistical principles to achieve this socially desirable goal, risk is rendered both collective and calculable. F. Ewald’s remark on the French law of April 1898 concerning responsibility with regard to occupational accidents is worth recalling:

“principle of conservation of vital equilibrium that normalise occupation accidents included as a sub-section of occupational risks associated to the risk which can be effectively insured against”. [24]

These elements depend on a causal principle existing between company activity and harmful effect defined in terms of occupational accidents or diseases. It naturally corresponds to a circuit made up of a small loop, accessible to all partners involved in companies: accident – internal emotion – compensation – modification of the work tool. In such a framework there is a real association between employees, the company, the insurer and the state laying down statutory obligations. This takes place in a sphere characterised by slow technological and socio-technico development (progress) which as something which is open to calculation can be anticipated.

Such statistical elements corresponding to average values lead to the consideration of all operators being equal before risk. The low number (albeit a number that remains excessively high) of accidents does not allow for the hierarchical organisation of inter-individual differences. Under such circumstances, whilst admitting that the principle of equality is only a theoretical construction, it has been possible to introduce and apply simple legal requirements.

J. Lottin [26] supplied a useful lead with regard to this aspect of things when he wrote in 1912: “If one is happy to observe individuals, it becomes impossible to grasp laws and one is struck by the particular nature of individuals which is infinite”. The norm is applied to the average case and is not supplemented by knowledge of standard deviations, display being collective philosophy.

At this point, a group of elements further upstream from this present paper might be taken into consideration:

- Companies are increasingly involved in the exploration of complexity and, as a result, in the consequences of uncertainty arising from rapid change in technologies (in the broadest sense of the term);
- the citizen is increasingly an individual with rights he wishes to see defended, increasingly engaging the responsibility of company heads, not to say social insurers. Under such conditions there is indeed shift, even if it is not willed, from the collective to the individual;
- science allows, even if almost everything still remains to be done, for significant progress in reducing the uncertainty of the effects of hazards and pollution on individuals;
- occupational diseases or diseases which might be considered as occupational diseases are increasingly considered as being multi-factorial in origin;
- journalism “will fill with superficial information that which an individual is ignorant of that veritable complexity which no scientist masters”. [27] The appearance of information of uncertain source in the newspapers gives rise to the judgement of someone on the basis of mere intention, confusion of different categories and hence the emergence of Manichean attitudes or finally the “ethics” associated with socially correct falsehood in the name of pseudo-virtuous principles. This is due to the fact that everything is not mastered nor can be mastered;

It is, therefore, possible to understand the degree of complexity towards which social insurance is heading. It must no doubt explain and inform but naturally also explore, by means of research, a certain number of obstacles which have been outlined above.

These elements mean that it is necessary to act in order to reduce the gap between the need for personal safety which seems to “feed off its own satisfaction” [24] and the rapid development of an increasingly complex society at work. [18] At the same time, social insurance must repair the harmful effects of occupational hazards and pollution linked to out-dated techniques and contribute to the full social and personal development of operators by developing prevention. This allows modification of the conditions defining causes of these hazards and pollution. It represents, for social insurance, another significant gap to be bridged between consequences (compensation) and causes (prevention).

Moreover, the role of legislators in this domain has been largely disturbed by the failure to master causal structures and associated statistics. The lawmaker finds himself in a state of incertitude. Nevertheless, in France, he tends to depend increasingly on experts (for example, the *Institut de Veille Sanitaire* – (*Sanitary Monitoring Institute*) – in so far as we are concerned) whose function it is to inform public authorities with useful information concerning the world at work.

Society requires greater levels of transparency, something which corresponds to an irreproachably reasonable principle, but which, according to A.G. Slama [3] tends to “contribute to a drift towards totalitarianism in so far as it increases supervision and gives rise to a constant fear of informers”. The desired

transparency might not be wholly accessible to the citizen or for that matter to the lawmaker. It (often) amounts to asking other experts to come up with quick summaries of or propositions for ready-made solutions applicable to society at large. These experts sit on committees on ethical matters which differentiate, in principle, the moral (the good) from the immoral (the bad). According to G. Lipovetsky [11],

“the flourishing of ethical concerns can be interpreted in terms of the degeneration in patterns of behaviour, a sudden burst of conscience when confronted with the chain effect provoked by individual lack of responsibility (...): ethical concerns take on the appearance of miraculous, ready-made solutions so much do they resemble rhetorical leitmotives”.

These committees are called upon to discuss important but local problems. They contribute to the drawing up of specific conclusions to questions/anxieties concerning society at large (e.g. human cloning). At the same time, democratic structures do little to encourage the citizen to define what constitutes the good or the bad (concepts which are subject to high levels of change over time and from culture to culture).

Against this background the central question that emerges is that of establishing one of two things. It is necessary to establish whether change in society is causal, irremediable or can be controlled or else whether a system of a stochastic nature – certain of whose effects when taken together might even put humanity itself in danger – is to be accepted. Debate arising in such “meta-complexity” hardly exists, the decision-making process in this sphere of uncertainty being undoubtedly closer to amateur theorising than the production of fully thought out reasoning!

All involved whether it is the state, social insurers, companies and ultimately employees themselves are therefore fragile. Growing uncertainty, collective anxiety reinforced by the power of the media strengthens the demand for precautionary principles to be applied. However, this leads to unknown secondary effects. For example, knowledge about the real dangers associated with asbestos led the public authorities to ban the use of this mineral which has been replaced by fibres whose effect on man is wholly unknown!

Hence, all the elements rapidly sketched in here must necessarily be found in the questions that a social insurer will ask of risk prevention research. These questions are typically:

- What forms of work will emerge in the future? What forms of prevention (initially of a mono-causal nature) should be proposed? [2]
- How is the gap between the collective and the individual to be narrowed?
- What are the effects of social alienation on occupational risks?
- Is it possible to explore risks (of which certain have not as yet been anticipated) which do not lead to immediate loss or damage to health)?
- How are complexities introduced by causalities associated with or tangled up with multi-factorial risks to be managed?

- “How is information which is both easily perceived and informative to be delivered; how are informed opinions from a large enough cross section of the public to be obtained so that the authorities can subsequently make enlightened decisions?” [18]
- How, within this complex, world-wide work area can confidence in the partners involved in a company be re-established? How can they be supplied with the elements which allow them to make satisfactory judgements? [28]  
How is consensus to be obtained in this context?

Beyond these foreseeable factors, social insurers clearly expect to be informed in such a way that they will be able to limit the harmful effects of past company activity. Which should be given priority: present concerns rendered indispensable in order to limit the social costs of chance events or investment in the distant future? This is another significant gap to be bridged.

Traditionally, failure to invest in one or other of these two aspects would not be understood by the different partners in a company. Should priority be given to the everyday as it limits the loss of confidence on a day by day basis which has been amply dealt with in this paper? It is indeed a perfectly natural and reasonable tendency due to the wholly predictable character of the consequences (to be brought into relation with the uncertain aspects of future projections). It supposes, nevertheless, a certain immobility in the development of the world economy, something at odds with observable evidence.

New fields of knowledge are therefore necessary so that the social insurer is recognised as a partner on account of the prevention he is able to offer in the form of practical advice given to the different partners in a company.[29] This involves the definition of a certain number of targets mentioned below by way of example [29]:

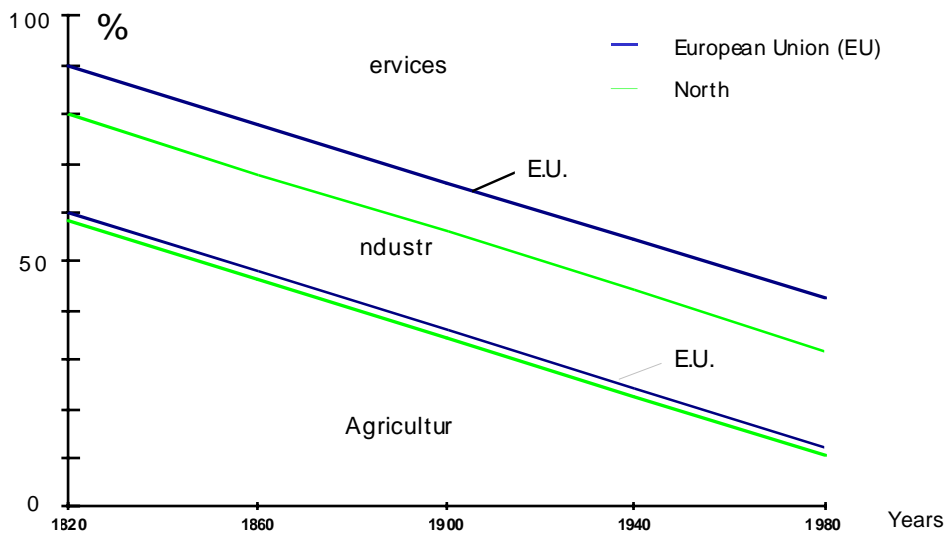
- effects of the shift from a work contract to a commercial contract,
- changes in the organisation of work,
- changes in technology,
- shift from the causal to the probable,
- exploration of the effects on insurance of standard deviations (and not only of statistical averages) – personal dimension,
- work-environment interface,
- etc.

To ascertain where the frontier between the tolerable and the intolerable lies, in this markedly complicated context, it is advisable to exchange points of view, to develop co-operation between counterpart western organisations but also to explain to the world at work our own misgivings and uncertainties whilst attempting to avoid as Lipovetsky puts it “the simultaneous development of two antithetical manners of relating to values”. He goes on to write:

“The face of tomorrow’s world will, in part, reflect the struggle between two antagonistic forms of logic. The first distances itself from methodological extremism, takes complexity arising from social and individual situations into account whilst inventing plural, experimental and personalised systems. The other turns away from social and individual reality in favour of new ethical and legal forms of dogmatism.” [11]

To this end, are we able to proceed with basic composure and impartiality?

**Fig. 4.2.1 Change in employment of the active population in the United States and Europe**



From J.M. JANNENEY and  
nos jours» *Fondation Nationales des Sciences Politiques, Paris*

*“All sciences must henceforward prepare the task of the future philosopher; for such a philosopher, this task consists in resolving problems of evaluation, in determining the hierarchy of values.”*

*F. Nietzsche [30]*

*“All work has a dream-like quality attached to it, each matter that is crafted brings with it its intimate reveries. Nothing of value is achieved without one's heart being in the task or what comes to the same thing without the ability to invest the task with one's dreams. The ability to dream at work is an integral part of the craftsman's mentality. Ah! come the time when each trade and craft will have its accredited dreamer, its oneiric guide, when each factory will have its poetry department [...] Without the dreams of the will, will is not so much a human force as it is a brutal one.”*

*G. Bachelard [31]*

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## 4.3 Strategies for Occupational Health Research in a Changing Europe – a German Perspective

*Gunda Maintz*

### **Introduction**

The strategies for occupational health research in the FIOHS are strongly influenced by the changes and developments in the society, by the policies of the government, the developments of the OSH system and of the OSH structures. Some patterns of development in Germany should be mentioned.

### **The Change of Work**

A lot of forces are changing the way we work: consumers demand higher quality, lower prices, more variety and better service; production requires the co-ordination of more complex, more global systems; technological innovations call for constant, rapid adaptation; changes in the composition of the workforce and the attitudes of workers make established personnel practices obsolete. Businesses, administrations and labour are moving more or less rapidly to face these developments by altering their structures and methods of work. Production that is closer to the market, customer oriented and with great flexibility, and the idea of production as a current process of development and learning rather than an organisation characterised by stability, firmness and rigid administrative measures – these are some of the elements of advanced business systems today.

The transformation of business activity, through technological development, the shorter life-cycles of business ideas and products, and the need for new skills, require new management strategies and new forms of work organisation. The transition from stable forms of industrial activity to organisations that are in a process of constant change requires a shift in leadership and management methods and in the design and organisation of production. This change makes new demands at all levels of the hierarchy of modern companies and administrations inclusively OHS. One of the major problems is how to renew strategies so that full use case can be made of the advantages offered by new technology and how best to apply technology to new commercial opportunities. One of the most important means of overcoming these problems, and therefore one of the priorities for change in management practices and work organisation, is to focus on human competence and skills development at all levels.

While experience has shown that there is no unique formula, the most successful of today's companies and administrations have used a cluster of similar techniques to raise their effectiveness:

- *commitment of workers to productivity, quality and profitability*, recognising that these are prerequisites for income growth and employment security;
- *continuous improvement of product quality and work methods* based on shop-floor initiatives, including close relations with consumers and suppliers.
- *organisational patterns designed specifically to promote the efficient application of new technologies*. In other words, organisation precedes and supports innovation and technology rather than responds to it;
- *complex organisational and inter-organisational arrangements* to ensure continuity of production flows, minimum capital tied up in inventory and rapid adaptation to changes in demand, products or production methods;
- *development of multiple skills*. Training is systematic, constant and integrated into the work itself. Work becomes a lifelong learning experience;
- *work in teams or groups*, which often have responsibilities that go far beyond task execution;
- *use case of networks and co-operation* (supported by new information technologies) instead of bureaucratic hierarchies to plan, co-ordinate and control work;
- *innovation as a conscious goal*, sometimes promoted by teams outside the traditional hierarchy;
- *commitment of the employer to job security*. Decisions about lay-offs, plant closings, new technology and other matters reflect the view that long-term economic interests require dedicated workers who are fully confident that their employment will continue.

The shortcomings of the traditional approach in OSH become increasingly manifest in designing the workplaces; this has strongly influenced the development of design strategies in the FIOHS.

### **Health and Safety in Transition**

In most cases, state intervention in working life to promote health and safety commenced with the introduction of a factory inspection system. When the first factory inspectors set about the task of deciding which working conditions were acceptable and which were not, they had little on which to base their work in terms of methods, standards and other objective parameters. To a large extent, they had to rely on personal judgement based on a subjective evaluation of the workplace as a whole. Later, their role developed to that of technical expert and their work became more scientific, in the sense that rules were developed to replace judgement and objective measurements were introduced. Central to this development was the use case of threshold limit values (TLVs), which are quantitative expressions. By the time of the major work environment debates of the 1970's, this had long been the main approach to health and safety in working life, and corps of experts in the form of occupational health personnel, safety engineers and labour inspectors had grown up in its wake.

This regulatory strategy corresponds to some of the dominant ideals in legal thinking, such as the need to establish standards which are:

- general;
- unequivocal;
- applied through technical specifications rather than subjective evaluations.

Standards of this type can meet the traditional criteria of formal justice, although their interpretation is somewhat mechanistic.

Clearly, the debate to some extent consisted of a re-examination of traditional problems. However, there were also several new elements, or at least elements which had not received so much recognition at earlier stages.

- There was growing awareness of the complexity of protecting health and safety at work. The focus on potentially toxic substances was not only a result of the use of more and more dangerous substances; the number of new substances and chemical combinations made it increasingly difficult to find out their likely effects, particularly in the long term. The same applied to accidents. Traditional single-factor accidents were being replaced by accidents generated by complex, unpredictable interactions between a large number of factors.
- Problems such as damage to the musculoskeletal system, which had previously been assumed to be unavoidable or trivial, were given increased attention.
- Major changes in illness and mortality patterns emerged with the replacement of traditional diseases by cancer, heart disease and damage to the musculoskeletal system. These diseases are often difficult to prevent as they are frequently caused by the interaction of a large number of factors. However, prevention is of major importance because the diseases are often hard to cure once they have taken root.
- In contrast with the traditional focus on the more acute and immediate dangers, there was now a recognition of the impact of more modest levels of exposure over an extended period of time.
- Changes occurred in the frames of reference applied to the understanding of the problems of work and environment, in particular the replacement of a factor-by-factor understanding with a more coherent overall perception of the problem.

The issue of health and safety had moved into a new phase, which was characterised less by the increased importance of specific problems than by concentration on nature of the problems and the understanding needed to cope with them. How would the traditional approach, based on TLVs and associated standards, measurement methods and control systems, fare when confronted with the new generation of problems? Summed up in these terms, it is not difficult to understand that the traditional approach is fraught with problems of the following nature, i.e.:

- Under the factor-by-factor approach, for remedial action to be taken it is generally necessary to establish one-way causality between each factor and the specific negative consequences. Establishing such causal chains is difficult, and simply cannot be done for the majority of work environment problems.
- The use case of TLVs and similar rules places work environment problems in a closely defined technical context and means that experts of various categories are required to deal with them. This, in turn, requires the existence of a sufficient number of experts. The full significance of this requirement is difficult to assess, since no society has as yet been able to develop full coverage in this field.
- A technocratic approach to work environment problems has the dual effect of creating demands for expertise which cannot be met while, at the same time, giving management and employees a passive role at the local level. Those who are directly concerned by workplace safety are often prevented from launching local initiatives by the belief that they lack the necessary knowledge to deal with the problems adequately.
- Rationing the use case of expert resources through the systematic application of priorities is not easy; it requires an ability to compare and assess the relative importance of, for example, a small number of deaths in a higher-risk but numerically limited procession such as deep-sea diving with a large number of cases of damage to the musculoskeletal system in more modestly exposed but larger groups such as retail sales workers.
- Finally, regulating workplace safety and health questions using threshold limit values is not well suited to the dynamic aspects of the work environment or the strategies that are needed to deal with them. The work environment raises problems of co-ordination and mutual adjustment in excess of those that are commonly covered in agreements.

These examples taken together constitute a range of problem areas:

- the problem of mobilising sufficient resources to deal with all workplaces, giving due weight to such issues as complexity and ecological consideration;
- the problem of creating mutual understanding and joint initiatives among the different categories of people who share a workplace;
- the problem of making knowledge relevant to the context so that it is operational in specific settings and effective in relation to the problems that are experienced at the local level;
- the problem of how to deal with cases in which there is little existing knowledge which can be brought into the workplace from outside;
- the problem developing a total, or holistic, understanding of each workplace and enterprise, and formulating a corresponding action programme;
- the problem of obtaining a commitment to improvement by managers and workers at the local level;
- the problem of being able to work consistently with the issue over a period of time while the same time being able to maintain the ability to learn by doing.

The institutional perception of this transition had a strong impact during the last twenty years on the strategies of the FIOHS.

### **The Change in the Social Security System**

Over the last decades government social policy in Germany has undergone considerable qualitative and quantitative development. The group of persons covered, the estimated risks and the level of benefit have been expanded with the results of a comprehensive and differentiated system of social security. Expenditure for the individual areas of social security (e.g. financing of pensions and the health system) is growing and the *inadequate of retrospective corrective interventions has become evident*. In particular with this in mind it is now acknowledged that the preventive elements in the social system have to be strengthened – with a lot of consequences for the FIOHS. This not only has economic benefits in the long run, but the prevention of illness, the safeguarding of the workplace etc. are, prerequisites for the individual to enable him to lead a dignified and active life in our society.

The historically grown and very different approaches in the various areas of our social security system (health, invalidity, old age, workplace) has therefore been more closely interlinked with regard to their preventive functions, thus furthering the interests of a comprehensive security. It will be possible to organise the social security system more effectively in the future if in particular the preventive functions are more closely interlinked. The demand and need for preventive solutions will continue to rise sharply in future thanks to changed boundary conditions. Thus the demographic composition of the population will change considerably. The proportion of older people in the overall population will increase sharply. There will therefore be fewer young people in the labour market in the next few years. It thus becomes considerably more important to preserve the full work capacity of all working people up to a relatively high age. This sets new requirements for employers, the education system and the labour market, and for those responsible for funding the social security system. These requirements concern the creation of suitable forms of work and technology in industrial plants so as, on the one hand, to maintain, adapt and develop further the necessary qualifications, and the other, to preserve the health of working people for many years.

The demand for more prevention has therefore become a necessity in terms of social policy.

### **The Presence**

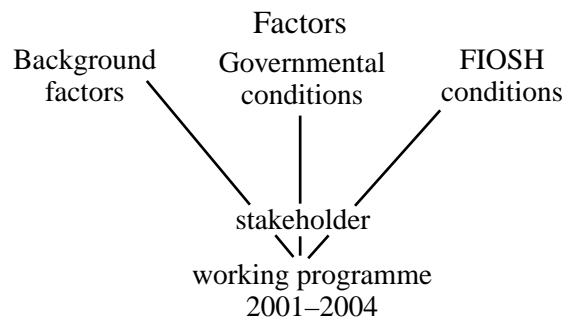
The annually cutting of staff – the FIOHS has lost seventy positions during the last seven years and will lose forty more in the next three years – the reduced resources and the above mentioned developments have changed the conditions of the FIOHS. At the moment the FIOHS is undergoing an organisational development process for the development of new structures. A joint workshop with the

board of members had as a result four critical issues which have to be solved with the ongoing development of our new research programme:

- the gap between theoretical analysis of the last research programme and the activities of the research groups has to be linked,
- the “cafeteria situation” of the last programme – offering all OSH-issues in the programme and dealing with them – has to be overcome,
- the FIOHS has to set clear priorities,
- for this priorities the resources available have to be identified.

The Federal Institute for Occupational Safety and Health in Germany was established on 1. July 1996 by merging the former Federal Institutes of Occupational Safety and Health in Dortmund and of Occupational Medicine in Berlin.

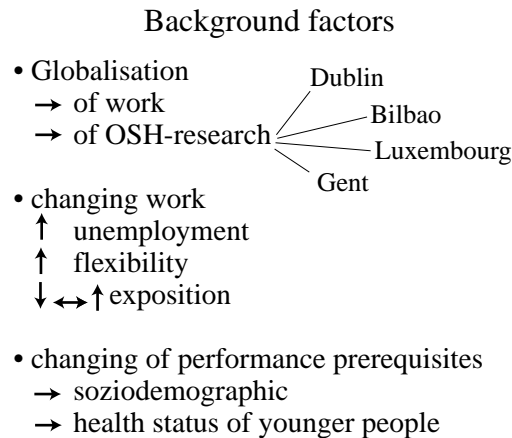
*3. Factors on political level implying pressures and expectations with impact on priority setting for R&D Programs of the Federal Institute for Occupational Safety and Health (FIOHS)*



**Figure 4.3.1.** Factors influencing the program of FIOHS.

There are three conditions, which influences the visions and activities in the FIOHS:

- General Background factors at supranational and national level
- Governmental conditions as expectations and obligations of the ministry
- FIOHS – Conditions like competencies and strong points



**Figure 4.3.2.** Background factors.

A lot of the background factors we discussed partly yesterday. In respect to out-carving the work-programme the factor “Globalisation” is seen not only in the context of work, but also in occupational health research too.

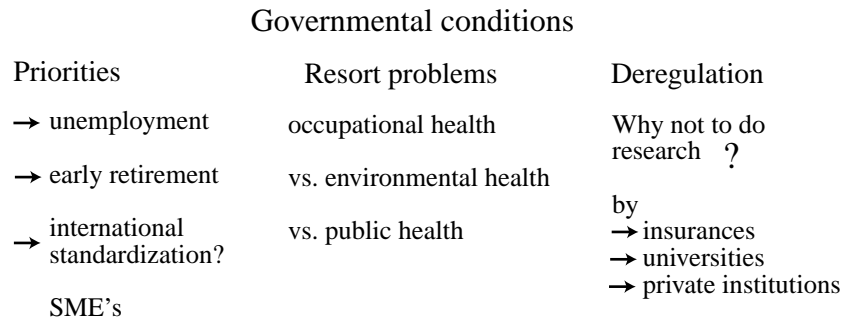
More than in the past the BAuA wants and needs the support of the institutions on the international level as the European foundation, the Agency, the EU-research programmes, activities of the WHO and ILO-offices.

The great changing waves influences of course, our working program too:

We have to look at the

- changing work with
  - rising unemployment rate
  - increasing flexibility (working-time-schedules, working life time, work places, work tasks)
  - changing exposition
    - ⇒ new dangerous substances, combined exposure
  - increasing psychosocial load
- changing of performance prerequisite of the work force
  - sociodemographic items
    - ⇒ more elderly
    - ⇒ more woman wanting to work
    - ⇒ rising immigrant rate
  - health status of the younger people (more allergic diseases, more musculo-skeletal complaints, hearing loss).





**Figure 4.3.3.** Governmental conditions.

In the German Ministry of Labour and Social affair two priorities are predominant: problems of the labour market and problems of financing the early retirement. These problems are connected in a some what contradictory way: Should the policy give a chance to the youth? That means: early retirement of the elderly is to be supported. That means: discussing the employability of the elderly has not the first priority.

On the other hand, if the financial burden for (early) retirement is too high, than finding ways of increasing employability of the elderly has high priority. Also there are in Germany today about four millions of unemployed people, this population – which might be classified as a “Branch” – is not to look after by *Occupational Health Services*.

Whereas solving occupational safety and health problems in SMEs is seen as an important task, the question of working in and for standardisation bodies is not so clearly decided.

The expectations of the ministry to its FIOSH are to:

- work on official tasks (announcement of new dangerous substances; administration of health-records of the former Uranregion, Wismut)
- accompany the process of a changing working world
- help SME's in implementing knowledge
- increase methodological research to support practicable solutions (intervention methods, training programmes)

Problems may arise from the department-thinking and from the call for deregulation. The department-thinking makes it difficult to bring occupational health in connection with the public-health-programs of the Ministries of Health and Environment. The deregulation arises questions, in what extend research, especially basic work related research, has to be done by the institute themselves.

FIOSH conditions		
Strong points	Fusion BAfAM + BAU	Controlling process
→ Occupational safety: <ul style="list-style-type: none"> <li>• Official tasks</li> <li>• Education</li> <li>• Safety</li> <li>• Ergonomics</li> </ul>	++ (Confusion?) expected: <ul style="list-style-type: none"> <li>→ “Fusions rendite”</li> <li>→ Synergie effects</li> </ul>	→ Reorganisation  → Economic investigations
→ Occupational medicine: <ul style="list-style-type: none"> <li>• Epidemiology</li> <li>• Psychological + physiological factors</li> <li>• Dangerous substances</li> <li>• Occupational Health and Safety</li> </ul>		

**Figure 4.3.4.** FIOSH conditions.

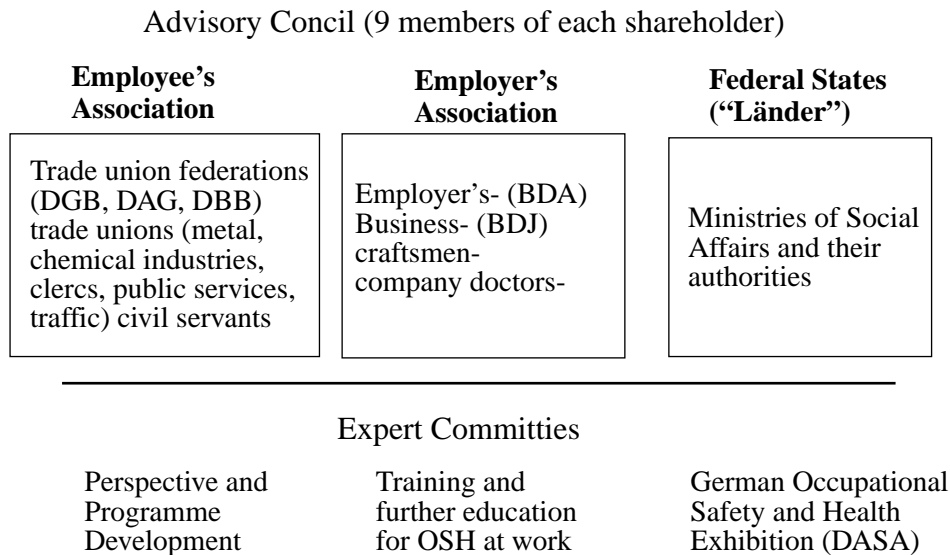
At the Institute level there are chances and problems by the fusion from the two former Occupational Health BAfAM et Occupational Safety (BAU) Institutes, each of which have its competencies as seen at the follow.

In this time we have to take care for the danger that the fusion could lead to confusion. Therefore a controlling process is installed past year during which the BAuA will prepare the new “Arbeitsprogramm” with the support of the ministry and its stakeholders.

## *2. Process of budgetary allocations and priority setting within the FIOSH*

The FIOSH is fully sponsored by the Ministry of Labour and Social affairs. The priority setting and the distribution of money for research and equipment’s were discussed by a leading board (chiefs of the divisions together with administration- and strategy and planning-experts) every year.

3. Role of important stakeholders (employers and Workers organisations, social security institutions and others) as lobbying bodies and partners having impact on priority setting of the FIOSH



**Figure 4.3.5.** Advisory council.

The promoting role of the stakeholders can be demonstrated in an example:

The BAuA got from our "Main stakeholder", the Ministry of labour and social affairs, the instruct, to help the SMEs implementing the "Lastenhandhabungsverordnung" i.e. the German version of the 4<sup>th</sup> guideline – Manual handling (90/269 EWG).

The experts have some ideas to develop a practicable adviser, but they wanted to develop and evaluate it in a broad approach of course. So the BAuA asked the stakeholders, to discuss the first draft with their experts in these fields and to support the proposal for testing it in the field. Two of the three stakeholders were active immediately: The Federal-Ministries' supreme authorities for occupational safety and health wanted to work directly with the authors: the Employers' associations rejected the proposed method as a whole categorically. But, with the help of the Ministry, we started a fruitful dialogue with those experts, which have scanned the draft so critically. Because of discussion critical points in detail, an alternative assessment method was developed, the so named "key item method". So experts of the BAuA began the first step in the field (more than 300 different workplaces) with a substantial improved material. And, by the way, all of the stakeholders supported the primary field testing in 1994 and suggested the method for using by practitioners. Today the evaluation project at about 400 workplaces is finished, the outcomes will be delivered in a few weeks and than the definite method will be available in German and English language.

Other stakeholders are national and international expert-committees.

*4. Role of internal stakeholder groups (individual researchers, research groups) on priority setting of the FIOSH*

From the former BAfAM a special know how in occupational medicine was brought into the fusion-process. A not unimportant part of the work today is for instance dominated by problems of dose effect relationship between exposure and work related diseases respective occupational diseases. In this field we are asked by the external stakeholder “AGS” = committee on dangerous substances and “Sektion Berufskrankheiten beim BMA” = experts, advising the ministry in matters of Occupational Diseases.

A growing up problem is the reduction in staff by retirement and cutting of these special experiences because of missing employment of new personnel.

*5. Role of external funding agencies. Grade of dependence of institute programs and other activities on external funding*

It will growing up in future by European research funding

*6. Personal assessment of the most important strategic goals for future Occupational Health R&D programs at the FIOSH and the most important obstacles or difficulties in achieving them*

Answering the questionnaire.

The authors have had some different views as it can be seen by the following list (the view of the occupational medicine is the first digit, the view of the occupational safety in [ ], the outcomes of all participants of this workshop together in ( ).

**Questionnaire [Do] (all)**

<b>Research and development area</b>	<b>1998/99</b>	<b>Future</b>
Chemical health hazards at work (especially new substances, low doses, combined exposure, environmental overlapping exposure)	1 [3] (1,7)	2 [5] 3,7)
Environmental (non-occupational) health issues (In Germany are a lot of problems in working together between the different resorts and ministeries. I don't expect changes in a short time)	13 [14] (8,5)	13 [14] (9,2)

Physical health hazards at work (Experiences show, that physical work is a lasting problem and will not disappear apparently by new forms of work)	2 [4] (5,1)	4 [4] (5,6)
Work place accident risk (the higher the unemployment rate the lower the accident risk. On the other hand part time work and casual labour increase the risk)	6 [7]	9 [7]
Work place ergonomics (I think, we have still a lot to do concerned with W.p.e. New forms of works have new problems, f.i. software ergonomics)	3 [10] (4,4)	3 [5] (4,3)
Work place health promotion (in my opinion the theme was overheated in G. In the past years. We need urgently evaluated, workplace related methods and we have to look more to aspects of health promotion of the work itself)	5 [4] (7,9)	8 [3] (8,7)
Health service research (including Occupational Health Management) In the discussion related to “Kostendämpfung im Gesundheitswesen” and effectiveness in services we have to look at this problem too)	7 [8] (6,8)	6 [6] (4,7)
Health economics	10 [7] (7,6)	10 [3] (7,0)
Work organisation and management (including Working hours and shiftwork) (some of the problems following this item we have seen in our favoured item 1)	8 [4] (5,4)	9 [2] (4,0)

Ageing and work capacity/ disability (it is an important item, but it depends on the attitudes of our stakeholders in early retirement politics)	9 [9] (7,6)	7 [9] (6,6)
Young workers and labour market entry (here are barriers as outlined above: the Youngsters before the beginning of their careers are not in our department, but the pint is really important.)	12 [8] (11,8)	12 [6] (9,8)
Psychological and social work place factors including work overload (in relation to the changes of working life I think a growing importance of this theme is to be expected)	4 [7] (4,7)	1 [2] (3,6)
Rehabilitation and vocational training	11 [11] (10,8)	11 [11] (9,8)
Unemployment and labour market research (See above: in this time we are incompe- tent of this)	15 [11] (11,1)	15 [8] (10,9)
Ethnicity and cross / cultural occupational health (See above: in this time we are incompe- tent of this although it is a point of growing importance)	14 [13] (12,1)	14 [12] (11,8)

## Remarks

### 1. in the areas:

- Environmental (non-occupational) health issues.
- Young workers and labour market entry.
- Unemployment and labour market research.
- Ethnicity and cross/cultural occupational health.

- are no researching and development initiatives in our institute till yet. This point has to be overlined in future.

*2. the following areas ought to be added*

- Databases.
- combined exposures (f.i. vibration and noise, psychosocial stress and hazards).
- changing exposures (new chemical hazards, low intensities of chemicals, and physical health hazards, total work load, interrupted job/exposure histories).
- changing of performance-prerequisites.
- health promotion effects of working.

## 4.4 Strategies for Occupational Health Research in a Changing Europe – the Italian View I

*Antonio Grieco and Pier A Bertazzi*

Numerous laws regulate health surveillance for exposed workers in Italy. The law 303/56 represents the reference norm for programs of health surveillance. The type of health surveillance proposed by this law is based on the medical-legal concept of “presumption of risk”. The definition of risk does not take into account the intensity of duration of exposure but only the intrinsic hazardous properties of the various pollutants. Law 626/94 substantially modified the regulation by introducing the concept of “risk assessment” and extending this principle to the protection of male and female workers in all workplaces, both in public and private sectors, and to all occupational hazardous agents of a physical, chemical and biological nature. Law 626/94 also introduces the concept of fitness for a specific job, based on evaluation of skills which will lead to better results at work, and to prevention of illnesses from individual hypersensitivity to specific harmful agents and working conditions.

The shift from “risk presumption” to “risk assessment” represents also a sort of change of “scientific paradigm” and has had a tremendous impact on both the conceptual and managerial levels of research and development (R&D) at Clinica del Lavoro of Milan University. In the old scenario, the risk factors and the associated health risks for the exposed subjects were known *a priori* (at least in part). Production and manufacturing processes were fairly standard, jobs were stable, workers were males, and different jobs were associated with well-established social, cultural and environmental characteristics. Focus of the research was, then, to render OH as early and as accurate as possible in *recognizing* the existence of a given exposure and the associated characteristic effects in order to:

- avoid further damage to the worker
- allow compensation for the damage incurred
- improve environmental measures of primary prevention.

The new paradigm recognizes the changes occurring at work, currently characterized by new, low-level, and multiple exposure; subtle and non-specific effects; ageing, multiethnic and mobile working population. The challenge to OH is then to *discover* the new exposures and the new bad health conditions among the working population and to *ascertain* their work-relatedness. The goals of protection of the worker compensation for damage, and environmental prevention are now provided only through a specific research approach that should be modelled by the novel characteristics of the work setting to be evaluated.



2 – Despite the fact that research needs might appear obvious, research programs cannot be decided on the basis of this unique criteria. The research funds allocated each year to our Department by the University and the Ministry of Education and Research are insufficient to support any major R&D program. In general, these funds are employed to support the “basic metabolism” of the Clinica del Lavoro itself and the established research groups within it. A real research program, instead, can be launched only thanks to the resources acquired from outside (national and international) agencies and bodies.

There are two main kinds of such funding bodies.

One is represented by institutionally concerned bodies (mainly at the national level) willing to address emerging work problems through a respected and authoritative university, as we actually are.

The other is represented by international agencies to which the different Clinica del Lavoro groups (single or in collaboration) apply to obtain research grants.

R&D budgetary allocation and priority setting, thus, heavily depends on the existence of concerned funding bodies and on the capabilities of researchers and research groups within the Department to gain access to research grants. Therefore, discrepancies might exist between the identified and pursued priorities and the research programs that can actually be implemented. In our experience, these discrepancies are rather negligible.

Smaller research projects can sometimes be allocated and funded within the framework of service supplied by the Clinica del Lavoro to private and public societies and institutions (e.g., guidance and assistance to the Municipality of Milan in complying with safety regulations).

3 – Stakeholders have played a major role in implementation and funding of Clinica del Lavoro research programs. A few examples will illustrate our experience.

In the early eighties, the National Institute for Accidents and Occupational Disease Compensation (INAIL) decided to address in particular the effects of fibres on workers health and, to this end, facilitated the development in the Clinica del Lavoro Pulmonary Medicine Section of research programs aimed at identifying early and specific signs of the pulmonary changes associated with fibre exposure. In addition, INAIL concurred with ISPESL (National Institute for Occupational Safety and Prevention) and the Lombardy Region in supporting the Clinica del Lavoro for the establishment of a region-wide Mesothelioma Registry, which will greatly contribute to improve recognition, new research and prevention programs mainly on the occupational problem.

In 1990 the Lombardy Region jointly with WHO and the Milan University substantially contributed to the launching of an International Center for Pesticide Safety (ICPS), related to our Department.

In 1985 funding by a pharmaceutical Company allowed implementation of a Research Unit “Ergonomics of Posture and Movement” (EPM) involved in MSDs research activities. It was formally set up in Milan by joint initiative of the Milan University (through the Ergonomic Section of the Clinica del Lavoro), the Milan

Polytechnic (Department of Electronics), the Projektledare Juventute don C. Gnocchi Foundation (through the Bioengineering Centre) and the ICP Hospital (through the Centre for Occupational and Community Medicine).

In 1992 the Italian Trade Unions expressed their interest in developing occupation epidemiological research, and decisively contributed to the establishment in our Department of a Research Center in Epidemiology (EPOCA) that subsequently was successfully developed also at international level.

Every two years, the National Institute for Occupational Safety and Prevention (ISPESL) publishes Requests for Proposals on research topics identified as the priority list for R&D in the occupational settings in Italy. This is the single largest research opportunity and funding source for the Clinica del Lavoro, that regularly proposes several research projects. In some way our Clinica gives suggestions and proposals in the different research areas.

4 – The role of internal stakeholders is threefold:

- a- to be informed and creative in identifying priorities that actually reflect societal needs;
- b- to develop expertise, capabilities and methods to address those issues;
- c- to be able to obtain resources in order to implement relevant R&D programs.

The international of these three capabilities affects the weight and the role of internal stakeholders, be they individuals or groups, and may contribute to identifying priorities. The Direction advises on emerging trends, fosters individual attempts whose validity is recognized, and coordinates research groups within the Department.

When a program is unanimously recognized of high priority but, whichever be the reason, is unable to directly find sufficient resources, existing resources under other items might be directed towards this program, after a common decision by the Department, in order to further develop necessary capabilities, but also support, as far as possible, immediate activities.

5 – As already mentioned, external funding agencies have been decisive in developing activities (epidemiology, pesticide safety, etc.) and relevant research programs. As a matter of fact, those programs are almost entirely depending upon resources made available by external agencies. The Department role, instead, is mainly in training and assistance with basic research activity. In addition to those already mentioned (ISPESL, in particular), major grants were obtained by the following agencies:

EU Commission: BIOMED 1 and 2, and EUROPE AGAINST CANCER programs

National Research Council of Italy

International Agencies for Research on Cancer

US National Cancer Institute

6 – Personal assessment of the most important strategic goals.

The OH research is by definition “applied research”, and the acquired knowledge should be applied in order to achieve a goal that the European Union in 1992 described in this way

”... many accidents and almost all the occupational diseases could be avoided. In addition, experience repeatedly showed that safe workplaces are more efficient, more productive and more profitable”.

A strategy in this direction requires, first of all, the transfer of the whole existing knowledge available to designing and implementing the actual working conditions. The available knowledge is in fact, in our opinion, much wider than it is currently used in prevention programs. Therefore, the emphasis should be on programs aimed at transferring the whole accrued relevant information (technical, biomedical, psychosocial, etc.) to the real scene, to protect the workers and, hence, also the society at large.

To this end, it is of utmost importance to integrate a specific monodisciplinary knowledge (polytechnical, biomedical, social) into a common scientific approach in order to analyse, evaluate and design the interaction of the human being with complex systems, in such a way as to pursue, at the same time, objectives of productivity and respect and valorisation of natural resources.

In this conceptual framework, OH scientific knowledge may become relevant not only to the diagnosis and mitigation of the harmful effects of work, but also in a much earlier stage, exactly in the process of designing and organising a working system.

7 – Most important obstacles and difficulties in pursuing the above strategic objectives are the following.

- a- Extreme fragmentation of monodisciplinary knowledge.
- b- Lack of communication between social actors and scientific community.
- c- Conservative application of the old paradigm, almost exclusively based on a merely “toxicological” or “technical” (i.e., not biologically oriented) view of man-work interaction.
- d- Reduced interest, even by the social actors, in the “safety and health at work” issues (which had their momentum in the 1970’s), caused by cultural changes and economic constraints. The interest is now on general environmental issues (which may, on the other hand, represent a novel opportunity for our research).
- e- Less opportunities to access the OH research field for young physicians. The plant physician job appears, in fact, much more economically rewarding.
- f- Overload of routine duties in the Department.

## 4.5 Research Strategies and Priorities in Workers' Health Protection: The *ISPESL* Survey – Italy II

*Sergio Iavicoli and Carlo Grandi*

### **Introduction**

At the start of the new millennium, technological innovation and social transformations are leading to rapid changes in the workforce and the types of occupational risks. The protection of workers' health at the workplace therefore requires a re-orientation of research in this field in order to respond to the growing and varied requirements of prevention.

This need has also been reported by international organisations such as the European Commission (as in a 1995 report), and in the document "Occupational Health for All" produced by the WHO Collaboration Centres in the occupational health sector.

Over recent years, wide-ranging initiatives have been conducted in some countries in order to identify and orient the demand for research in the sector on the basis of a priority-identification system. The initiative of the US National Institute of Occupational Safety and Health (NIOSH) is of particular interest; through a programme of numerous debates among the experts themselves and with representatives of the social partners with regard to American labour, 21 priority research areas for the protection of workers' health and safety at the workplace were identified.

Up to now, the results already achieved by the programme co-ordinated by the NIOSH, known as the National Occupational Research Agenda (NORA), have allowed for a more rational re-allocation of the resources available for research in the sector, as well as the development of a greater synergy by all the parties involved in order to identify and achieve the priority objectives in the safeguarding of occupational health.

In Europe, we should recall the study conducted by Harrington in the UK. This study shows methodological differences compared to the NIOSH research. Occupational physicians from both the universities and private enterprises were contacted using the Delphi technique, with questionnaires being sent in two stages. In the first stage, there was an open request to the interviewee to state which of the three OSH sectors required research priority. On the basis of the results, the areas most frequently indicated in the responses were identified, and these were then inserted in a new questionnaire. The interviewees were then asked to assign points to each area in order of priority.

A subsequent extension of the study, conducted with the same methodology, enabled researchers to identify the priorities within sector according to the employer viewpoint.

The scientific nature of the method used and the wide-ranging participation of all the parties involved provided a model for the *ISPESL* study.

Another study on research priorities in occupational health carried out applying the Delphi technique is that conducted by Van Der Beek and co-workers in the Netherlands.

We should also recall a very recent survey by Macdonald and co-workers in the UK; on the basis of a Delphi questionnaire, divided into two stages and sent to the members of the European Association of Schools of Occupational Medicine (EASOM), the Occupational Medicine Section of the Union of European Medical Specialities (UEMS) and the European Network of Societies of Occupational Physicians (ENSOP), the questionnaire led to the identification – on the basis of the answers provided by qualified experts from all the European Union countries – of the common basic skills that occupational physicians in Europe should have.

ISPESL, as the national research institute and reference centre for the National Health Service regarding the safeguarding of health and safety at the workplace, as well as the Italian reference institution for the European Agency in Bilbao, aimed at identifying and ranking the research demand in this sector in Italy. In conducting this study, the *ISPESL* utilised the experience accrued in the research initiatives mentioned above, also actively involving their promoters.

## **Procedure**

The methodological approach was chosen on the basis of the particular situation in Italy. In identifying qualified interviewees, it was decided to involve two main areas operating daily in the OSH sector in Italy, with partially different approaches and aims. On the one hand, there are the university chairs and institutes in occupational hygiene and medicine, represented by full professors, associate professors and researchers, who produce most of the research in the OSH sector.

On the other hand, there are the Local Health Agencies (ASL), represented by the Directors of the Departments of Prevention, working on a day-to-day basis on the local level in surveillance and checking of workplaces. We should also recall that in many Local Health Agencies there are active research groups financed on the national and/or regional level.

The survey was conducted using a questionnaire, with the Delphi technique. This consists in contacting (in a series of cycles, each based on the results of the previous one) experts in a given sector as qualified interviewees, trying to identify consensus on a topic by the convergence of the opinions expressed.

In the case concerned, two cycles (or stages) of sending and retrieving specially produced questionnaires were considered to be enough. In the first stage, each interviewee was asked to identify – by an open question – three areas, which in their opinion were a priority research topic in the OSH sector. On the basis of the responses received, a second questionnaire was drawn up, showing the answers given most frequently in the first stage, grouped by thematic area.

The processing of the data of the first stage led to the formulation of a single questionnaire for the Local Health Agencies and Universities, since the most frequently reported topics coincided. The latter was sent to the same interviewees, asking them to assess each of the items shown, assigning points ranging from 1

(*lowly relevant*) to 5 (*highly relevant*). The feedback for this second stage was processed separately for the University Institutes and Local Health Agencies, defining the corresponding master lists according to the order of priority identified.

## **Results and Discussion**

Out of the 300 questionnaires sent to specific persons in the group including the University Institutes and Local Health Agencies (131 people among full professors, associate professors and researchers as well as 179 Directors of Prevention Departments) over half were filled in and returned for the first stage. In this stage, the response rate was higher in the Universities (70 per cent and more) compared to the Local Health Agencies (not over 50 per cent). In the second stage, the percentage of responses was on the whole higher (75 per cent) compared to the first stage, almost equally distributed between Universities and Local Health Agencies. A total of 203 “stage II” questionnaires were available for the analysis of results.

As we can see from the *priority lists* shown below (Tables 4.5.1 and 4.5.2), the survey results first of all show that for the Local Health Agencies and Universities, the broad area directly concerning the methodological approach to research in the sector has priority. This includes numerous aspects, ranging from worker training, the problem of quality in occupational medicine, the development of methods and indicators to identify risk exposure and precocious effects to the problem of optimising prevention and safety services at the workplace.

The broad sector of identifying the mechanisms of action of risk agents then followed (a premise for the development of sensitive and specific indicators for exposure/effect).

Least important were the priorities in areas related to the assessment of single occupational risks or topics regarding single occupational sectors.

With regard to the individual thematic items, top priority is assigned to occupational carcinogenesis and quality assessment in occupational medicine, for which there follows a more detailed comment by two Italian experts in the sector.

Other priority items are the problems linked to research on the health impact of exposure to low doses of environmental pollutants and multiple exposure to several risk factors (an aspect especially stressed by University Institutes). Among the top items, there is also the development of approaches and methods for an effective, correct and adequate worker training, as well as their effective participation in prevention activity (a problem most highlighted by the Local Health Agencies).

As already mentioned, items such as single risks, diseases or working areas were assigned lower priority. Nevertheless, the same item is often assessed differently by the University Institutes and the Local Health Agencies.

For example, the topic of individual susceptibility to the action of risk factors is considered to have quite high priority by the University Institutes (perhaps because it directly involves techniques and methodologies typical of advanced

biomedical research), ranking in 5<sup>th</sup> place, while for the Local Health Agencies it ranks only 24<sup>th</sup>.

Another example is the problem of load handling at the workplace, quite relevant for the Local Health Agencies (13<sup>th</sup> place), much less for the University Institutes as a whole (26<sup>th</sup> place).

In general, with respect to the Universities, the LHA Prevention Departments are more in favour of orienting research activity to topics like quality assessment, worker training, prevention services, labour accidents and the topic of load handling.

On the other hand, for the University Institutes, topics like individual susceptibility to risk factors, occupational exposure to chemical pollutants and occupational diseases of the respiratory tract (in particular asthma) are considered to be more relevant for the development of research with respect to the views of the Local Health Agencies.

**Table 4.5.1.** Research areas with overall identification according to the order of priority, as derived from the results of the questionnaires submitted by Professors and Researchers of the University Institutes for Occupational Medicine and by the Prevention Departments of the Local Health Agencies.

<b>Area identified (macro-sector)</b>	<b>Rank</b>	<b>Mean score obtained for the area identified*</b>
Research methods, approaches and strategies	1	3.88
Mechanisms of action and development of indicators	2	3.57
Diseases and work accidents	3	3.56
Risk assessment	4	3.45
Work environment, workforce and working sectors	5	3.4

\* The score of the macro-sector is calculated as median of the single variables included in the macro-sector itself.

**Table 4.5.2.** Research topics with overall identification according to the order of priority, as derived from the results of the questionnaires submitted by professors and researchers of the University Institutes for Occupational Medicine and by the Prevention Departments of the Local Health Agencies.

<b>Topic identified</b>	<b>Rank</b>	<b>Mean score obtained for the topic identified</b>
Occupational carcinogenesis	1	4.32
Quality in occupational medicine	2	4.15
Exposure to low doses and multiple exposure	3	4
Worker information, education and participation	4	3.89
Organisation, strategies and optimisation of prevention and safety services at the workplace	5	3.87
Biological monitoring: identification of markers for low-dose exposure	6	3.83
New work-related diseases	7	3.77
Medical surveillance and work ability criteria	8	3.77
Work accidents	9	3.75
Electromagnetic fields	10	3.69
Work organisation and new types of work	11	3.66
Musculo-skeletal and repetitive trauma disorders	12	3.64
Health-care and hospital sector	13	3.61
Asbestos substitute fibres	14	3.55
Individual susceptibility and development of susceptibility indicators	15	3.53
Occupational allergies	16	3.46
Biological agents	17	3.44
Occupational asthma and respiratory diseases	18	3.43
Agriculture	19	3.38
Load handling	20	3.36
Special populations at risk*	21	3.33
Occupational exposure to urban chemical pollutants	22	3.32
Mechanisms of action of occupational stress and occurrence of disease	23	3.32
Reproductive and pregnancy disorders	24	3.31
Methods of assessing and measuring occupational stress	25	3.29
Air quality and indoor environments	26	3.14
Study of the mechanisms of skin absorption of xenobiotics	27	2.93

\* (elderly, minors, disabled people)



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## 4.6 Between National Policy and Market Demands – The Netherlands

*Frank Pot*

### **1. Institutional and Financial Structure of TNO Work and Employment (TNO Arbeid)**

Although our institutional history covers about 110 years TNO Work and Employment (former NIA TNO) as such is founded in January 1999 and became the 14<sup>th</sup> Institute of the Netherlands Organisation for Applied Scientific Research (TNO). TNO is established by law, independent and employs about 5 000 employees. The institute Work and Employment employs some 190 people and has an annual turnover of EUR 16 million. Other TNO institutes employ about 50 people for specific OSH topics such as dangerous substances (TNO Nutrition and Food Research), vibrations, noise, software ergonomics and anthropometry. The national function of TNO is to develop and maintain knowledge that can be used by government and industry.

The fields of activity of TNO Work and Employment are more comprehensive than the “traditional” OSH-issues. The institute develops and applies knowledge in the areas of innovation of work, organization and technology, and employment. Based on an integral approach to human resources, organisation and technology, the institute’s mission is to realise the conditions for employees to work in a productive and healthy way.

Achieving synergy between societal function and market orientation gives TNO Work and Employment a unique, central, initiating position in the area of strategic and complex labour issues.

In the Netherlands there is no national institute of OSH for which the government is responsible, but TNO Work and Employment is considered by all parties in the field as the central institute in the Dutch OSH infrastructure. The institute provides information services, research, consultation and professional education and training for OSH experts. The institute supports with a number of activities the Focal Point of the European Agency OSH and the national platform on OSH and is WHO Collaborating Centre Occupational Health.

About 25 per cent of the annual turnover consists of funding by the government for explorative research, to be distinguished from contract research for the government; 2/3 of the government funding is granted on base of a four years program, which has to be discussed with the Ministry of Social Affairs. Government policy and knowledge fields of our researchers meet in this four years program.

The remaining 1/3 of the government funding is granted on base of a four years program which for the whole of TNO, has to be discussed with the Ministry of

Education. This four years program is mainly based on the knowledge fields of our researchers.

TNO Work and Employment is rather free to set its own priorities for this part of the R&D Program.

The other 75 per cent of the annual turnover has to be acquired in competition on the market for contract research, consultancy and professional education and training.

## **2. Process of Budgetary Allocations and Priority Settings within the Institute**

In order to stimulate the research groups to increase their “market orders”, the volume of the government funding budget is related to the annual “market” turnover of the group. Moreover the institute's policy is that the proposals for R&D research have to meet the following criteria:

- the projects have to fit in the strategy of the institute;
- the projects have to fit in the four years programme as agreed upon with government;
- the projects have to generate knowledge which within three years time can be used in contract research and consultancy for the market;
- the projects should contribute to develop our activities towards an international competitive level.

On top of this, extra R&D budget is allocated to research groups which are in a growing state of development. Extra R&D budget is also allocated to research groups whose knowledge should be adjusted to new societal needs. With the aid of this extra budget they can either shrink down their activities or convert their activities into new services.

## **3. Role of External Funding Agencies. Grade of Dependence of Institute Programs and other Activities on External Funding**

The institute is rather dependent on external funding in the form of contract research from the Ministry of Social Affairs and Employment and from the national co-ordination institute for social security institutions (Lisv).

The highest priority is research related to “back to work” programmes (re-integration):

- a- concerning employees who are sick but still in the company (quick and proper treatment by occupational health and curative health agencies; adjustments of workplaces and work organisation);
- b- concerning people who are already dependent on social benefits, such as partly disabled and unemployed people (quick and proper treatment by social security and employment agencies; adjustment of workplaces and work organisation; training).

The second priority of the Ministry is work organisation, in particular the impact of ICT and flexibility (job content, working times, terms of employment).

The third priority of the Ministry continues to be dangerous substances; this research is carried out by the department of Work Toxicology of TNO Nutrition and Food Research Institute.

Concerning physical and psychological workload the opinion of the Ministry is that these subjects should be developed further by the stakeholders in the field. Support of the Ministry is given through subsidies for the execution of covenants on branch level in which the social partners have agreed upon specific targets to improve the working conditions; these subsidies are for project management and measurements of results.

Furthermore the institute is dependent on commissions from other government agencies, companies, occupational health services, branch organisations, international agencies. All these commissions have to be acquired in competition.

Part of the programme for explorative research is set aside for co-financing orders of the European Union, which are only partly subsidized and do not take into account our cost prices. These orders are however important for the institute to increase our knowledge and to improve our (international) position on the market.

#### **4. Role of Important Stakeholders (Employers and Workers Organisations, Social Security Institutions and Others) as Lobbying Bodies and Partners have Impact on Priority Setting of the Institute**

Stakeholders as employers and workers organisations, and social security institutions play a secondary role in the priority setting of our institute.

These organisations are however important clients for our products and services. So, indirectly, they influence the priority setting of the R&D research of the institute. With our R&D investments we try to anticipate and develop knowledge in order to meet future demands of these organisations.

Representatives of these stakeholders are members of the Advisory Board of the institute.

#### **5. Role of Internal Stakeholder Groups (Individual Researchers, Research Groups) on Priority Setting of the Institute**

In a professional organisation the members have quite an impact on the policy making of the institute. Research managers are involved in the negotiations with government on the priority setting for the programmes for explorative research (25 per cent of the annual turnover). Once the priorities of the institute have been set by the management team the individual researchers and consultants are supposed to develop their competences and to acquire commissions within the boundaries of these priorities.

## **6. Personal Assessment of the Most Important Strategic Goals for Future Occupational Health R&D Programs at the Institute and the Most Important Obstacles or Difficulties in Achieving them**

The aspirations of the institute are to realise a growth in annual turnover of approx. Ten per cent per year. At least on 3–5 topics, we claim an international position and high market attractiveness in five years time, namely:

- monitoring and evaluation of social legislation, policies and scenario studies on work and health;
- re-integration and disability management;
- the impact of ICT and flexibility on work organisation and industrial relations
- research and development of instruments related to stress, job content (demands, control and responsibilities), health risks, physical workload
- preventing RSI (Repetitive Strain Injury) both by strategic research on risks and solutions as well as by product development and consultancy.

At the moment, the most important obstacle is to maintain high quality research and consultancy that is geared with market demands. The variety of our fields of activity is far too large. We are now in a process to focus on fewer product-market-combinations. This is not an easy process, for it means that in the future we have to reduce or convert activities which for the moment are still profitable: it is important to do this at the right moment. At the same time we have to meet the obligations with regard to the annual turnover and the financial targets set by the Board of Directors of TNO.

## 4.7 National Institute of Occupational Health – Norway

*Tor Norseth*

### **Background Information**

According to the instructions issued by the *Ministry of Local Government and Regional Development*, the primary objective of the institute is to promote good health conditions at work and to create an understanding of the importance of a good working environment. In accordance with this, the institute is responsible for carrying out research, training, studies, information and preventive health care.

The *National Institute of Occupational Health* is a sector research and service institute, administratively under the *Ministry of Local Government and Regional Development*. As such, the institute is responsible for generating and developing knowledge in the working environment sector and for developing methods adapted to the specific problems of this sector. It is also responsible for analysing and describing trends and problems in the working environment sector, providing the appropriate authorities with the professional basis for deciding on priorities, policy formation, norms and standards. The institute shall function as a professional link between Norwegian industry and international occupational health research.

The institute is to function also as a specialist institution in Norway. Through participation in international research, the institute should keep itself well informed on the professional development in the occupational health field and inform the authorities and the Norwegian community on important trends and possible problems. The institute is to contribute to defining the professional premises for the formation of government policies in the working environment sector.

The institute has a national function and is the most important professional institution of occupational health in Norway. This is to be reflected in its research activities, the services it provides and in its information and training activities. The national responsibilities of the institute implies that it has to establish and maintain co-operation and contact with the universities and industry in all parts of the country, as well as with other nation-wide institutions and organisations and with the appropriate public authorities.

The *National Institute of Occupational Health* will continue to carry out its functions on the basis of the traditional background of the natural sciences and medicine, on which the institute was founded. Problem orientation and interdisciplinary co-operation are important premises for the activities of the institute. The institute shall contribute to solving organisational and psychological working environment problems in co-operation with institutions within the social sciences where methods related to medicine and/or the natural sciences are relevant.

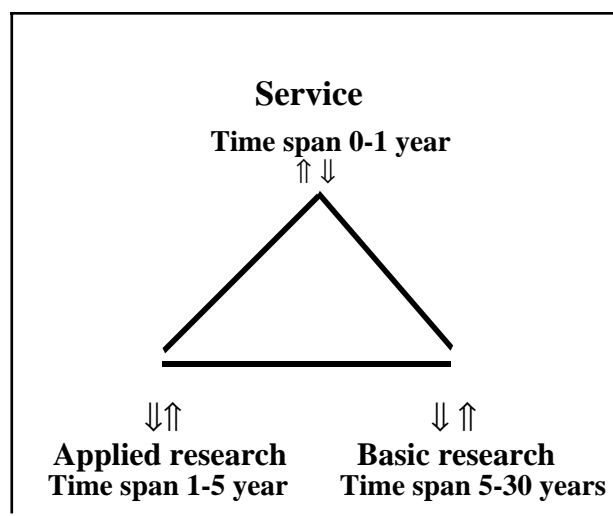
The core of the institutes activities consists of its services to the target groups. The institutes research is intended to support the services and to provide a professional foundation for these activities.

### **Main Strategies**

To meet the challenges and demands, the institute bases its activities on the following main strategies:

- research, services, education and information in close association with industry and guided by the needs of the users,
- research in close association with national and international research institutes and universities,
- close co-operation with the working environment authorities,
- organisational attachment to the governmental working environment and safety-at-work administration,
- organisation, management, administrative systems and social environment which secure a high level of quality and make the institute an attractive place to work.

An important strategic principle is the interaction between service, applied research and basic research as shown in figure 4.7.1.



**Figure 4.7.1.** National Institute of Occupational health Strategic model.

The figure demonstrates interaction with users of the National Institute of Occupational Health at different levels of knowledge from the lay person to academic institutions. There is a free flow of information and knowledge inside the triangle with output in all corners and at all levels along the sides of the triangle.

## **Institute Policy**

The fundamental philosophy of the National Institute of Occupational Health is to give independent professional support in bio-medicine and natural sciences to workers, to trade unions and to management, and to serve as an expert organ to government organisations for the improvement of workers health and the working environment.

In accordance with the fundamental philosophy, the institute is by 85 per cent financed by the government (Ministry of Local Government and Regional Development). Even if the financial structure may change to some degree in the future, the principle of scientifically based independent support both to individuals and organisations continues to be the *raison d'être* for the institute.

## **Target Groups**

Based on the above philosophy the main target groups for the institute are:

- single enterprises by their occupational health and safety departments, for small enterprises by any worker or management representative,
- government organisations (Directorate of Labour Inspection; Ministry of Local Government and Regional Development),
- workers unions and management organisations at the national – or enterprise level, or in different trades.

In addition there are two specifically important groups for collaboration and exchange of information

- the public health service (hospitals; single physicians or patients; the National Health Insurance System),
- universities and other research organisations.

## **Aims and Objectives**

A structure of aims and objectives has been developed as follows (specific subordinate aims are of equal importance):

### *Primary aim*

- All Norwegian trades, enterprises or organisations should have the knowledge to create a working environment which prevents work related diseases and supports better health conditions in workers.

### *Specific subordinate aims:*

#### Research

- To provide new knowledge on the relationship between work, disease and health.



Specifically to

- work-related diseases in the airways and nervous system – exposure and effect,
- occupational cancer,
- work-related adverse reproductive effects,
- mechanisms of muscular pain syndromes (musculo-skeletal disorders),
- work, stress and health,
- gene-environment interactions in work-related diseases.

*Service and counselling*

- To provide surveillance and monitoring, risk assessment and suggest preventive measures

Specifically to

- investigate and diagnose cases of work related diseases,
- provide assistance in surveying, surveillance and monitoring work and health to enterprises and trades,
- investigate exposures and exposure sources,
- offer chemical survey- and analytical services.

*Information and education*

- To make information and knowledge about work and health available to target groups

Specifically to

- keep updated on national and international research and disseminate new,
- inform government organisations about new trends and knowledge of importance,
- offer teaching and training in occupational health,
- provide documentation and knowledge about work and health,
- inform target groups about the institute.

Plans are developed according to these principles and goals every year. Results according to plans are reported to the director general and research director with all department heads present every year during late fall. Plans for the next year including budget and allocation of time for different activities are developed for final adjustment in January (subject to changes during the year if necessary).

### **Activities and Criteria for Priorities**

The activities of the National institute of occupational health can be summarised as follows:

- Give advice (or references to other information sources) in occupational health in general.

- Provide services (occupational medicine (out patient clinic), industrial hygiene, surveillance, monitoring, analytical or clinical, ad hoc expert work) in according to priorities.
- To do applied research in some areas according to priorities.
- To do basic research on a high competitive international level according to priorities.

Starting out with advice in general, the service is limited to more specific topics. The relative limitation continues for applied research towards basic research in some highly selected topics. Advice, service, applied and basic research should be, however, linked together for mutual support in an interdisciplinary problem-oriented structure as shown in figure 4.7.1.

*Criteria for priorities can be summarised as follows:*

- risk assessment
  - degree of risk
  - number affected
- social scope
  - political priority
  - Norwegian problems
- applicability
  - prevention
  - treatment
  - provisions enforcement (labour inspectorate)
- scientific importance
- feasibility
  - competence
  - economy and equipment

### **Conclusions and Points of Focus**

Based on the above background information, strategies and policy, and on the referred aims and objectives, the points of focus as outlined by the workshop organisers can be summarised as follows:

Factors on political levels exert a very limited pressure on priority setting for institute programs. The priority criteria as judged and put into practise by the institute seems to fulfil the expectations from the ministry.

The institute is by 85 per cent financed by the Ministry of Local Government and Regional Development which implies a rather limited room for change within short time spans. Budgetary allocations and priority setting within the institute are to a limited degree based on results, mostly on a continuing evaluation of the priority criteria and available resources (specifically experts and equipment).

Important external stakeholders as mentioned (social security institutions excepted) influence priority setting by their participation in the board of the institute which discuss and accept the plans and priorities for each year.

Internal stakeholders participate in priority discussions at each section, influence priority setting by participating in an internal *Scientific council* and participate in the *Steering group* (director, research director and section heads). Employers are also represented in the board of the institute.

External funding agencies influence the priority setting by advertising research areas for support. The institute depends up to 10-15 per cent on external funding at present. Efforts to increase the external funding is under way, but this should not be coupled to a decreased basic financing from the Ministry.

In my assessment, the most important strategic goals for the future of our institute is to keep the basic financing from our ministry at a sufficient level to continue our scientific and practical independence. Equally important is to keep and to work for to strengthening of the principles of protection and the promotion of health as the basic (and only) moral value or *raison d'être* for the existence of any institute of occupational health even in "a changing Europe". The most important obstacles or difficulties in achieving this are the ever increasing demand of profit and productivity in national and international work-life, and the corresponding decreasing trends of governmental financing.

## 4.8 Priorities and Points of Focus – UK

*J. Malcolm Harrington*

### **1. Background**

The change in government in the UK has seen a burgeoning interest by politicians and national health and safety agencies in the health of people at work. Several important strategy documents from the Department of Environment, Transport and the Regions are in the pipeline for publication this year and they will dovetail into the Public Health initiatives emanating from the Department of Health.

At this same time, a number of major industrial employers are “downsizing” or “outsourcing” their occupational health expertise. Nevertheless, there is a need for occupational health professionals to capitalise on the political initiatives – while they last – for political interest and political drive is for the moment.

### **2. Occupational Health Research in the UK**

Whilst much of the research is funded by the Health and Safety Executive, most of the work is undertaken by university departments. There is no national institute.

Constraints on academic research in occupational health have changed little since the EU sponsored report of 1985 (van Hoorne et al.). The constraints were – as then –

- Deficiencies in identifying suitable topics.
- Inadequate records for retrospective study.
- Difficulties in participation at all levels.
- Insufficient resources.
- Ill co-ordinated effort on agreed topics.

#### *2.1 Priorities*

Developing research priorities requires criteria. These are:

- Common exposure/condition.
- Life threatening/chronic disability.
- Object of research amenable to change.
- High cost/high profile.
- Cost effectiveness of intervention.

In the UK, two such scoping studies have been undertaken using the Delphi technique (Harrington et al., 1994, 1995).

For occupational physicians and academics, the priorities were:

- Natural history of musculo-skeletal disorders.
- Allergy.
- Audit.
- Environmental impact.

For personal managers, the priorities were somewhat similar:

- Work related upper limb disorders/backs.
- Preventive strategies for stress.
- Cost effectiveness of occupational health services.

Such priorities are supported by data from two self report surveys conducted by the Health and Safety Executive (Jones et al., 1998) which showed that the commonest work related illnesses were back problems; upper limb disorders or neck disorders; stress, depression or anxiety and illnesses ascribed to stress.

Occupational physicians voluntary reporting surveys have similar results:

- Musculo-skeletal disorders (45.5%)
- Skin disorders (19.9%)
- Mental ill health (18.9%)

Findings from other priority setting studies in the Netherlands and the USA come to broadly similar conclusions. Summarising all this, three conditions predominate:

- Musculo-skeletal disorders.
- Psycho-social factors.
- Allergy.

## 2.2 Funding

Research resource is mainly found in the Health and Safety Executive with some other monies coming from the British Occupational Health Research Foundation, industry and commerce and less amounts still from the Medical Research Council, the mainstream medical charities and the European Commission.

At academic centre level, the IOH in Birmingham is not dissimilar from the other (few) centres in the UK. That is, overall funding is to a large extent from outside sources. In Birmingham's case, 20 per cent comes from the Higher Education Funding Council, 30 per cent from research contracts, 17 per cent from external funding of academic posts and 15 per cent each from post graduate teaching and consultancy work.

## 2.3 Prognosis

The outlook is not good. Research institutions in the UK are heavily dependent on external funds with a smaller – and diminishing – proportion coming from central government. Staff retention issues arise over pay and working conditions compared with industry/commerce. Long term planning is, therefore, problematical

although the recent increased profile of public health in general does help support work place research as part of the public health agenda.

#### *2.4 The Future*

Increasingly the emphasis on research is shifting from discrete toxicological or physical agent issues at work to a consideration of the whole person in the context of their life (HSE, 1999). Occupational health research is becoming illness or complaint driven – rather than disease motivated. Industry and commerce want practical answers and applications to their problems of maintaining a contented, stable and efficient workforce.

The research questions generated by these issues require multi-disciplinary teams to tackle multi-facetted problems.

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## **5. Occupational Safety and Health Research in Europe – A European Agency Perspective**

*Markku Aaltonen*

### Needs and Priorities in the EU Member States

#### **Introduction**

A key role of the European Agency for Safety and Health at Work is to carry out information activities related to occupational safety and health (OSH) research. These activities are implemented with assistance of its European network of Focal Points and OSH research experts from all Member States (Thematic Network Group on Research – Work and Health) and of a Topic Centre on Research – Work and Health. The Thematic Network Group has also observers from the Social Partners and the Commission. The Topic Centre is a consortium of ten major OSH research institutes in Europe.

Common goals of the research information projects are to:

- Collect data about relevant OSH research resources available in Internet;
- Disseminate research results;
- Identify gaps in research activities;
- Prevent duplication of effort and promote information exchange; and
- Inform decisions about future research.

The Agency has set up special web pages on OSH research, which provide relevant information from the Member States as well as from other countries and international bodies.<sup>1</sup> State-of-the-art reports on Work-related neck and upper limb disorders<sup>2</sup> and on Stress at work<sup>3</sup> are other recent products.

#### **Aiming to Identify Future European OSH Research Needs and Priorities**

The European Agency has compiled information from the EU Member States about their future research needs, which forms the basis of a new report “Future Occupational Safety and Health Research Needs and Priorities in the Member States of the European Union”.<sup>4</sup> The aims were to collect up-to-date information on these research needs and priorities to inform the European Commission’s research programmes, to improve collaboration between the Community bodies and the Member States, and to guide occupational safety and health research over the next decade.

Each Member State was asked to report on emerging risks and their future OSH research needs and priorities. They were asked to include the viewpoints of the social partners as well as all relevant research institutions, according to national practice. In nearly all cases, the national research organisations were consulted. However, the

degree of participation of the social partners varied between Member States. The final summary report is based on these individual Member State reports.

### Overall OSH Research Needs and Priorities

Ten overall priorities were identified, each mentioned by at least two thirds of Member States as future OSH research priorities (see box 1).

<b>Risks</b>	<b>Times mentioned</b>
Psychosocial risk factors	13 times
Ergonomic risk factors	13 times
Chemical risk factors	13 times
Safety risks	12 times
Risk management in SMEs	11 times
Occupational and other work-related diseases	10 times
Risks in specific activities	10 times
Risk assessment	10 times
Substitution of dangerous substances	10 times
Physical risk factors	10 times

**Box 1.** Overall research priorities.

Psychosocial issues, ergonomics and chemical risk factors emerged overall as the top priorities for future research. Within the field of psychosocial issues emphasis was placed on stress at work. In the area of ergonomics particular priority was given to manual handling/ work postures. Regarding chemical risks, toxic/ dangerous chemicals and particularly carcinogens were prioritised. Furthermore research into the substitution of chemicals to reduce risks appeared separately in the top ten and chemicals were also prioritised under the category of risk assessment.

The next most frequently mentioned priority concerned safety risks (particularly human factors) followed by risk management in Small and Medium-Sized Enterprises. In the field of occupational and other work-related diseases respondents identified the need for more research into problems caused by psychosocial and ergonomic factors, as well as those caused by exposure to a combination of factors including complex combinations resulting from the introduction of new technologies. Among physical risk factors, noise and electric/magnetic fields appeared to be of particular interest.

Research priorities relating to risk management and risk assessment featured prominently. As mentioned above risk assessment relating to dangerous chemicals and carcinogens is of particular interest as is managing chemical risks through substitution of less harmful substances. Risk management in SMEs has been referred to. Other risk management areas highlighted included integrated OSH management systems, certification and competence issues.



## **Need for European Co-operation**

Member States concluded that the major need for co-operation at the European level was the organisation of joint research projects and programmes.

## **Future Plans**

The report aims to support discussion in EU Member States about future European OSH research needs and priorities. The European Agency is therefore organising a follow-up project in 2000 in order to receive feedback about the report's conclusions. Based on these comments, the aim is to provide a consolidated document for use in the formulation of priorities for future research programmes of the European Commission.

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## 6. Overview of Group Discussions

*Richard Ennals*

Although forces of globalisation and technical change, and the scientific foundations of occupational health and safety, are international, the contexts in which the various occupational health research institutes operate are diverse. Whereas in Nordic countries, as presented by *Tage Kristensen*, *Jorma Rantanen* and *Christer Hogstedt*, the tradition has been for strong government support for specialist institutes, in the UK, as explained by *Malcolm Harrington*, there is no national institute for occupational health, and work is conducted in universities. In Italy, *Antonio Grieco* reported that it is hard to sustain research programmes in universities, which largely depend on external funds, and *Sergio Iavicoli* described efforts to classify priorities for research. In France, INRS, with research director *Jean-Claude André*, has to operate in a context of market forces and the social insurance industry, and in the Netherlands TNO, reported *Frank Pot*, is heavily engaged in contract research.

The role of European institutions has clearly increased; the European Foundation for the Improvement of Living and Working Conditions in Dublin, and the European Agency for Safety and Health at Work in Bilbao, were represented at the workshop, where *Pascal Paoli* and *Markku Aaltonen* described their missions and current activities. The European approach has been to facilitate networking between member countries, aiding comparison and collaboration, but not addressing basic research, which is left to national level activity in most scientific areas. European projects are normally only part-funded, posing problems for nationally based groups. Collaboration is made more complex by inconsistency and incompleteness of basic statistical information, and frequent under-reporting, sometimes due to administrative changes in occupational injury compensation systems.

This raises questions about the role of national governments in the area of occupational health, concerned for the good of the population. Although large businesses may be expected to pay for their research needs, most employers are SME's who are not equipped for such challenges, but may be vulnerable to particular exposures, about which they have little or no prior knowledge. If governments abandon research funding to Europe or the private sector, the future of the economy will suffer. Research in occupational health has an instrumental and a cultural dimension. If such research is privatised, the cultural dimension may suffer, weakening the social dimension of the working environment, and threatening human rights. Understanding of political processes is vital for research managers. It is not enough to rely on "GOBSAT" method (Good Old Boys Sitting Around the Table), as argued by *Ib Andersen*.

There is often a missing link between theory and practice, the research laboratory and the single workplace. The link can be provided by intermediate structures, by enterprises working together in networks and development coalitions, which tend to have formed to address common practical problems, and grown as the culture of

collaboration has taken hold. In the Netherlands the link can also be through TNO consultancy activities, as presented by *Frank Pot*, which may be cost-effectively delivered via networks. Networks can operate at a regional level, between regions in a given country, or even across Europe. This pattern of localisation and regionalisation is a natural complement of globalisation, but there is considerable variety between and within countries.

Networking was also presented as an answer to the question of the future of occupational health research institutions, large and small, which cannot cover all topics of concern. Already not all EU member states have national institutes, though centres of excellence can be identified. Where, as in the UK, occupational health research is largely conducted in universities, multidisciplinary links are provided and sustained by networking within and between institutions. There are issues of intellectual culture and mission, and it is hard to change career directions of specialist scientists.

Standing outside occupational health research, as suggested by *Tage Kristensen*, how would one assess the case for future funding? If the research were to succeed, current problems and many associated projects would wither away. On the other hand, new technological and social changes will bring associated problems. Training new scientists takes many years, and there is a need to sustain the research culture in transition. In Sweden new doctoral programmes were established. Inequities can be analysed by work area, and by social class, raising broader policy questions. Both natural science and social science are needed, as stress is linked to uncertainty, and conditions outside the work context are identified as a source of pressure.

The Malmö conference in January 2001 will bring together 650 decision makers, who will receive the conclusions of 1,000 networked researchers who have taken part in 70 preparatory workshops. There is an opportunity to influence the agenda of the Swedish Presidency, and to affect the direction of European policy. We need to show the links between OHS and political agenda priorities.

It is evident that occupational health research scientists need to be able to address a number of distinct audiences apart from their professional colleagues. In an age of media and communications, *Frank Pot* argued that scientists need to identify the appropriate message that will capture the attention of the decision-makers, and the means of delivering practical solutions to problems that are already on the agendas of the potential funder. Furthermore, having interested the financier and “spin doctor”, the solution needs to be able to work at work place level as part of a developmental process characterised by involvement and participation in a learning organisation, a concept emphasised by *Peter Westerholm*. Changes at NIWL reflect this awareness.

Such an agenda is ambitious, and reminiscent of Machiavelli’s “The Prince”. The modern government, company and research laboratory need to have recourse to the latest technologies, while respecting Machiavelli’s insights into the dynamics of power relationships in organisations and states. Dissemination is an intervention to affect the health of the occupational culture, and requires understanding of the articulation of the parts of the system. Such understanding involves experienced research managers, with expertise in communication. Change is easier when

accompanied by increased funding, but even if job losses are avoided, reorientation is difficult, requiring constant evaluation.

Occupational health research institutes were surveyed in advance of the workshop to assess the priorities that they accorded to different areas of research. In general, reported *Staffan Marklund*, their responses regarding current practice and future plans could be regarded as relatively conservative, when measured in terms of financial and human resource allocations, concentrated as they are on the measurement of exposures in the workplace. Long established programmes on chemical health hazards continue, with increasing popularity for psychological and social work factors, followed by work place ergonomics, work organisation and management, and physical health hazards. These priorities reflect traditional sources of funding and lines of government reporting.

It may be that areas of occupational health research with a broader social context could attract support from politicians, but this would require a change of perspective from research managers, although *Jorma Rantanen*, in his presentation, emphasised the growing inequity in working conditions, safety and health between North and South. The International Commission on Occupational Health has set tackling HIV/AIDS as one of the four key priorities, but this was not included in the European survey. Bottom of the list of stated priorities from respondents were ethnicity and cross cultural occupational health, unemployment and labour research, young workers and labour market entrance, rehabilitation and vocational training, and environmental health issues. In the middle ground we find work place health promotion, work place accidents, health economics, ageing and disability, and health services research, accepted by researchers and politicians as worthy, but raising little excitement.

Individual researchers tend to be conservative, as their training and experience have equipped them for particular lines of work, and it is difficult to venture outside a specialist discipline. *Amanda Griffiths* noted that career progression is not helped by pursuing work that does not command respect, and successful multidisciplinary activity is harder to achieve than to outline; it runs counter to traditional scientific training.

The workshop was concerned with processes of change and transition, both in terms of changes in the global economy, reflected in work environment and work organisation, and in the details of structural adjustments in occupational research institutes.

From a basis of UK experience, *Amanda Griffiths* considered European working life in transition, and questioned the adequacy of the dominant research paradigm to address all the challenges. A substantial proportion of current occupational health problems concern employee reactions to the way work is organised and managed (psychosocial risks). The quantitative methods of the natural sciences paradigm are necessary but not sufficient. Qualitative methods may have a useful complementary role. She concluded by discussing the implications of changes in work for the education and training of occupational health personnel.

*Christer Hogstedt* commented on change in institutional structures for occupational health research in Sweden, set in a global context. Research has been brought

together at NIWL, from previously separate institutes, providing greater coherence but at the expense of a reduced proportion of the budget for OHS. He concluded with strategy statements setting a course for 2000 and the future, drawing on the new, more integrated approach, and addressing the political agenda. Discussion then considered the process of change and reform, and implications for the orientation of the work, including professional ethics, and the new Third Task for universities. It was argued that new methods were perhaps best implemented by those with experience of traditional approaches to scientific research, able to maintain professional standards.

Sweden is not alone in changing research management approaches in recent years, as was argued from Netherlands and Denmark, though they have preferred evolution to top down revolutionary change. Germany has addressed the challenges of reunification by fusing previously separate institutes. Problem orientation brings together previously separate disciplines, and changes the focus, for example, of surveillance and risk assessment. As in Finland, the resulting focus is on promoting healthy work.

The contrast between the institutions is marked. Small Norway enjoys 90 per cent government funding for the national institute, employing over 100 people, while the much larger United Kingdom has no national institute at all, and research is conducted by staff on short-term contracts in universities. Given this diversity, and the mix of professional backgrounds and scientific emphases, it would be surprising if there was full agreement in an initial formulation of a European position.

Although the European Union is not new, many of the member states represented at the workshop are relatively recent members, and the infrastructure of support for research networks and information sharing is both still in the process of maturing and relatively unfamiliar to researchers. There are many benefits to be gained from effective collaboration, including cost benefits of sharing expertise, saving each institute from having to be universal in coverage.

# 7. Workshop Considerations

## 7.1 Changing Structural Conditions

The workshop was concerned with processes of change and transition related to developments in the global economical system. It was focussed on the impact on labour markets, organisation of work and enterprises, with implications for the scope of occupational health and occupational health strategies, practices and research both on national and on enterprise/workplace levels.

Organisations and labour markets are confronted with many changes in their environment, due to growing and sometimes sharp competition, globalisation of markets and the introduction of new technology with retrieval, integration and transfer of information as integrated elements of all production. There are also changes to be seen in the regulatory approaches in many countries, implying new regulatory strategies and new types of regulations. In many countries the role of the state to regulate and control work environment and health hazards has diminished.

These factors have resulted in significant changes to labour market structures in many industrialised countries in the world and in Europe. It is increasingly recognised that the growth of unemployment, including temporary or part-time employment, self-employed, micro-sized businesses, leased and subcontracted workers as well as organisational restructuring processes, are features of this change process. On the organisational level there are various strategies applied to cope with environmental change through privatisation, downsizing, outsourcing and changes of organisational boundaries and acquisitions.

There are, in addition, various job changes and conception of alternative work arrangements including increased use of workers on temporary, fixed term contracts – commonly referred to as externalisation, peripheralisation or flexibilisation. There is a hardening economical reality, and rapid change in management systems and managerial approaches. All these transformations have implications for occupational health and safety, and for industrial relations and distributions of responsibilities – real or perceived, formalised or related to cultural habits and practices – at workplaces and in enterprises.

It is increasingly recognised in Europe that unemployment is a powerful determinant factor in the causation of mental health and social problems. At the same time, reports from several nations have pointed at high levels of negative stress due to increased pressure at work and long working hours. One particularly important feature of work in a changing working life in many types of work is the invasion of work into the sphere of private life, blurring the distinction of life at work and life off work.

These developments give us a tangible reminder of the close links between the domains of occupational health and public health, the immediate implication being a need to expand occupational health research to include pertinent health determinants in the societal context and socio-economic sphere. The agenda of occupational health

research is thus developing to encompass also general aspects of living and social conditions.

## **7.2 New Definitions, New Areas, New Outcomes, New Challenges**

Work in industrialised and post-industrialised societies in the 21<sup>st</sup> century is, for most employees, less physically arduous and dangerous than in earlier times. Other, less tangible factors, related to the design, content, management and organisation of work increasingly represent threats and challenges to workers physical, psychological and social health. The psychological health or well-being is usually conceptualised using dimensions such as job satisfaction, job strain, stress and anxiety. The conception of health becomes less distinguishable from well-being, in including a person's ability to develop life objectives and to pursue them effectively, by means of a combination of their own capabilities and resources available through their work.

The health concept is also broadened to include autonomy and independence. The days are gone when the determinant criterion of occupational health was perceived as the absence of an occupational disease in a conventional patho-physiological sense. Today occupational health is rather conceived as a framework conception including life quality at work and the enabling of individuals and groups to develop regardless of the presence of a disease or physical or mental dysfunction. In this perspective “occupational health” has a conceptual content encompassing both means and ends.

This transformation of the target variable “occupational health” leads to needs to examine new types of workplace exposures and also a wider range of outcomes related to health, life quality challenging the security, self-respect and developmental potentials of individuals and groups at work. The following conditions and worklife stressors are likely to emerge increasingly as foci on the research agendas of occupational health research institutions:

- stress and demands on adaptability of workforce to physical conditions and organisational settings,
- stress related to loss of self-esteem or loss of security,
- implications of new work life for trust and loyalty of staff,
- work-related fatigue and burn-out,
- recovery from psychological work strain,
- social support, leadership and management systems,
- the quality movement and occupational health and safety,
- organisational handling and effectiveness in coping with new work life challenges.

## **7.3 Institutional Conditions**

Although the forces of globalisation and technical change, and the scientific foundations of occupational health and safety, are international, the national contexts in which various occupational health research institutes operate are diverse. Whereas in Nordic countries the tradition has been for strong government support for state

funded occupational health research institutes, in other countries, such as the UK, there is no national institute for occupational health, and research is conducted in universities. In Italy, it is hard to sustain occupational health research programmes in universities, which largely depend on external funds. In European countries the financial basis for the occupational health research institutes is variable. In France, for instance, on the national level INRS has to operate in a context where the funding mechanisms are influenced by market forces and the social insurance industry. In the Netherlands TNO is heavily engaged in contract research, thus being dependent on funding policies and resources of external sponsors, whether public or private.

The introduction of market mechanisms in funding occupational research implies a new context for institutes conducting such research and related development (R&D) activities. To the extent that the institutes become dependent on external funding, it may lead to difficulties in upholding long-term research objectives in becoming dependent on research agendas and policies of such funding agencies, public or private. The temptation arises to opportunistic behaviour implying adaptation to programmes, activities and funding objects judged to be attractive to external funding agencies. As a consequence, institutional resources are diverted away from other programmes to agendas judged to be more profitable, in terms of funding prospects.

It is obvious that occupational health research has to satisfy rigorous quality requirements in order to be useful and to be recognised as a domain of science in its own right. Both ex-ante and ex-post evaluations and competition in research funding procedures are to be seen as strategies in pursuance of excellence in quality of research and sustained quality development.

The contrast in funding mechanisms between the institutions is marked. Norway enjoys 90 per cent government funding for its national institute, employing over 100 people, while the much larger United Kingdom has no national institute at all. Research in the UK is mostly conducted by staff on short-term contracts in universities. Given this diversity, and the mix of professional backgrounds and scientific emphases of R&D institutions in Europe, it would be surprising if there was full agreement in an initial formulation of a European position. Given this diversity and the mix of research agendas, objectives and orientation of R&D institutions in Europe it comes as no surprise that a full consensus of opinion was not achieved at the present time in attempting to formulate a European position.

#### **7.4 Organisation and Funding of Occupational Health Institutes**

The experience reported from several nations is that reorganisations of research institutes should be planned and implemented with care. Such reorganisations should take into account their role in producing new knowledge and crystallised understanding of events and processes at workplaces and the intellectual and creative nature of research in this area. In Europe we have much to learn from examples of reorganisations and restructuring of enterprises, corporations and public sector, including health service organisations which have not been adequately planned and carried through, with disastrous results for the organisations concerned.



European countries have differed in their approaches to perceived needs to transform and adapt research institutions to new needs and demands in their environments. In Sweden, a much needed reorganisation was undertaken to broaden the scope of the National Institute for Working Life in establishing regional satellite centres and reorientation of research emphasis towards research on labour market and on work organisation. At the same time, resources for work environment as a research and development field were reduced. In other countries, such as Denmark, Finland and the Netherlands, change has been initiated as a process of evolution taking place primarily within ongoing programmes and envisaged to occur over a longer, indefinite period of time. In Germany, the transition has concurred with the need to merge the occupational health research institutions to one organisation following the reunification of the German Federal and German Democratic Republics in 1990. The complex subject matter of occupational health in a world of change implies a research organisation with the capabilities and competencies to deal with work life problems and issues – more often than not transcending boundaries and competencies available in one research discipline only. Research in modern working life is truly a multidisciplinary undertaking.

Changing market mechanisms in Europe constitute a new context for occupational research institutes. To the extent that they are dependent on external funding, the implications include adaptation to the priorities and policy objectives of such external funding agencies, and competition in such terms for research funding. This may lead to a shift away from long-term research objectives towards a shorter planning range in terms of project or programme time, giving priority to projects expected to yield outcomes with practical utility value within a shorter time period.

### **7.5 Occupational Health Research Institutes and R&D Needs in Working Life**

Research programmes of occupational health research institutes should be seen as serving the health needs of working populations. The ultimate aim of such programmes is to provide the underpinnings of social programmes addressing issues related to sustained and developing work ability and life quality at work. Despite the fact that health hazards and negative effects on human beings of work are still much in focus, there is also a growing interest in research to find “health factors” and organisational characteristics that promote healthy work.

One aspect of market change, which should not be taken lightly, is the market logic of thinking and market behaviour of enterprises and organisations in the labour markets of Europe. Globalisation of economic activity and the lowering of trade barriers has underlined and renewed concerns for competitiveness. The question instantly arising concerns the implications of this development for the thinking and management in all matters related to occupational health and safety. This, in turn, raises a whole range of issues concerning the impact with regard to the approaches practised in various territories of occupational health such as accident prevention, ergonomics, workplace psychological strain, workplace stressors, toxicological hazards etc. and in occupational health practises.

It is appropriate to remind that enterprises differ with regard to own R&D potentials and capabilities. Large businesses in many branches may be affluent and aware and motivated to pursue own programmes of hazard prevention and health promotion. Most enterprises, however, and small and medium-sized enterprises (SMEs) in particular, are not usually equipped for such tasks. This SME sector of labour markets of Europe is largely underfunded, under-researched and, accordingly, unknown with regard to R&D needs and, indeed, occupational health service needs.

Failure of governments to recognise such research needs carries the implication of leaving knowledge on this important and rapidly growing sector of work life inadequate. This may, by implication, contribute to or add to inequalities in occupational health in Europe.

## **7.6 New and old Occupational Health Problems**

It was agreed by several national reporters that recent trends do not only produce new problem areas and new causes to work related health hazards. Some old hazards continue to exist, and some traditional exposures have not been sufficiently researched. Many new chemical substances have not been well studied. There are the potential health hazards of new chemical and petrochemical substances but also findings of negative health effects of old substances. The latter is for example the detection of new allergens. In a rapidly changing working life it is important not to forget that old risks still produce problems for large numbers of workers in different branches and occupations.

In a number of European nations, there are growing health problems related to mental stress and increasing intensity of work. Growing time pressure, increasing educational demands and increasing task complexity have created a situation where a majority of the working population is suffering from negative stress. The most well known effects concern health and social life, but recent research has also pointed at negative effects of stress on productivity, product quality and creativity of the individual. Although some of the negative effects of raised work related demands may be mitigated by increased autonomy of the individual in decision making and autonomy in carrying out a specific task, there is in most countries a growing concern about how far this process can go. Long term sickness, extreme forms of work related fatigue, burn-out syndrome and a number of other mental disorders are reported to grow and are in many nations seen mainly as an effect of tougher conditions in modern working life.

There are large numbers of people deprived of work due to unemployment and social exclusion. Unemployment and underemployment not only cause economic strain and social problems but also create increased risks for short and long term health problems. The fact of large shares of working age people in Europe being unemployed, even in good economic times and even in prosperous nations, is thus a specific area where research and development must go hand in hand. Long term unemployment and social exclusion of specific groups should also be given increased attention.

Specific research considerations should be directed towards groups that are exposed to multiple hazards, such as a combination of physical and mental strain, and groups that during their occupational career are exposed to combinations of stresses and strains leading to an impact on health in a long-term perspective of time. One example of such problems is groups working under demanding ergonomic conditions, as well as under large stress. The risk for work injuries is in many cases not only additive in such combinations, but even further increased. Long-term effects of even moderate combined ergonomic and mental demands are not well known, let alone the long-term health hazards of heavy burdens.

## **7.7 Vulnerable Groups**

Although demographic and industrial conditions vary largely within Europe, there are a number of similarities in groups particularly hit by negative developments in the work environment.

Increasing ergonomic and mental demands have particularly dubious effects on older workers and workers with limited work ability. Due to the ageing of the labour forces of Europe, there is a need for intensified research on the working conditions for middle aged and older workers. This includes research on specific needs for organisational conditions, working hours, recovery and ergonomic adjustments.

The entrance of young people in the labour market is in many countries gradually delayed due to lengthened education. This is generally speaking a positive trend since it will increase the educational level of the labour force. However, in most European nations large numbers of young people are also unemployed or have temporary and short-term employment. Such conditions have negative health effects, but also affect the integration of young people in society.

There is also a growing concern with R&D addressing the integration of ethnic minorities in the societies of Europe, and specific research dealing with working conditions of migrant workers and ethnic minorities. It is generally known that migrant workers and workers of minority ethnic background work under extremely negative conditions. Much less is known about how to integrate these groups in working life and social welfare structures, and how educational and labour market programmes can be better co-ordinated.

Increased emphasis is needed on early retirement and exit processes on the labour market. Apart from improvements of working conditions for older workers and people with limited work ability, intensified research on the interaction between programmes for vocational rehabilitation and flexible employment is a future challenge.

## **7.8. Stakeholders**

Stakeholders in European societies, with regard to the results of research and development work at research institutes, are increasingly aware of the need to use research findings and the competence of research institute staff. This implies a development of customer, client, and stakeholder awareness and knowledge of current occupational health issues.

Occupational health research institutes increasingly find themselves having to deal with well informed and knowledgeable customers or consumers. These may represent both public sector stakeholders and private enterprise bodies. There is a variety of interests and potential arenas of conflict, both between such groups of consumers of research, and between research staff and the many stakeholders. This situation has created a growing need for specific activities from the research institutes directed at their particular target groups, and an intensified discussion about how independent research can survive.

## **7.9 Communication and use of Occupational Health R&D**

A great deal of research knowledge is not used in the work environment. It is evident that occupational health researchers need to be able to address a number of distinct audiences and target groups apart from their professional colleagues. In an age of media and communications, scientists need to identify the appropriate message that will capture the attention of the decision-makers, and the means of delivering practical solutions to problems which they are expected to address. Increased efforts in education of scientific staff to deal with media and information are needed. Research results very often need to be “translated” into a language where practitioners can more easily find useful information and examples of realistic applications. This practice has been developed in some Institutes for Occupational Health with good results, and may be further developed. This could include a shift from an academic research career towards a consultancy career for our research staff.

There is often a missing link between theory and practice, the research institution and the single workplace. The link can be provided by intermediate structures, such as occupational health service units or consultancy agencies, by enterprises working together in networks and development coalitions, which have formed to address common practical problems, and grown as the culture of collaboration has taken hold. This link can also be through consultancy activities by which may be cost-effectively delivered via networks. Networks can operate at a regional level, or between regions in a given country, or even across Europe. This pattern of localisation and regionalisation is a natural complement of globalisation, but there is considerable variety between and within countries.

It is important for occupational health research institutes to respond to growing demands from practitioners at different levels to provide expert knowledge in the full range of occupational health disciplines. As this usually takes time, it can partly be met by using IT and partly by systematic surveys, like the NORA project in the U.S. National and European information centres on scientifically valid and relevant work environment and work health issues should be developed based on computerised techniques but complemented with professional back up.

## **7.10 Quality of the Occupational Health Research Organisation**

The term “quality” has become a buzz-word in economic life throughout the world including Europe, starting in the 1980’s and continuing to the present time as a

desirable feature of industrial and service production, sometimes formalised following recognised and standardised quality systems, more often tacitly assumed and expected. Without entering a detailed discussion of what is meant by quality of an occupational health research institution, it is important to recognise that the success of a research and development institution (R&D) in occupational health is determined by the following quality aspects:

- quality of staff,
- quality of programmes and performance,
- quality of the human resource management policies,
- quality of public image.

These aspects are interrelated in that the quality of the public image – as one determinant of public funding of research – will, for obvious reasons, be determined by the three items first listed. The programme quality will depend on quality of the staff and its development management. The human resource management aspect relates to the policies and practices of high standards in the recruitment, selection, training, appraisal and goal-setting and designing high quality challenging tasks to high calibre staff.

Organisational survival and competitiveness of occupational research institutions are fundamentally dependent on the commitment of all their staff, in particular on ability to anticipate change, adapt to new circumstances and contribute to solutions needed for institution to develop. Learning at all levels of the organisation is imperative for survival and success.

The programme quality of an R&D institution can, in general terms, be seen as conformance in relation to expectations – internal and external to research institutions and intra-professional criteria for excellence. Quite clearly, institutions need to seek and, as appropriate, define their own quality criteria for performance taking into account research objectives, nature of output or product, product tangibility and the interests and values and expectations of important stakeholders.

### **7.11 Evaluation**

Evaluation is critical. All actions and interventions must be assessed for their effects, both intended and unintended, as required in a new dimension of occupational health research. This implies new challenges for occupational health researchers, in seeking strategies and methods, in both self-evaluations and in having their own research and development programmes assessed by external reviewers in a structured and pertinent manner, contributing to continuous quality improvement. The emphasis on effects and outcomes should not lead to a scientific disregard for the processes conducive to change and the underlying mechanisms in the change process.

To enlighten decision makers on all levels in research policies and strategies, evaluations have become germane. Evaluation is, in the present context, understood to include both ex-ante and ex-post evaluations of R&D policies and approaches. It is the systematic application of social research procedures for assessing problematics,

conceptualisation, programme design, implementation and, as appropriate, methodology, utility value and relevance of occupational health practise and its underlying research. It has to be accepted that the “GOBSAT” method (= Good Old Boys Sitting Around the Table) is not capable of creating the foundations for development of quality and competence in occupational health research of today.

There is also a need to strengthen implementation research addressing issues related to assessments of policy implementation and preventive occupational health programmes. The focus in such assessments may be set on the product (of policy or programme), implying its impact on organisation of work and working conditions, as well as the process of designing and implementing a programme, including the involvement of employees as primordial stakeholders and participating agents.

There is a need in all countries of Europe to increase research into processes and practical solutions and applications. This will mean a greater emphasis on implementation research and the evaluation of specific programmes, which may also imply a convergence of social sciences and occupational health research. There is also a need to improve the quality of implementation research.

More emphasis must also be placed on attempts to measure the economic cost of occupational and work-related health disorders. A recent WHO report shows that in the USA the direct and indirect costs of work related injuries and disorders are larger than those for AIDS, and on a par with those of cancer and heart disease. Even for the individual firm or organisation the costs for work related ill health are high but rarely known in detail. More research and development in costs and benefits of activities that positively or negatively affect occupational health should be stimulated.

## **7.12 European Co-operation**

The role of European institutions has clearly increased during the recent decade; the European Foundation for the Improvement of Living and Working Conditions in Dublin, and the European Agency for Safety and Health at Work in Bilbao, both have important missions and implement programmes of high relevance in their current activities. However, the European approach has been to facilitate networking between member countries, promoting comparison and collaboration, but not addressing basic research, which is left to national level activity in most scientific areas. Indeed, European projects are normally only part-funded, posing problems for nationally based groups. Collaboration is made more complex by the inconsistency and incompleteness of basic statistical information, and frequent under-reporting, sometimes due to administrative changes in compensation systems.

Networking was also presented as an answer to the question of the future of occupational health research institutions, large and small, which cannot cover all topics of concern. Not all EU member states have national institutes, though centres of excellence can be identified in all countries. Where, as in the UK, occupational health research is largely conducted in universities, multidisciplinary links are provided and sustained by networking within and between institutions. There are issues of intellectual culture and mission, and it is hard to change career directions of specialist scientists.

Although the European Union is not new, many of the member states represented at the workshop are relatively recent members. The infrastructure of support for research networks and information sharing is still in the process of maturing, and relatively unfamiliar to researchers in the field of occupational health research. There are many benefits to be gained from effective collaboration, including cost benefits of sharing expertise, saving each institute from having to be universal in coverage.

More systematic co-operation between European occupational health research institutes is needed, using IT technology to create information banks of published research results and ongoing projects.

Research should be timely, relevant, well-grounded and appropriate for application by experts and laymen in the European Union. However, Occupational Health Research is also, in principle, a shared responsibility between states, employers and workers at all levels in the European Union.

Existing networks between occupational health research institutes and departments should become institutionalised at the European level, as part of a European strategy to strengthen the social dimension of. In this co-operation, attempts to create academies for joint training in ergonomics, and subjects addressing issues of health at work and healthy organisations, etc should be supported.

The Malmö conference in January 2001 will bring together 650 decision makers, who will receive the conclusions of 1,000 networked researchers who have taken part in 70 preparatory workshops. There is an opportunity to influence the agenda of the Swedish Presidency, and to affect the direction of European policy. We are challenged to demonstrate the links between occupational health research and political agenda priorities.

## 8. Core Conclusions of the Workshop

- Occupational Health Research is seen as a basic tool to achieve healthy work for all.
- Healthy work embraces a vision of Healthy Work Environment, Healthy Organisations and conditions promoting health and development for the working individual.
- Occupational Health Research addresses issues of Healthy Work in its social dimensions, thus constituting a research domain of social sciences and public health sciences.
- The role of Occupational Health Research institutions is to produce action relevant scientific knowledge and to implement knowledge that creates healthy work for all.
- Occupational Health Research institutions are centres of scientific excellence and centres for education of research staff and occupational health practitioners.
- Occupational Health Research institutions are expected to collaborate between themselves and with private and public stakeholders to pursue research in a useful and cost-efficient way.
- Occupational Health Research institutions are required to develop communicative skills in dealing with a multiplicity of stakeholders with a view to implement scientific knowledge in practical workplace interventions.
- Occupational Health Research institutes are required to pay particular attention to vulnerable groups and to negative developments in terms of work-related health and quality of life.
- The European Union should designate particular funds for European occupational health research and research co-operation.



## 9. Abstract of the Workshop

*Lena Skiöld*

The globalisation of the world economy and the development of new technologies are changing the face of the workplace. This has created new challenges for occupational health and safety research. Many researchers now believe it is necessary to extend the scope of this research and that traditional research models no longer serve their purpose.

This was made clear at an international research workshop under the Work Life project that was held in January 2000. The workshop was led by *Peter Westerholm* and *Staffan Marklund* from the Swedish National Institute for Working Life.

“What are the implications of economic globalisation and new information technology for the role and agendas of institutes of occupational health research?” Peter Westerholm asked.

The changes in working life have several dimensions and driving forces, not least technical and demographic. All across Europe the workforce is ageing. New industries are growing rapidly while others face mounting problems. The market is global and IT has changed the way we work. In companies learning processes are becoming increasingly important, because new technology has to be implemented as soon as it becomes available.

At industry and company level one example of these new ways of working is that many firms now have more flexible work routines and fewer employees, and out-source a lot of work which they would previously have done themselves. This, in turn, has affected the employees' workload, health and opportunities of influence.

“The changes are considerable, but it is hard to draw a definite conclusion from what is happening. It seems that in countries with high standards of living this has in many ways been a positive development, while in less developed and rapidly industrialising countries it has been more negative”, *Jorma Rantanen*, the director of the Finnish Institute of Occupational Health, said.

One thing that is certain is that we are living in a complex and rapidly changing environment.

“It is therefore fundamentally important that we get better at preparing ourselves for change”, *Amanda Griffiths* from the University of Nottingham said.

### **A New Class Structure**

The changes taking place at workplaces also place work environment and working life researchers in a new situation. *Tage S. Kristensen* from the Danish National Institute of Occupational Health gave as an example the new class structure which is emerging, with five groups: those who are permanently excluded from the labour market; those who live in the margin, such as the large group of people who take

temporary employment; employees in traditional employment; those for whom the career is a way of life; and the self-employed.

“In many countries each group has about 20 per cent of the workforce, but most of the research still focuses on traditional salaried employees”, he pointed out.

### **New Models are Needed**

Working life is changing at a phenomenal pace, and this makes it difficult to follow up previous research, Jorma Rantanen remarked. Because of the flexibility of employment conditions and the high staff turnover all those who participated in the first study may have left the company when it is time for the follow-up.

“Our traditional model, which involves measuring direct connections between exposure and effect, is becoming redundant, partly because of time aspects but also for structural reasons. We must try to use models which are better at predicting effects,” he suggested.

### **Necessary to Understand the Processes**

Amanda Griffiths stressed the importance of speed in occupational health and safety research.

“We can’t afford to wait until the trends we discern have become established. We have to become better at understanding the links between work and health. As I see it, we should not simply be looking at how the new workplace is affecting people – the results – but also at its mechanisms. This would give us a greater chance of structuring our working lives in a good way,” she said.

She also thought that we have to become better at evaluating previous working life research.

“Up until now we have mostly been using cause-and-effect models, but these are often insufficient, as companies are not laboratories where you have perfect control over the important variables,” she said.

The result can also be irrelevant. Amanda Griffiths drew attention to an oft-quoted point: “The traditional research paradigm has not worked particularly well... It has generated a lot of reliable conclusions about unimportant things, while other areas have been ignored because they are too hard to explore through traditional research methods.”

Amanda Griffiths herself believes that qualitative methods could be useful in working life research – to ask the question “What is it like?” rather than “How many?” or “How much?” This approach could be useful especially in the early stages of an analysis of a problem and in the formulation of new theories.

“Traditional quantitative methods are necessary, but insufficient,” she said.

“The idea that results should be produced quickly does, however, create certain complications”, Staffan Marklund pointed out.

“We need new knowledge. We know, for example, that stress is dangerous, but don’t really have any idea as to what we should do about it, and it takes time to conduct research in the area”, he said.

## **Priorities**

Many people believe that occupational health research has to change in some ways. The survey which Staffan Marklund and Peter Westerholm distributed to the participants in the workshop, who came from various parts of western Europe, about their respective institutions' priorities for the future gives an indication that such a change is now taking place. Although chemical health hazards are still considered most important, psycho-social factors now take second place, and areas like the health effects of unemployment, multiculturalism and health, and labour-market research are expected to receive more attention, although they still occupy a fairly small place on the agendas of research institutes.

## **Changes in Finland**

The Finnish Institute of Occupational Health is one of the institutions that have already broadened their scope for research. A new national strategy has been drawn up and the previous research agenda has been supplemented with two additional criteria: development potential and effect on learning.

"But the change has not been all that easy," Jorma Rantanen admitted. Not all researchers are positive, and in some areas it has proved hard to find competent staff. It can also be hard to produce evidence of the immediate practical results for external parties.

*Tor Norseth* from the Norwegian Institute of Occupational Health was sceptical about the changes.

"Is it still occupational health that is your objective, or is it productivity?" he queried.

"It is still health", Jorman Rantanen assured him, "but we have added new areas, such as work organisation issues and learning, to better meet the requirements of modern working life."

## **... and in Denmark and Sweden**

"The Danish Institute of Occupational Health was reorganised in 1997 and was given a more problem-based structure", *Ib Andersen*, the institute's director, said. It uses double strategies and focuses both on traditional and on new work environment problems, collective improvements and individual lifestyles, risk assessment and risk management, as well as monitoring of work environments and health.

"If you place the various types of research on a line with work environment issues to the left, organisational issues in the middle and working-life and labour-market issues to the right, I would say that we are heading towards the right," he added.

The Swedish National Institute for Working Life is probably the one that has undergone the greatest changes. In 1996 it merged with *Arbetslivscentrum*, ALC, which was more focused on labour-market issues. The new institute comprises about 20 different research programmes in the areas of labour-market research, work organisation, and working environment and health.

“New questions were asked, for instance about the health effects of unemployment and how people’s health is affected by the social-security system. Such a research agenda requires interdisciplinary research teams, new methods and a lot of resources”, *Christer Hogstedt*, research co-ordinator at the National Institute for Working Life, explained.

Four years after the merging of the two institutes he can discern a number of positive effects, such as increased resources, increasing co-operation with universities, more contact with the Government and trade unions, an increasing interest from the media and a greater emphasis on relevance in the research. But there are also some negative effects.

“It takes time to reorganise, for example. We are now also placing greater emphasis on development and less on research, and we need to improve our communication with outside parties and our educational projects,” he said.

### **Communicating Knowledge**

The importance of spreading knowledge and putting it to use was the subject of in-depth discussion at this workshop. *Malcolm Harrington* from the University of Birmingham pointed out that occupational health research must be given practical application and that while researchers have produced answers to many questions, the solutions have not necessarily been applied at the workplaces. Noise, for example, should be easy to deal with, but remains a big problem in the EU.

The Danish Institute of Occupational Health belongs to those which are seeking to disseminate the knowledge that is built up, for example through close dialogue with unions and employers’ organisations, by training researchers to speak in front of public audiences and by working with journalists and communications consultants.

“But for a researcher it is not always easy to address an outside audience”, *Amanda Griffiths* noted. “The academic system can be a hindrance. It is often considered more important to get studies published in academic journals.”

And it is by no means certain that information is enough.

“I believe that, above all, we have to learn to listen to those who take an interest in our research and translate their problems into research topics,” *Frank Pot* from the Dutch research institute TNO Work and Employment, said.

### **An Important Role**

Most of the researchers at the workshop agreed that there is every reason to think that occupational health research will continue to play an important role in the future, but that the area it covers must be broadened. The questions are becoming ever more complex, new requirements are made, the market has become an important player for many research institutes, and the institutes’ relations with their stakeholders are becoming ever more important. Many institutes are also starting to concentrate on health promotion rather than prevention of accidents and illness. “All this means”, *Peter Westerholm* suggested, “that it is important for the institutes to adopt the principles and practices, as appropriate, of learning organisations, not least because such

organisations constantly evaluate their own work. The basic task remains the same: to produce reliable and relevant information about real-life problems faced by men and women at workplaces across the EU.”

## **10. Acknowledgements**

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