Guidance on work-related stress

Spice of life or kiss of death?

Health & safety at work

Employment & social affairs

European Commission

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European Commission
Directorate-General for Employment and Social Affairs
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PREFACE

This is a Guidance on work-related stress prepared by the European Commission. Member States and their social partners can use or adapt it as they choose, in line with national, legislative and administrative arrangements in their territories. The aim of any resulting *national* guidelines would be to raise awareness within the Member States that work-related stress is a major occupational health issue and to encourage action to alleviate the cause of stress in order to improve health and safety at the workplace and elsewhere in a cost-effective and pertinent manner.

This Guidance provides general information on the causes, manifestations and consequences of work-related stress, both for workers and work organisations. It also offers general advice on how work-related stress problems and their causes can be identified and proposes a practical and flexible framework for action that social partners situation, both at national level and in individual companies, can adapt to suit their own situation. The focus is on primary prevention of work-related stress and ill-health, rather than on treatment.

These recommendations should be considered in the light of Framework Directive 89/391/EEC, which states that "employers have a duty to ensure the safety and health of workers in every aspect related to the work". The implications of this Directive in the present context are discussed on page 27. Given the wide variety of working conditions across Member States, across professions and across individual workplaces, the guidance given is of a *non-binding* nature. It provides a menu from which the various actors can choose a specific mix of measures to meet their own specific needs, going beyond mandatory requirements, if they so wish.

One of the challenges in the present context is to target not only larger companies but also the medium-sized and small enterprises (SMEs) and other work organisations.

This Guidance takes into account the views and recommendations contained in the Report on Work-Related Stress by the European Commission's tripartite Advisory Committee for Safety, Hygiene and Health Protection at Work, and by its Ad Hoc Group on Work-Related Stress (European Commission, 1997a). The latter was set up by the Advisory Committee with a remit to investigate national and Community work and measures on work-related stress and report on its findings to the Commission with a view to further action.

Part I provides relevant background information, including European and other Treaties, Resolutions, Directives, Communications and other initiatives. It describes the incidence, causes and consequences of work-related stress, defines the phenomena and provides a number of examples. It also reviews present knowledge of who is at risk and the risks they run.

Part II describes the challenge the interested parties are facing in terms of a variety of multifaceted organisational and individual approaches - their key elements, targets and effectiveness.

Part III is devoted to the full scope of options for action at various levels, including Belgian, Norwegian and Swedish examples from the workplace, diagnostic measures and primary, secondary and tertiary prevention, targeting both individuals and organisations.

To facilitate the use of this Guidance by all interested parties, the main concepts and terms have been defined and an index and glossary have been added to help the reader to find what he or she is looking for. The text is referenced to enable interested readers to review the evidence and access more in-depth information.

The task of preparing this Guidance was entrusted to **Lennart Levi**, M.D., Ph.D., Emeritus Professor of Psychosocial Medicine, of the Karolinska Institutet, Stockholm, Sweden. He was assisted in this task by Ms. **Inger Levi**, Director of Studies Eurostress,

Stockholm, Sweden. The text was reviewed by Jaume Costa (European Foundation for the Improvement of Living and Working Conditions), François Philips (ETUC) and Olivier Richard (UNICE), all of whom have provided feedback. James Campbell Quick, editor of the Journal of Occupational Health Psychology, and the American Psychological Association (APA) have kindly allowed us to use several quotes from their publications, as indicated in the text. All this help is gratefully acknowledged.

We hope that this Guidance should prove useful for Governments and social partners in the 15 Member States and for others interested in occupational and public health.

Odile QUINTIN
Acting Director General

EXECUTIVE SUMMARY

The background

- Work-related stress, its causes and consequences are all very common in the 15 European Union Member States. More than half of the 147 million workers report working at a very high speed, and to tight deadlines. More than one third have no influence on task order, and more than one fourth cannot influence their work rhythm.

- 45 per cent report having monotonous tasks; 44 per cent no task rotation; 50 per cent short, repetitive tasks. Such work-related "stressors" are likely to have contributed to the present spectrum of ill health: 13 per cent of the workforce complain of headache, 17 per cent of muscular pains, 20 per cent of fatigue, 28 per cent of "stress", and 30 per cent of backache, and many other, even potentially life-threatening diseases.

- Stress consists of a pattern of "stone-age" reactions preparing the human organism for fight or flight, i.e. for physical activity. Stress was adequate when stone-age man was facing a wolf pack, but not so when today's worker is struggling to adjust to rotating shifts, highly monotonous and fragmented tasks or threatening or overdemanding customers. It is often maladaptive and disease-provoking.

- A conservative estimate of the costs caused by work-related stress amounts to some *twenty billion euro annually*. Even more staggering is the resulting human suffering in many millions of European workers.

The challenge

- According to the EU Framework Directive, employers have a "duty to ensure the safety and health of workers in every aspect related to the work". The Directive's principles of prevention include "avoiding risks", "combating the risks at source", and "adapting the work to the individual". In addition, the Directive states that it is the employers' duty to develop "a coherent overall prevention policy". This Guidance intends to provide a basis for such endeavours.

The actions

- Based on surveillance at individual workplaces and monitoring at national and regional levels, work-related stress should be prevented or counteracted by job redesign (e.g. by empowering the employees, and avoiding both over- and underload), by improving social support, and by providing reasonable reward for the effort invested by workers, as integral parts of the overall management system, also for SMEs. And, of course, by adjusting occupational physical settings to the workers' abilities, needs and reasonable expectations - all in line with the requirements of the EU Framework Directive and Article 152 of the Treaty of Amsterdam. Supporting actions include not only research but also adjustments of curricula in business schools, in schools of technology, medicine and behavioural and social sciences, and in the training and retraining of labour inspectors, occupational health officers, managers and supervisors, in line with such goals.

Why Guidance?

Work-related stress is conditioned by, and contributes to, major environmental, economic and health problems. It affects at least 40 million workers in the 15 EU Member States and costs at least 20 billion euro annually. It contributes to a host of human suffering, disease and death. It also causes very considerable disturbances in terms of productivity and competitiveness. And much of all this is highly likely to be preventable.

This is why the European Commission's tripartite Advisory Committee for Safety, Hygiene and Health Protection at Work recommended that the Commission should prepare a *Guidance on Work-Related Stress*. The present document includes an Executive Summary of the Guidance prepared in response to this recommendation. This Executive Summary is also made available as a separate leaflet, for wider distribution.

Is there a problem?

Two EU-wide surveys have shown that a substantial proportion of the 147 million workers on the EU labour market are exposed to a variety of work-related demands or exposures (stressors), known, or highly suspected, to be stress- and disease-inducing.

Stress is caused by a poor match between us and our work, by conflicts between our roles at work and outside it, and by not having a reasonable degree of control over our own work and our own life. Stress at work can be caused by a multitude of stressors. Some common ones include:

- ❑ Over- and underload.
- ❑ Inadequate time to complete our job to our own and others' satisfaction.
- ❑ Lack of a clear job description, or chain of command.
- ❑ No recognition, or reward, for good job performance.
- ❑ No opportunity to voice complaints.
- ❑ Many responsibilities, but little authority or decision-making capacity.
- ❑ Uncooperative or unsupportive superiors, co-workers, or subordinates.
- ❑ No control, or pride, over the finished product of your work.
- ❑ Job insecurity, no permanence of position.
- ❑ Exposure to prejudice regarding age, gender, race, ethnicity, or religion.
- ❑ Exposure to violence, threats, or bullying.
- ❑ Unpleasant or hazardous physical work conditions.
- ❑ No opportunity to utilise personal talents or abilities effectively.
- ❑ Chances of a small error or momentary lapse of attention having serious or even disastrous consequences.
- ❑ Any combination of the above.

Some examples of work-related stress

Fred works at an assembly line on piecework. He can neither influence the pace of his line nor the monotonous and highly repetitive tasks he has to perform, being a small cogwheel in the dynamics of a large and complex mass-production industrial enterprise.

Mary is employed in an office. Her task is to prepare form letters on a word processor. Being a divorced mother of two small children, she needs to leave her job not later than at 5.00 p.m. to be able to pick them up at a day care nursery before it closes. But her workload is steadily increasing, and her supervisor considers it important that all letters are mailed before she leaves her job and insists on her completing the task.

John works as a system designer for a multinational information technology company. He is well-paid, his tasks are stimulating and he has great freedom to plan his work the way he likes. But his company's sales department has signed an agreement on the timely delivery of a new, complex, software system - yet to be designed by him and his understaffed project group.

Peter has been laid off by his employer, a big car manufacturer, because a series of tasks formerly performed manually have been automated. Being 57 years old and with only a primary school education, he is facing long-term unemployment, probably until retirement.

These four situations are very different in many respects. Still, they have something in common, namely that they can act as powerful and chronic stressors, and activate, in exposed workers, a stone-age reaction pattern referred to as "stress" (see below).

As will be shown below, something else they have in common is their accessibility to preventive action. Such action is now increasingly seen as a priority for all stakeholders on the labour market.

What is stress?

Stress is a pattern of "stone-age" reactions that occurs in response to stressor exposures such as those mentioned above, and prepares the human organism for fight or flight, i.e. for physical activity. It is a kind of "revving up", or "stepping on the gas". This was adequate when stone-age man was facing a pack of wolves, but not so today when workers are struggling to adjust to rotating shifts, highly monotonous and fragmented tasks, or threatening or overdemanding customers.

Work-related stress can be *defined* as a pattern of emotional, cognitive, behavioural and physiological reactions to adverse and noxious aspects of work content, work organisation and work environment. It is a state characterised by high levels of arousal and distress and often by feelings of not coping.

Is stress dangerous?

The answer is - yes, and no.

Stress is potentially disease-provoking when occupational demands are high *and* the worker's influence over his or her conditions of work is low, when there is insufficient social support from management or fellow workers, and when the reward offered to the worker in terms of remuneration, esteem or status control does not match the effort he or she has invested. And

generally when such conditions are intensive, chronic, and/or often repeated. Common end results include a wide range of physical and mental morbidity and even death (see below).

The answer is more likely to be No if the worker - within reasonable limits - is allowed, or encouraged, to take control over his or her conditions of work, if he or she is offered adequate social support and if reasonable rewards are offered for efforts invested.

When we feel in control, stress becomes "the spice of life", a challenge instead of a threat. When we *lack* this crucial sense of control, stress can spell crisis - bad news for us, our health and our enterprise. If we feel this to be part of our everyday work, it affects the rate at which processes of wear and tear in our body take place. The more 'gas' given, the higher the revolutions per minute' (RPMs) at which our body's engine is driven, the more rapidly our 'engine' wears out - "the kiss of death".

Can work stress influence health?

Health and wellbeing can be influenced by work, both positively and negatively. Work can provide a goal and meaning in life. It can give structure and content to our day, week, year, and life. It may offer us identity, self-respect, social support, and material rewards. This is likely to happen when work demands are optimal (and not maximal), when workers are allowed to exercise a reasonable degree of autonomy, and when the "climate" of the work organisation is friendly and supportive. If this is so, work can be one of the most important health-promoting (salutogenic) factors in life (see above).

If, however, work conditions are characterised by the opposite attributes, they are - at least in the long run - likely to cause ill health, accelerate its course or trigger its symptoms.

When we are exposed to these or related stressors, most of us experience *emotional* reactions such as anxiety, depression, uneasiness, restlessness, or fatigue.

Stress at work can also influence our *behaviours*, making some of us start smoking more, or overeating, seeking comfort in alcohol or taking unnecessary risks at work or in traffic. Many of these behaviours can lead to disease and premature death. Suicide is one of many examples.

We also react *physiologically*, with our internal organs. When we feel unjustly criticised by our supervisor, our blood pressure may increase; we may experience increased or irregular heart rate, or muscular tension with subsequent pain in the neck, head, and shoulders, or dryness of our throat and mouth, or heartburn because of overproduction of acid gastric juice.

All of these stress reactions can make us suffer, become ill, and even die - through diseases of the heart and blood vessels, or cancer (from smoking too much, or eating too much fat food and too little nutritional fibre).

In this way, virtually every aspect of work-related health and disease can be influenced. This can also be mediated through emotional, and/or cognitive *misinterpretation* of conditions of work as threatening, even when they are not, and/or trivial symptoms and signs occurring in ones own body as manifestations of serious disease.

All this can lead to a wide variety of disorders, diseases, loss of wellbeing, and loss of productivity. Examples discussed in some detail in the Guidance include ischemic heart disease, stroke, cancer, musculo-skeletal and gastrointestinal diseases, anxiety and depressive disorders, accidents, and suicides.

Who is at risk?

In fact, every one of us. Every person has his or her breaking point. In addition, the nature and conditions of work are changing at whirlwind speed. This adds to the risk we run, or may run, but to a varying degree. Some groups are more at risk than others. Some determinants of this increased risk are "Type A" (hostile) behaviour; an inadequate coping repertoire; living and working under underprivileged socio-economic conditions, and lacking social support. Other determinants are age (adolescent and elderly workers), gender combined with overload (e.g. single mothers), and being disabled. Often, those who are particularly at risk are also more exposed to noxious conditions of life and work. High vulnerability and high exposure thus tend to coincide.

Can work-related stress be prevented?

Work-related stress can be approached on four levels - those of the individual worker, the work organisation, the nation, and the European Union. Whatever the target(s), conditions are man-made and open to interventions by all relevant stakeholders.

In all cases, there is a need to identify work-related stressors, stress reactions, and stress-related ill health. As already emphasised, there are several reasons for doing this: stress is a problem both for the worker and his or her work organisation, and for society; work stress problems are on the increase; it is a legal obligation under the EU Framework Directive on Health and Safety; and many of the stressors and consequences are avoidable and can be adjusted by all three parties on the labour market if they act together in their own and mutual interests.

Thus, work-related stress may be prevented or counteracted by job redesign (e.g. by empowering the employees, and avoiding both over- and underload), by improving social support, and by promoting reasonable reward for the effort invested. And of course by adjusting occupational physical settings to the workers' abilities, needs and reasonable expectations.

Approaches to be considered include participative management, flexible work schedules, and career development - all in line with the requirements of the EU Framework Directive and of Article 152 of the Treaty of Amsterdam.

Tools to prevent stress?

To identify work-related stress, its causes and consequences, we need to monitor our *job content, working conditions, terms of employment, social relations at work, health, wellbeing* and *productivity*. This Guidance provides many references to simple checklists and questionnaires to enable all stakeholders to do this.

Once the parties on the labour market know 'where the shoe pinches', action can be taken to 'adjust the shoe' to fit the 'foot', i.e. to improve stress-inducing conditions in the workplaces. Much of this can be accomplished through rather simple organisational changes by:

- ❑ Allowing adequate time for the worker to perform his or her work satisfactorily.
- ❑ Providing the worker with a clear job description.
- ❑ Rewarding the worker for good job performance.

- Providing ways for the worker to voice complaints and have them considered seriously and swiftly.
- Harmonising the worker's responsibility and authority.
- Clarifying the work organisation's goals and values and adapting them to the worker's own goals and values, whenever possible.
- Promoting the worker's control, and pride, over the end product of his or her work.
- Promoting tolerance, security and justice at the workplace.
- Eliminating harmful physical exposures.
- Identifying failures, successes, and their causes and consequences in previous and future health action at workplace; learning how to avoid the failures and how to promote the successes, for a step-by-step improvement of occupational environment and health (Internal control, see below).

On a company or national level, all three parties on the labour market may wish to *consider* organisational improvements to prevent work-related stress and ill health, with regard to:

- *Work schedule.* Design work schedules to avoid conflict with demands and responsibilities unrelated to the job. Schedules for rotating shifts should be stable and predictable, with rotation in a forward (morning-afternoon-night) direction.

- *Participation/control.* Allow workers to take part in decisions or actions affecting their jobs.

- *Workload.* Ensure assignments are compatible with the capabilities and resources of the worker, and allow for recovery from especially demanding physical or mental tasks.

- *Content.* Design tasks to provide meaning, stimulation, a sense of completeness, and an opportunity to use skills.

- *Roles.* Define work roles and responsibilities clearly.

- *Social environment.* Provide opportunities for social interaction, including emotional and social support and help between fellow workers.

- *Future.* Avoid ambiguity in matters of job security and career development; promote life-long learning and employability.

Person-oriented measures

By following the principles mentioned above, workers and employers can adjust the 'shoe' to fit the 'foot'. However, this may take time or even turn out not to be feasible in the short-term. Here, the social partners may need to resort to the complementary strategy of adjusting the 'foot' to fit the 'shoe', by offering physical exercise and/or relaxation techniques, medication, counselling, and stress management.

Internal control

Actions to reduce noxious work-related stress need not be complicated, time consuming, or prohibitively expensive. One of the most common-sense, down-to-earth and low-cost approaches is known as *Internal Control.*

It is a self-regulatory process, carried out in close collaboration between stakeholders. It can be coordinated by e.g. an in-house occupational health service or a labour inspector, or by an occupational or public health nurse, a social worker, a physio-therapist, or a personnel administrator.

Its first step is to *identify* the incidence, prevalence, severity and trends of work-related stressor exposures and their causes and health consequences, e.g. by making use of some of the many survey instruments listed in this Guidance.

In a second step, the characteristics of such exposures as reflected in the content, organisation and conditions of work are analysed in relation to the outcomes found. Are they likely to be *necessary*, or *sufficient*, or *contributory* in causing work-stress, and ill health related to it? Are they accessible to change? Are such changes acceptable to relevant stakeholders?

In a third step, the stakeholders design an integrated *package of interventions*, and implement it in order to prevent work-related stress and to promote both wellbeing and productivity, preferably by combining top-down and bottom-up approaches.

The short- and long-term *outcomes* of such interventions need then to be *evaluated*, in terms of (a) stressor exposures, (b) stress reactions, (c) incidence and prevalence of ill health, (d) indicators of wellbeing, and (e) productivity with regard to the quality and quantity of goods or services. Also to be considered are (f) the costs and benefits in economic terms.

If the interventions show no effects, or negative ones, in one or more respects, stakeholders may wish to reconsider what should be done, how, when, by whom and for whom. If, on the other hand, outcomes are generally positive, they may wish to continue or expand their endeavours along similar lines. It simply means systematic *learning from experience.* If they do so over a longer perspective, the workplace becomes an example of *organisational learning.*

Experiences with such interventions are generally very positive, not only for the employees and in terms of stress, health and wellbeing, but also for the function and success of work organisations, and for the community. If conducted as proposed, it is likely to create a *win-win-win* situation for all concerned.

There is an urgent need for increased cooperation between all relevant stakeholders at all societal levels (EU, nation, workplace) with regard to

- *Implementation* of the very considerable body of current information on prevention measures to reduce stress-related illness and injury in the workplace and promote the health and wellbeing of workers, and *research* to address gaps in such knowledge.

- *Surveillance* at individual workplaces and *monitoring* at national and regional levels, in order to identify the extent of work-related stress and health problems and to provide baselines against which to evaluate efforts at amelioration.

- *Education and training* of occupational health and other key professional groups to facilitate their participation in researching and developing programmes to reduce the impact of work-related stress and to evaluate the outcome of such approaches.

- *Methodological developments* for the continued production and improvement of valid and reliable methodology kits for intersectoral and interdisciplinary monitoring, analysis and action by all concerned.

- Creation of a *Clearing House* for all relevant information using state-of-the-art technology, video, curricula, leaflets, hotline, etc. This would include use of the WWW to collect, review, integrate and disseminate information concerning such data and activities.

- Address the stress-related consequences of both over- and unemployment on the individuals concerned and their families and the communities in which they live. This will mean minimising unemployment and underemployment, minimising overemployment, promoting "the healthy job" concept, and humanising organisational restructuring.

Start now

Does all this sound complicated or even utopian? It is not. It has been done in many enterprises, and with considerable success. The principles mentioned above are incorporated in the EU Framework Directive and in the Work Environment Acts of a number of European countries. True, it may take time and effort, but it can be done. And it is likely to be highly cost-effective.

Your first step? Read the accompanying Guidance, and take concrete steps to apply what you have read in your own country, or at your own workplace. The 'right time' is now. It can mean improving both working conditions and health, as well as your own, your company's and your country's output and productivity.

PART I

THE BACKGROUND

This Part I of the Guidance on Work-Related Stress provides the relevant background information, including European and other Treaties, Resolutions, Directives, Communications and other initiatives. It describes the incidence, causes and consequences of work-related stress, defines the phenomena and provides a number of examples. It further reviews present knowledge of who is at risk and the risks they run.

Stone-age reactions in modern organisational settings

Over its approximately 500 000 years of existence, the human race has experienced a rather limited number of work life transitions. The first one occurred only some 10 000 years ago when hunting and gathering nomadic tribes turned to *agriculture*. The next transition started only a few *centuries* ago with the advent of the *industrial revolution*. Presently, we are in the midst of a third transition, into a post-industrial era characterised by an *information economy* but also by globalisation, corporate reorganisation, the introduction of new technologies (such as computerisation, robotisation and biotechnology), the introduction of new management philosophies, increased workforce diversity and increased expectations in the workforce (cf. Murphy et al. 1995; Enochson et al., 1999). Unprecedented in the history of mankind, these changes are also occurring at breakneck speed.

It goes without saying that many of these developments carry a great potential for health, wellbeing and prosperity. It is equally obvious that some of them create side-effects in terms of work-related stress and ill health (cf. page 23). This Guidance aims to identify some of the latter, and propose how they could be prevented, and how health and wellbeing could be promoted, both in workers and in organisations.

What is stress?

According to a common dictionary, the word "stress" is derived from middle English *stresse* (hardship, distress), from Old French *estresse* (narrowness), from Vulgar Latin *strictia*, from Latin *strictus* (tight, narrow), from the past principle of *stringere* (to draw tight, to tighten).

What, then, is stress? According to the originator of the biological stress concept (Selye, 1936), it is the *lowest common denominator* in the organism's reactions to (almost) every conceivable kind of exposure, challenge, and demand, in other words, the stereotypy, the *general features* in the organism's reaction to all kinds of stressors. Another way to describe the phenomenon "stress" is by referring to Selye's (1971) reference to "*the rate of wear and tear in the organism*" - a kind of "revving up" or "stepping on the gas", preparing the organism for action, for muscular and other activity.

According to the UK Health and Safety Commission (HSC, 1999), "stress is the reaction people have to excessive pressures or other types of demand placed on them".

Similarly, according to NIOSH (1999), "job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury".

In the context of this Guidance, work-related stress is defined as "*the emotional, cognitive, behavioural and physiological reaction to aversive and noxious aspects of work, work environments and work organisations. It is a state characterised by high levels of arousal and distress and often by feelings of not coping*".

It follows from this definition that even a heavy work demand, within reasonable limits, need not necessarily be noxious if the worker is allowed, or even encouraged, to influence the way these demands are being met.

In the dawn of the history of mankind, stress helped our ancestors to survive when they were facing, e.g. a pack of wolves. Through their senses they became aware of the impending threat. In response, their cerebral cortex signalled to their hypothalamus to prepare for fight or flight, for physical activity, to cope with this threat. The hypothalamus, directly and indirectly, passed on the signal to every part of their bodies, through three separate but closely interrelated bodily systems - the nervous, endocrine and immune systems - to increase such preparedness for fight or flight. In response, their hearts began to beat faster (to provide the organism with more blood), and their lungs started to breathe faster (to secure the necessary oxygenation of the blood). There was a dilatation of the blood vessels serving their muscles (to provide them with the necessary fuels) at the expense of some of their visceral organs, which could be put on the back burner temporarily in the event of an emergency. An increased release of the hormones adrenaline and noradrenaline led to an increased mobilisation of two major "fuels", glucose and free fatty acids, into the blood stream from the stores in the body.

All this facilitated a preparation for fight or flight, for muscular activity. All these reactions occurred very rapidly and in an automatic manner, as components of nature's master plan for the survival of the fittest. Those of our stone age ancestors who exhibited a good ability to react in this way survived, multiplied and filled the earth with a race - our race - very prone to react with stress. Those lacking this ability succumbed in their fight for survival. It follows that we are the progeny of the former.

Since then, conditions of life have changed dramatically. Very few of us ever confront an aggressive wolf pack. In most everyday life contexts, we do not need our stone age stress reactions. They have become obsolete. They are, however, *genetically* determined and do not change, except over a very long perspective. This is probably why our ancient but persisting genetic programming, in combination with our modern - usually long-lasting - occupational and other environmental exposures, have become a threat to our health and wellbeing, cf. European Foundation (1994) and International Labour Office (1986 and 1992).

Some work-related examples

Fred works at an assembly line. He is paid by the piece. He can neither influence the pace of his line nor the monotonous and highly repetitive tasks he has to perform, being a small cogwheel in the dynamics of a large and complex mass-production machinery.

Mary is employed in an office. Her task is to prepare form letters on a word processor. Being a divorced mother of two small children, she needs to leave her job not later than at 5.00 p.m. to be able to pick up her children at a day care nursery before it closes. But her workload is steadily increasing, and her supervisor considers it important that all letters are mailed before she leaves her job and insists on her completing the task.

John works as a programmer for a multinational information technology company. He is well-paid, his tasks are stimulating and he has great freedom to plan his work the way he likes. But his company's sales department has signed an agreement on the timely delivery of a new complex software system - yet to be designed by his understaffed project group.

Peter has been laid off by his employer, a big car manufacturer, because of the robotisation of a series of tasks formerly performed manually. Being 57 years old and with only a primary school education, he is facing long-term unemployment, probably until retirement.

These four situations are very different in many respects. Still, they may have something in common, namely that they can act as powerful and chronic stressors, and activate, in the exposed workers, this stone age reaction pattern referred to as "stress".

Something else they have in common is their accessibility to comprehensive environmental and health action. Such action is now a priority for virtually all stakeholders on the labour market, preferably through what is usually referred to as mainstreaming.

Mainstreaming of stress prevention into organisational development

The European Commission's (1998a) Second Report on the *Integration of Health Protection Requirements in Community policies* states that employment (and unemployment) have broad repercussions for health.

And according to the *Treaty of Amsterdam* (Article 152), "a high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities".

"Community action, which shall complement national policies, shall be directed towards improving public health, preventing human illness and diseases, and obviating sources of danger to human health. Such action shall cover the fight against the major health scourges, by promoting research into their causes, their transmission and their prevention, as well as health information and education."

A better organisation of work

The European Commission (1997b) has also issued a Green Paper on the scope for improving employment and competitiveness through *a better organisation of work* at the workplace, based on high skills, high trust and high quality. It is about the will and ability of management and workers to take initiatives, to improve the quality of goods and services, to make innovations and to develop the production process and consumer relations.

According to this Green Paper, there is no single model for such a "flexible firm", but an infinite variety of models, which are constantly being adapted to the circumstances of the individual firm and its workers. Their aim is to improve the competitiveness of European firms, the quality of working life and the employability of the workforce.

The Green Paper triggered a lively debate across the EU, among employers and unions, public authorities and other interested parties. A number of conferences were organised with thousands of participants. More than 150 written comments were submitted to the Commission, from social partners, governments, research centres, individual companies and individual researchers. These are summarised in the DGV publication: "Partnership for a new organisation of work: Synthesis of responses". The European Parliament and other European institutions also made substantial comments on the Green Paper.

Based on this consultation and discussion process, the European Commission (1998b) in its Communication, has drawn a number of *conclusions*:

- Europe needs to foster high skills and promote high quality in the workplace, in order to improve productivity and to create the conditions for competitiveness and employment;

- The modernisation process must be speeded up. New, more flexible forms of work organisation are generally not widespread in Europe. Individual good practices have been developed, but support is needed to transform them into innovative policies;

- The new organisation of work affects all workplaces, including the public and private sectors, small firms and large;

- Concrete measures for the organisation of work are the responsibility of firms: it is a key role of management, with the proper involvement of workers, to develop the most suitable and effective methods. Partnership in change is a key to success.

- In the search for a better organisation of work, more attention must be given to the gender perspective, including the reconciliation of working and family life.

These conclusions lead the Commission to ask the social partners to consider taking a leading role at all levels in developing a new approach to work organisation. Therefore, this Communication seeks to identify the best strategy for all actors at the appropriate level to be able to address the key issues confronting them and to take a positive approach to change, trying to reconcile the needs of firms for flexibility and the needs of workers for security in change.

The main thrust of this Guidance, on the Prevention of Work-Related Stress, chimes in with both Article 152 of the Treaty of Amsterdam and the Commission's strategic objectives on a New Organisation of Work. The "flexible firm" referred to above should also be a "healthy firm" with "healthy workers". Therefore, the Guidance aims at **integrating** the "healthy workers in healthy organisations" objectives with all relevant organisational activities and policies in line with what is stated in the Treaty of Amsterdam and the Commission's third report on the integration of health protection requirements in Community policies (COM(98)34 of 27.1.1998b in connection with SEC(98)278 of 20.2.1998a), and what is discussed in the Green Paper and the Commission's Communication - i.e. **mainstreaming**.

This could be achieved with regard to the following main issues concerning new a organisation of work as mentioned in the Commission's Communication (1998b):

Ensuring proper training

This would mean life-long learning to facilitate the adaptation of workers' skills to companies' needs to promote both life-long employability and company competitiveness - but in such a manner that work-related stress is prevented and productivity promoted.

Developing working time packages in a comprehensive framework.

Here, the task is to reconcile flexibility and security, occupational health and productivity, improved employability and a optimal balance between work and family life, to prevent work-related stress and to promote healthy and competitive workplaces.

Facilitating the diversification of working relations as well as new forms of work

In the present context this means allowing new forms of contractual relationships and career paths, while providing security for workers, e.g. in terms of employment continuity, social security cover and opportunities for training - again with stress prevention and health promotion, along with productivity, as guiding principles.

Ensuring optimum conditions for the introduction and uptake of new technologies

Such programmes should ensure that stress prevention and health promotion are integrated with such introductions.

Promoting workers' motivation and adaptability through increased involvement

Again, the task is to implement such actions taking full account of the health and wellbeing of the workforce, inter alia through proper participation of the workers in planning and implementation.

Promoting equal opportunities

Here, the gender perspective should be taken into account in order to promote equal treatment for women and men, including entry and re-entry of women into the workforce and combining family and work responsibilities, to ensure "the high level of human health protection" called for by the Treaty of Amsterdam.

Education and training

To achieve the above objectives, there is an urgent need to amend the training curricula for various professions to promote both the modernisation of organisational work and the prevention of work-related stress in an integrated manner. This would mean adjusting many of the present curricula in business schools and schools of technology, medicine and behavioural and social sciences in all 15 EU Member States. There is also a need for training and retraining of labour inspectors, occupational health officers, managers and supervisors. Last but not least, there is a need to make sure that the entire workforce has a basic understanding of the issues under discussion (cf. pages 73-74).

This will necessitate tripartite collaboration to formulate what could and should be included in such curricula. At government level, it will also necessitate close collaboration between the ministries of education, labour and health.

In its Mid-Term Report on the Community Programme concerning Safety, Hygiene and Health at Work (1996-2000), the Commission (1998c) draws attention to the need for a programme on non-legislative measures to improve health and safety at work (SAFE), paying particular attention to small and medium-sized enterprises. According to this report, the Commission will further promote a greater involvement of the 9000 labour inspectors in the 15 Member States, in cooperation with the committee of Senior Labour Inspectors (SLIC), and support the creation of the necessary safety culture. It will be necessary to integrate prevention of work-related stress with all these and related objectives and activities.

Resolution of the European Parliament

The timeliness of the initiatives reviewed above is reflected in the European Parliament's Resolution A4-0050/99 (of 25 February 1999). In this Resolution, the European Parliament, inter alia,

- considers that work must be adapted to people's abilities and needs and not vice-versa, and notes that by preventing a disparity from arising between the demands of work and the capacities of the workers, it is possible to retain employees until retirement age; considers that new technologies should be used in order to achieve these aims;

- urges the Commission to investigate the new problem areas which are not covered by current legislation: i.e. stress, burn-out, violence and the threat of violence by customers, and harassment at the workplace;

- notes that muscular-skeletal diseases and psycho-social factors constitute the greatest modern threat to workers' health;

- draws attention to the problems resulting from a lack of autonomy at the workplace, monotonous and repetitive work and work with a narrow variety of content, all features which are typical of women's work in particular, and calls attention to be paid to the importance of ergonomics to the improvement of health and safety conditions at the workplace;

- draws attention to the health and safety at work of groups which now largely fall outside the scope of legislative protection, such as homeworkers and the self-employed; and

- recommends the principle of safety management whereby the management of the risks of the working environment and development of the safety and welfare of workers are regarded as part of the normal activity of the workplace, and that this should be done in cooperation with the management and workforce.

The London Ministerial Declaration

Another important initiative, coordinated by the WHO (1999), is the London Ministerial Declaration. It is based on its conference document "Towards good practice in health, environment and safety management (GPHESM) in industrial and other enterprises", and is expected to lead to a "European programme of good practice in health, environment, and safety management in enterprises".

According to this document, both enterprises and the national economy in all WHO Member States carry a significant economic and social burden caused by accidents, injuries, and occupational, work-related and workplace-preventable (but non-occupational) diseases. Economic loss from occupational accidents alone in some European countries has been calculated at 3-5% of gross national product. Occupational and non-occupational diseases and injuries are responsible for much of the current levels of reduced work capacity, increased temporary and permanent work disability, shortened life expectancy, and premature retirement or death. The high rate and early onset of chronic diseases contribute to the high expenditure of national health care systems, as well as to high demands for disability pensions and compensation from social insurance funds.

It recommends integration of Health, Environment and Safety Management into the overall management system of an enterprise, resulting in the effective and efficient promotion of GPHESM. It is the outcome of national and individual enterprise policies in the areas of health protection, promotion and surveillance at work, promotion of good working culture and of a work organisation conducive to safety and health, and provision of a healthy and safe working and ambient environment.

Good practice is a process that aims at continuous improvement in HESM performance, involving all stakeholders within and outside the enterprise: working communities (employers, management, employees and their trade unions), experts in different disciplines (health promotion, occupational health, environment, safety, economics and others) and the surrounding community.

The main objectives of GPHESM are to provide a safe and healthy working environment, while preserving the general environment and health of people living outside the premises; to ensure an optimal balance between economic and business interests, on the one hand, and the working ability and health of the entire staff, including their families, on the other; and to provide healthy and environmentally friendly products and services.

The likely health benefits are said to consist in increases in life expectancy and disability-free life expectancy, in working ability and the proportion of employees free from occupational and work-related diseases and injuries, in the percentage of employees and pensioners free from serious disability due to chronic noncommunicable disease, in the adoption of healthy lifestyles and in equity in health. GPHESM would also result in a decrease in absenteeism due to disease and injury, and decreases in health- and safety-related insurance premiums.

According to the Document, social and wellbeing benefits will consist in better quality of working life and life in general for employees, improved self-esteem and motivation, increased professional skills and ability to cope with the demands of working life, and increased social capital.

And the economic benefits are expected to consist in increased productivity and economic efficiency, greater competitiveness and likelihood of economic returns on investments, a better image for the enterprise, a decrease in social insurance premiums, and lower health care costs.

Promotion of occupational mental health

In collaboration with the European Commission and the World Health Organisation, the Finnish Presidency of the European Union is aiming to put promotion of mental health on the European agenda. According to the Finnish Government (1999),

"mental health is a broad concept. A comprehensive view of mental health covers much more than the treatment of mental disorders only. For both an individual and society, mental health is a positive resource originating in all areas of human activity, e.g. in schools, on streets, at workplaces and in homes. Mental health is also an essential element of public health, contributing to the quality of life and economic performance. There is no health without mental health."

One of the priority areas in this context is "Working Life, Employment and Promotion of Mental Health", divided into the following four thematic dimensions:

- *Balanced, mentally healthy working life*
- *Challenge of unemployment and mental health*
- *Towards an inclusive employment policy*
- *Future European strategy, programmes and actions*

Four recent initiatives

Four recent initiatives - one from the United States, another from the United Kingdom, the third from all post-industrial countries, and the fourth one from Belgium - all point in this same direction.

The U.S. National Institute for Occupational Safety and Health (NIOSH, 1999) has published recommendations on "Stress at work". Its opening chapter points out that the "nature of work is changing at whirlwind speed. Perhaps now more than ever before, job stress poses a threat to the health of workers and, in turn, to the health of organisations". The document "highlights knowledge about the causes of stress at work and outlines steps that can be taken for its prevention".

The Health and Safety Commission of the United Kingdom (UK) (HSC, 1999) has issued a Discussion Document on "Managing stress at work", indicating in its preamble that "in recent years, stress has become a major concern for employees, employers and the public at large".

"The Health and Safety Commission and Executive (HSC and HSE) and Ministers share these concerns. HSE has issued guidance to help employers manage work-related stress" (HSE, 1995; 1998a).

The HSE (1998b) Discussion Document is part of a more extensive UK initiative described in the British Government's (1998) Green Paper "Our Healthier Nation - A Contract for Health" and its subsequent White Paper ("Saving Lives: Our Healthier Nation", 1999). These argue for a comprehensive approach to health promotion and disease prevention, with a *horizontal* integration of actions, across societal sectors, and a *vertical* one, across all societal levels, from the individual citizen to the central government.

In a third recent initiative, co-sponsored by the European Commission, WHO, ILO, NIOSH and the Japanese Ministries of Labour, and Health and Welfare, 28 scientists from Europe, Japan, and North America, assembled in Tokyo, analysed work-related stress and health in these three post-industrial settings. Based on this analysis they issued the "Tokyo Declaration" (1998) advocating various ways to prevent work-related stress, thereby "improving the health and wellbeing of the labour force, the productivity and economic wellbeing of organisations and the economic system, the participation of workers in the democratic process, and the enhancement of social capital at work and outside it".

A fourth initiative is an Agreement between the Belgian employers' and employees' organisations on prevention of work-related stress (Conseil National du Travail, 1999). This agreement defines stress as a state experienced as negative by a group of workers and accompanied by "complaints or malfunctions on a physical, mental and/or social level". Such stress should be prevented or remedied at the collective level. Such actions are the obligations of the employer who should analyse the working situation, detect possible stressors, evaluate such risks and take appropriate measures for prevention or remedy, in an attempt to adapt

work to the worker. It is understood that these actions should be supervised by the Occupational Health and Safety Committee and the Work Council with the participation of employers and employees.

Reference will be made to some of these documents in the following chapters.

Is there a problem?

But is there, indeed, a problem worth European consideration? To be able to answer, data are needed on

- work-related stressors;
- pathogenic (disease-provoking) mechanisms;
- ill health in the working population caused by such processes;
- other potentially negative outcomes of such exposures; and
- the preventable proportion of the above.

In its First European Survey on the Working Environment 1991-92, the European Foundation for the Improvement of Living and Working Conditions (Paoli, 1992) provided some of this set of data. It was found that 23 million workers had night work during more than 25 per cent of their total hours worked; every third worker reported repetitive work, and every fifth male and every sixth female worked under continuous time pressure. Thirty per cent of the European workforce regarded their health at risk from work.

The European Foundation's Second European Survey of Working Conditions (Paoli, 1997), conducted in early 1996, calls attention to the pronounced transformation of European working life - from the industrial to the service sector, with a consequent change in job profile: introduction of new technology (one third of the workforce uses computers) and more client-oriented jobs (49 per cent of workers indicate permanent and direct contact with clients or patients). Work organisation has also changed, with new management models, teamwork, just-in-time and Total Quality Management (TQM).

At the same time, the workforce profile has changed. European workers are getting older; they tend to work more often on fixed term or temporary contracts; there is a rapid growth in the proportion of female workers; the traditional employee-employer relationship is slowly disappearing; and the unemployment rate remains very high.

According to this second survey, 45 per cent of the 147 million workers in the EU Member States report having monotonous tasks; 44 per cent no task rotation; 50 per cent short, repetitive tasks; 35 per cent no influence on task order; and 28 per cent no influence on work rhythm; while 54 per cent report working at a very high speed, and 56 per cent to tight deadlines.

And a sizeable proportion of this workforce reports ill health effects, to be discussed in more detail on page 23 (Paoli, 1997).

Of course, not all of the working conditions described above result in stress or stress-related ill health, and not in all exposed workers. Neither is all work-related ill health necessarily stress-related. On the other hand, it seems likely (cf. page 24) that the manifestations of work stress-related ill health far exceed the lists of health complaints presented by the two European Surveys reviewed above. There is supportive evidence (but no proof) indicating

that work-related stressors contribute to work-related ill health far beyond what the figures on page 26 reflect.

Costs of work-related stress

All this can result in a great deal of - largely preventable - suffering and reduced performance in a considerable proportion of the European workforce. But it can also give rise to very sizeable direct and indirect costs, to enterprises, workers, and society.

In two subsequent reports commissioned by the European Foundation, such costs at both enterprise (Cooper et al., 1996) and community level (Levi and Lunde-Jensen, 1996) have been analysed.

Based on three European case studies at the *enterprise* level, Cooper et al. (1996) describe costs caused by (a) occupational stress, (b) interventions chosen by the enterprises to reduce stressors, stress and stress-related ill health, and (c) resulting cost benefits. Interventions included job enlargement and enrichment and the creation of autonomous work teams (Sweden), improvement of communication and consultative structure, and provision of individual skills training for managers (the Netherlands), and improvement of individuals' skills and resources and creation of organisational awareness and support (United Kingdom).

The very considerable *benefits* observed as a result of such interventions could be due to: productivity improvements, reduced employee health and insurance costs, reduced human resource development costs, and improved organisational image, whereas intervention *costs* could be categorised into organisational, administrative, intervention, and participant costs. The authors conclude that stress prevention would seem to present a means whereby an organisation can *not only reduce or contain the costs of employee ill health, but can also positively maintain and improve organisational health and productivity.*

The second European Foundation report (Levi and Lunde-Jensen, 1996) concerns itself with socio-economic costs and benefits at *national* level.

The motivation for assessing the costs of work-related stress in socio-economic terms is that the market system creates "externalities", that is, some significant costs are not included in market prices of goods, services, salaries and wages. These - unpaid - costs are distributed among individuals in society. The fact that they are only partly visible might create the misconception that the *costs* of prevention - which are rather easy to identify - are more significant than the *benefits* from prevention programmes.

To carry out the calculations, the authors needed data on the *prevalence* of some major stressors among the working population and of subsequent health outcomes that can be associated with exposure to these stressors. Among the possible operational definitions of stressors, they chose the one based on Karasek's and Theorell's (1990) "job demand - job control" model (cf. page 18).

The First European Survey of the Working Environment enabled Levi and Lunde-Jensen (1996) to quantify the prevalence of the combination of *high job demand* and *low job control* in most EU Member States. Using that - rather narrow - definition of work-related stressors, they identified between 9 and 12 per cent of the male workforce and between 9 and 11 per cent of the female workforce to be exposed to such "stressors".

The background estimate of total *work*-related sickness behaviour costs for Sweden adds up to 4,700 million euro annually, or 19 per cent of all sickness behaviour within the 20 to 65

age group. This corresponds to 1,200 euro *per person* in employment for women, and 1,155 euro *per person* in employment for men. Musculoskeletal diseases (cf. page 23) account for more than half of the work-related costs for women and 40 per cent for men.

When compared to *all* sickness occurrence that can be related to work, the estimates of the costs of some - probably stress-related - *cardiovascular* diseases (cf. page 23, and European Heart Network, 1998) add up to between 3.2 per cent for Swedish women and 5.7 per cent for Swedish men.

If "high demands - low control" working conditions are associated with an *excess sickness absence* (i.e. a broader, undefined range of health outcomes), an estimate of *450 million euro annually* can be made for Sweden, corresponding to approximately 10 per cent of work-related costs of illness for both genders. This estimate is largely at the same level as the calculations for the United Kingdom (Davies and Teasdale 1994), where approximately 10 per cent of persons suffering from *work-related* ill health report that they suffer from "stress and depressions".

In spite of the rather restrictive definition of stress used by Levi and Lunde-Jensen (1996), the costs of work-related stress were found to be of the same order of magnitude as those of well-recognised exposures such as noise and carcinogens (Denmark). Based on such comparisons, Levi and Lunde-Jensen (1996) conclude that *"stress prevention" should definitely be among the top priorities in occupational health and safety policies.*

A more *global* attempt to estimate the societal costs for *all* work-related ill health has been published by the European Agency for Safety and Health at Work (1999). Estimates made by a number of EU Member States vary between 2.6 and 3.8 per cent of their Gross Domestic Product, corresponding to *185-269 billion euro annually for all 15 EU Member States.*

If we assume that at least 10 per cent of these costs are *work-stress-related* (cf. Levi and Lunde-Jensen, 1996; Davies and Teasdale, 1994), this would amount to approximately *20 billion euro annually.* For the reasons given on page 23, this figure is likely to be far too low. How much of this concerns fiscal costs to society, how much is due to a decrease in productivity and increase in absenteeism - a concern primarily for the work organisations - and how much of it reflects a decrease in income for the workers? Although there are no answers in the European Agency (1999) report, it seems clear that all social partners carry the burden. As much of this is likely to be preventable, both ethical and economic motives speak in favour of stress prevention and health promotion as proposed in this Guidance.

Work-related stressors

There are many ways to categorise conditions of work that have a stressor potential. Kasl (1991) has proposed the following *dimensions* of work to be considered in this respect:

- *Temporal aspects of the work day and work itself:*
  - (a) shift work, particularly rotating shift;
  - (b) overtime, unwanted, or 'excessive' hours;
  - (c) two jobs;
  - (d) piece work versus hourly pay (pay mechanism influencing pace);
  - (e) fast pace of work, particularly in the presence of high vigilance demands;
  - (f) not enough time to complete work deadlines;

(g) scheduling of work and rest cycles;

(h) variation in workload;

(i) interruptions.

- *Work content (other than temporal aspects):*

(a) fragmented, repetitive, monotonous work with low task/skill variety;

(b) autonomy, independence, influence, control;

(c) utilisation of existing skills;

(d) opportunity to learn new skills;

(e) mental alertness and concentration;

(f) unclear tasks or demands;

(g) conflicting tasks or demands;

(h) insufficient resources, given work demands or responsibilities (e.g. skills, machinery, organisational structure).

- *Interpersonal - work group:*

(a) opportunity to interact with co-workers (during work, during breaks, after work);

(b) size, cohesiveness of primary work group;

(c) recognition for work performance;

(d) social support;

(e) instrumental support;

(f) equitable workload;

(g) harassment.

- *Interpersonal - supervision:*

(a) participation in decision-making;

(b) receiving feedback and recognition from supervisor;

(c) providing supervisor with feedback;

(d) closeness of supervision;

(e) social support;

(f) instrumental support;

(g) unclear, conflicting demands;

(h) harassment.

- *Organisational conditions:*

(a) size;

(b) structure (e.g. 'flat' structure with relatively few levels in the organisation);

(c) having a staff position (versus line position);

(d) working on the boundary of the organisation;

(e) relative prestige of the job;

(f) unclear organisational structure (lines of responsibility, organisational basis for role conflict and ambiguity);

(g) organisational (administrative) red tape and cumbersome (irrational) procedures;

(h) discriminatory policies (e.g. in hiring, promotion).

An attempt to condense many of these dimensions into a more limited number of categories could result in the following considerations and headings:

Causes of work-related stress and ill health

One of the basic questions in this context is what is meant by "*causes*". In everyday language, it refers to "the producer of an effect, result, or consequence". But causality may imply a range of relationships. It can mean that a certain exposure is *necessary* , e.g. for a certain disease to develop (such as the exposure to lead causing lead poisoning). An exposure may also be *sufficient* - no additional influences or vulnerabilities being necessary. Or it may be *contributory* but neither necessary, nor sufficient. And is an exposure really *causing* a specific disease, or is it "just" *aggravating* it, *accelerating* its course, or *triggering* its symptoms? If we keep all these options in mind, it becomes clear that work-related stressors rarely are a *prerequisite* for the development of specific diseases, a *sine qua non*. On the other hand, it becomes equally clear that they may *contribute* to a wide variety of morbidity and mortality (cf. pages 13 and 24), a much wider spectrum than is usually realised.

Another basic question concerns what is meant by "*ill health*". In analysing work-related ill health one may wish to consider not only work-related mortality and morbidity, but also work-related physical and mental complaints, as well as tolerance to such complaints, as seen by the social partners.

A worker can be objectively healthy, but subjectively quite ill. Or he or she may be objectively quite ill but consider him- or herself quite healthy. Or the worker may be ill, both objectively and subjectively - or healthy in both respects. The latter is, of course, what disease prevention and health promotion in the workplace should primarily aim at.

Kleinman et al. (1978) distinguish between three concepts of "disease":

- *disease*, as an objective disturbance of structure and/or function in the human organism;
- *illness*, as a state of ill health recognised by the person, and
- *illness behaviour*, as the person's reactions to symptoms, and perceptions, values, attitudes, and interpretations conditioning them.

It has already been said that different workers, in different sectors, in different occupations, and in different cultural settings, differ widely with regard to the type and number and intensity of stressors they are exposed to, and in their reactions to these stressors. It is impossible here to cover and analyse each and every type and combination. Suffice it to say that the major stressors can be categorised under the following three headings (European Commission, 1997a).

Aspects of occupational stressors

(1) Physical factors, such as excessive noise, heat, humidity, vibration or work with toxic or dangerous substances may cause stress or make people more susceptible to other workplace

stressors (cf. page 52). Such factors deserve serious consideration because exposures to them are quite common.

In all, 25 million European workers are exposed to noise. 8 per cent handle or touch harmful products or substances. 17 per cent report breathing in vapours, fumes or dust during at least half of their working time. 17 per cent report being exposed to vibration, 12 per cent to high and 13 per cent to low temperatures. 20 per cent carry or move heavy loads, and 32 per cent work in painful or tiring positions (Eurostat, 1998).

(2) Psychological and social factors: jobs involving exposure to human suffering, sickness or injury (e.g. in the police, emergency and medical services) or in which staff themselves encounter physical danger (divers; those in the fishing industry) or threats of violence (security guards) may place severe emotional demands on employees and lead to stress.

(3) Management factors: Employers often emphasise the importance for productivity of aspects of work organisation and job content - having clear company objectives and values, good communication, clear roles within the organisation, clear priorities, balanced level of responsibility/authority, defined relationships with superiors, well-defined work, a safe work environment. However, it is equally essential to avoid inflexible attitudes to issues such as arrangements for employee consultations and involvement, policies to prevent conflict or harassment, job design, control over workload, work pace and work schedule. This type of factor is the focus of the Luxembourg Declaration (1997) on Workplace Health Promotion, reviewed and further amended in the Tokyo Declaration (1998), cf. pages 41 and 10, respectively.

Data and trends concerning many of these kinds of exposure have been published by the European Foundation for the Improvement of Living and Working Conditions (Paoli, 1992, 1997).

These studies have further shown that the percentage of interviewed workers required (half or more of the working time) to work at high speed rose from 48 per cent (in 1992) to 54 per cent (in 1996). Similarly, the percentage of those working to tight deadlines rose from 50 per cent (1992) to 56 per cent (1996).

A special case of person-environment misfit is created by shift and night work (cf. page 18).

Complementary approaches to categorising some of these work-related stressors are based on three important models of work-related stress - the demand-control-support model (Karasek and Theorell, 1990; Johnson and Hall, 1988), the person-environment fit model (Hackman, 1977; Hackman and Oldham 1976 and 1980; French and Kahn, 1962; Kahn et al., 1964; Kahn and Byosiere, 1992) and the effort-reward model (Siegrist, 1996). First, we need to consider the *three key components* of the demand-control-support model.

Occupational demands

Occupational demands (or workload) can be too heavy in relation to the abilities, training and prerequisites of the individual worker, e.g. if the employer wants him or her to perform not optimally, but maximally. And not occasionally so, but continuously. "Lean production" may develop into "lean and mean", and eventually "anorectic" production. There are, of course, limits to the human ability for sustained maximum performance.

The demands may further be quite reasonable quantitatively, but not so from the *qualitative* point of view. An example may be the introduction in a workplace of information technology software without sufficient training of the staff. Or assigning new duties to staff that have

become redundant, without providing adequate retraining. A third example concerns the opposite situation, characterised by quantitative and/or qualitative under- or unemployment (cf. Dooley et al., 1996) which can be as stress-producing as overemployment.

It is sometimes argued that *unemployment* may be of concern for governments but not for employers. Unemployed people have no working conditions or work environment and are, accordingly, not under the responsibility of management. On the other hand, a great proportion of all those who still hold a job are chronically afraid of losing it. The latter aspect is very much part of the conditions of work and thereby by definition also a concern for all parties on the labour market.

Decision latitude, control over one's working life

The other key component of the Karasek-Theorell-Johnson model concerns "control". In the early stages of the industrial revolution, it was assumed that the workers were motivated only by the remuneration they received. During the last few decades it has become increasingly clear that workers dislike being treated as mere "production units", and suffer as a result. Reasonably well-educated adult workers expect to be treated as such, to be given responsibility, to be allowed - within reasonable limits - to decide how a specific task should be accomplished. Denying them such opportunities may mean inducing stress, particularly so if the concomitant work demands are high. In contrast, workers have been shown to perform optimally and feel good, if allowed influence and say over their own conditions of work, again within reasonable limits. If allowed to exercise such an influence, the worker is more likely to experience the situation as a *challenge,* and not as a burden.

Social support

From the dawn of history, human beings have been genetically programmed to interact with fellow human beings in mutually supportive groups. This "social support" includes co-workers' appreciation and support for the worker's self-esteem, but also support for his or her interpretation and appraisal of what one is exposed to. It further includes a sense of belonging, and tangible support. The absence of some or all of this deprives the worker of an important stress-buffering factor.

The First Report on Economic and Social Cohesion by the European Commission (1996a) relates to some important aspects of social support by indicating that "the promotion of social cohesion requires the reduction of the disparities which arise from unequal access to employment opportunities and to the rewards in the form of income. Such inequality tends to have serious social consequences through the marginalisation of sections of society, such as the long-term unemployed, the young unemployed and the poor. The incidence of poverty is also a result of policy choices affecting inter-personal income transfers".

Further to this, it is of interest that the 10 per cent least well-off Europeans receive 2.5 per cent of the Union's total income, whereas the 10 per cent most well-off receive ten times as much, i.e. 25 per cent (Eurostat, 1998). These demand-control-support dimensions have been included in a model (Karasek and Theorell, 1990; Johnson and Hall, 1988) that has been a basis for both research and preventive action in this field.

The demand-control-support model

If work-related demands are too high for the worker to cope with, and he or she is not in a position to influence and adjust important aspects of his or her conditions of work, the situation becomes stressful (the "high strain" quadrant of Figure 1 below), is likely to increase the rate of wear and tear in the organism, and will possibly lead to an increased risk

of getting ill or even dying - "the kiss of death". In contrast, even if demands are equally high but the organisation of work allows the worker to exercise a reasonable amount of control (the "active" quadrant of Figure 1), the combination spells *challenge* - "the spice of life".

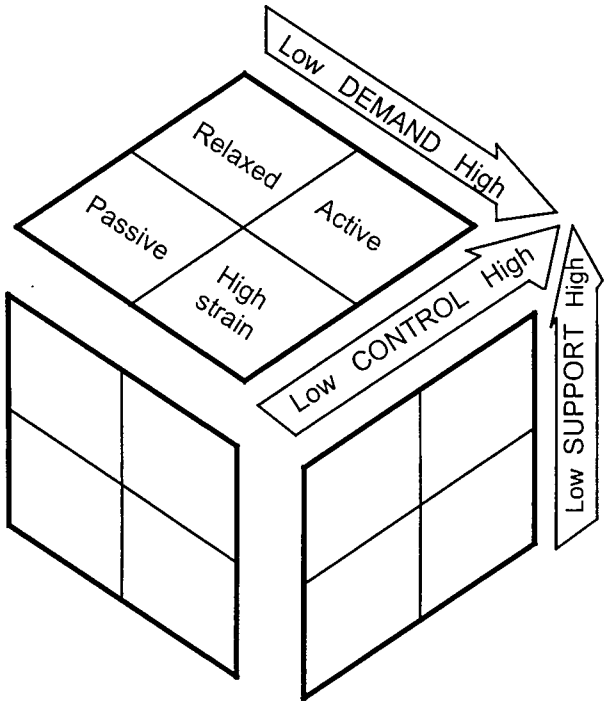

Figure 1 *The demand-control-support model (Karasek and Theorell, 1990; Johnson and Hall, 1988). Explanation: see text.*

A third crucially important modifying factor at work is the amount and quality of social support available from management and co-workers. If available and adequate, it may "buffer" some of the stressor potential created by the combined influence of high demands and low control. If, however, social support is low or absent, or the occupational social setting is characterised by discrimination or bullying, an additional stressor is added to the pre-existing ones.

In line with this demand-control-support model, work-related stress can be prevented by (a) optimising (instead of maximising) demands, (b) increasing the worker's control over his or her working conditions, and (c) increasing the availability of social support.

Person-environment misfit

Another common denominator of a multitude of work-related stressors is an unsatisfactory *fit* between environmental demands and workers' abilities, between work-related opportunities and workers' needs, and between workers' expectations and the outcome as perceived (cf. Hackman, 1977; Hackman and Oldham, 1976 and 1980; French and Kahn, 1962; Kahn et al., 1964; Kahn and Byosiere, 1992). A specific example of a *temporal* misfit could be shift work.

Shift work

Cyclic changes over a period of time are a property of all organic life and as such of great evolutionary importance. A special example of this rhythmicity is the circadian (*circa dies*

(Lat.) = about 24 hours) rhythm. Generally, circadian rhythms have their maxima during the active part of the 24 hours and minima during the inactive part. A multitude of physiological and psychological functions have been shown to exhibit circadian rhythms. From the dawn of mankind's history until quite recently, these circadian rhythms have been beautifully adapted to the environmental demands on man, favouring a variety of life- and species-preserving activities during the day, and sleep during the night so that "batteries are recharged" (Åkerstedt and Levi, 1978; Levi, 1981 and 1984; Åkerstedt, 1998a).

In today's working life, however, an increasing demand for services and the introduction of expensive and complex modern technology have created social structures which require greater human occupational activity around the clock. Such circumstances have led to some 6 million workers in EU 15 being "usually" assigned night work. Another 10 million "sometimes "work at night, while 12.6 per cent work in shifts (Eurostat, 1998).

In the case of shift work, these rhythmical biological changes do not necessarily coincide with corresponding environmental demands. Here, the organism may "step on the gas" and activation occur at a time when the worker has to sleep (during the day after a night shift). And deactivation correspondingly occurs at night when he or she is often expected to work and be alert. A further complication arises because the worker may live in a social environment that is not designed for the needs of shiftworkers. Last, but not least, the worker may have to adapt to regular or irregular changes in environmental demands, as in the case of *rotating* shifts.

Work in *two shifts* creates fewer problems, apart from those of an early start for the morning shift, which usually begins at 6 a.m. (access to breakfast? transportation?), and the effects of the afternoon shift on interaction with pre-school and school children, relatives and friends and participation in cultural, political and union activities. The most negative of all work schedules are *irregular shifts*, which often occur in, e.g. transportation services. Here, temporal, adaptational demands become part of ordinary life, with no predictability and few possibilities for coping. In addition, not only sleeping times but sleeping quarters too are changed irregularly and may be inadequate.

VDT-related work

Work at video display terminals (VDTs) is becoming increasingly common in European workplaces, and many employees report such work to be stressful, particularly if it has to be performed over a full working day. The display or keyboard may be difficult to read. Work may be sedentary. It may overload some of the muscle groups involved. The software may not be user friendly or adjusted to the worker's abilities. Or the tasks may be no less monotonous, repetitive or routine than work at an industrial assembly line.

Effort-reward discrepancy

The third major model is concerned with effort-reward discrepancy (Siegrist, 1996). There may be lack of feedback in the workplace, particularly in terms of a reasonable reward for the effort invested by the worker. This may lead to repeated and continuous dissatisfaction, feeling of unfairness, and stress.

Unclear or conflicting roles

If the work is badly organised, it may not be clear to the worker what he or she is expected to accomplish. Similarly, some work situations are characterised by conflicting demands - whatever the worker does, he or she breaks some rules or does not meet some expectations - in a catch-22 situation.

Potential stressors of future work organisation

Johnson (1997) calls attention to a number of increasingly common work organisation characteristics that *may* (but need not) decrease the employee's control over his or her conditions of work, and/or his or her social support. Thus, unstable labour markets may lead to less life course control, and fewer opportunities to create meaningful communities at work due to the instability of worksites. Centralisation of ownership may decrease the opportunity to influence decision-making, and break down the relationship between local firms and geographic sites or regions. Downsizing may lead to involuntary movement to non-union, lower paid jobs and to break up of long-term personal relationships. And computerisation may lead to more distance work preventing the formation of work-place face-to-face communities. But many of these unfavourable "side effects" can be prevented through concerted actions by the social partners and governments.

Another and even more radical change in our conditions of work is created by the increasing power executed by the *customer* over the content and organisation of work, by the demand for customisation of goods and for personalised services (Lundgren, 1999).

Increasing adjustment to customer needs and wishes, brought about by international competition, may make it even more difficult for all three parties on the labour market to influence conditions of work. Work life is no longer directed by Management in conjunction with Government and Labour.

And major enterprises are no longer self-contained organisations but consist of complex conglomerates of collaborating units with a wide variety of contractual agreements and ownerships.

And, to make it even more complex, employees can switch to and fro between several roles - as part- or full time employees, as entrepreneurs, as self-employed, or consultants.

How do we define an enterprise? What is meant by worktime? Or by overtime?

As pointed out by Miller (1998), management cares less about when and where work is being performed than about its timely and satisfactory completion, to satisfy the varying demands of the market. This market adjustment in a framework of global competition creates an ever-increasing drive for efficiency, effectiveness and speedy delivery of goods and services, leaving ever-decreasing opportunities for workers to recharge their batteries. This "time stressor" is added to a set of "cognitive stressors" comprising demands for ever-increasing competence, higher education, and ability to interpret IT-based and other instructions without support from middle-managers.

There is jobless growth in European economies, requiring more rapid, hard and effective work so as not to risk being fired, but at the same time coming ever closer to a breaking point of becoming burned out. In such a situation both workers and work organisations cease to develop, to be creative and competitive. If they try to cope by cutting down on necessary breaks, rest periods, meal-intervals, and night and week-end rests, this may lead to overburdening the workers.

What are the manifestations of stress?

Stress is a set of potentially pathogenic (disease-inducing) *mechanisms*. Its end results may include disease and death.

The mechanisms can be categorised under the following four headings but are usually concurrent and tightly interwoven.

(1) Emotional manifestations

Included here are reactions of anxiety and depression, and feelings of hopelessness and helplessness. Being exposed to work-related stressors, many workers react with some degree of feelings such as these. If a stressor exposure is intense, often repeated or long-lasting, and/or if the exposed worker is vulnerable to such exposures, his or her emotional reactions may be influenced accordingly. The temporary anxiety and/or depression grows deeper or more long-lasting and may cross over the border to disease (cf. page 24).

In addition, such an emotional state may increase the worker's propensity to interpret his or her conditions of work as noxious and his or her reactions to them as indicative of ill health.

(2) Cognitive manifestations

Under conditions of work-related stress, many workers find it difficult to concentrate, recollect, learn new things, be creative, make decisions. Again, if pronounced, such reactions may develop into a dysfunctional state, directly or through one's cognitive interpretation of the work context and one's reactions to it.

(3) Behavioural manifestations

Exposure to work-related and other stressors can trigger pathogenic health-related behaviours. Some workers use alcohol as a way to unwind, or they start (or increase) smoking (stress smoking). Others seek comfort in overeating (increasing the risk of obesity and subsequently of cardiovascular diseases and diabetes), in drugs, or take unnecessary risks at work or in traffic. Aggressive, violent or other types of antisocial behaviour may be another outlet chosen. Many of these reactions can lead to accidents, disease and premature death.

Examples of work-stress influenced, behaviour-related health outcomes concern the "principal killers" in the European Union, namely cardiovascular diseases, cancer, respiratory diseases and "external causes" (which include accidents and suicides). Together, they account for about 75 per cent of all deaths. And all of them are strongly related to work-stress and health-related behaviours and "life-styles".

In the 15-34 age group, 34 per cent of European women and 41 per cent of European men are *daily smokers*. One of several reasons for this behaviour, or for increasing tobacco consumption, or for not quitting the habit, is likely to be work-related stress.

A high *alcohol* intake increases the risk of primary liver cancer and cancers of the upper digestive system, as well as of accidents and suicidal and antisocial behaviours. Again, stress at work is likely to be one of several determinants for a high and/or often repeated intake. In the 15 EU Member States, 40 per cent of 15 year old boys say that they drink alcohol at least once a week. 23 - 61 per cent of all boys and 13 - 67 per cent of all girls of that age in selected EU countries admit having been drunk at least twice (WHO, 1996). One may worry about their subsequent alcohol consumption, if and when they fail to find a job or face work-related stress later in life.

Food, and particularly food rich in fat, is an important source of comfort and consolation. Under conditions of work-related stress, workers may overeat, gain weight, and/or increase their blood lipid levels. In addition, a major survey among European adults in all 15 EU Member States shows (Institute of European Food Studies, 1997; Lappalainen et al., 1997) that the category "lack of time", comprising "time" factors such as "irregular work hours" and "busy life-style", constitutes one of the most frequent barriers to healthy eating (EU average = 34 per cent).

(4) *Physiological manifestations*

As described above (cf. page 4), the stress reactions include a preparation for fight or flight. Take, for example, the employee who feels unjustly criticised by his or her supervisor. The employee's typical reactions may be increased blood pressure, accelerated blood clotting, increased or irregular heart rate, muscular tension (with subsequent pain in the neck, head and shoulder), or overproduction of acid gastric juice. Virtually every organ and organ system can be influenced. If such manifestations become chronic, health is likely to suffer (cf. Levi, 1981; Kalimo et al., 1987; Kompier and Levi, 1994; Sapolsky, 1998; McEwen, 1998).

Is stress harmful?

The answer is yes and no. It depends on the situation - at work and elsewhere - in which it occurs. To use a metaphor, a car stops at a traffic light and its driver "revs up the engine". In response, the engine races, leading to increased wear and deposition of soot on the valves, without the car moving from the spot. On the other hand, stepping on the gas while driving on a motorway may be sensible and productive. Stress in this latter physiological sense (*adapting*) cannot be eliminated. Without it, the process of life would cease, for the complete absence of stress means death. What needs to be avoided is intensive, chronic stress in the engineering (*deforming*) sense. Briefly, then, the relevant questions are: "How strong is it? How long-lasting? Is it appropriate to the needs of the situation? From whose point of view?"

Some examples: An employee's sadness may develop into a depression that makes her suicidal. A worker's frustration may trigger alcohol abuse, which in turn leads to occupational and marital conflicts, and/or drink-driving, and/or damage to his liver. An executive's overstimulation - or boredom - may induce or trigger him or her to chain smoke, eventually leading to chronic bronchitis, or contributing to ischemic heart disease, or lung cancer. Or a continuous state of overemployment (at work and outside it) may contribute to the development in an employee of a chronic state of nervous and endocrine over-arousal that may subsequently play a part in the development of a chronically elevated blood pressure, which, in turn, may trigger a stroke.

In addition to these more clear-cut outcomes, *work-related stress may lead to an aggravation of virtually every state of ill health and disease, whatever its main cause* (cf. page 25).

There are many options for the latter type of effect. One includes a stress-related increased *awareness* of symptoms and signs of a disease, whatever its cause or category. Another concerns the propensity to *interpret* symptoms and signs as more distressful or life-threatening. Or the "revving up" of the organism can actually reinforce the symptoms. Or, if work involvement is too high, symptoms and signs that should be brought to the attention of the medical profession are suppressed and disregarded, at the expense of worker health.

Stress and health

Heart disease and stroke

Cardiovascular diseases (CVD) are the leading cause of death and one of the most common causes of disability in the 15 EU Member States.

The combination of high psychological demand at work and low decision latitude (control) in the job spells "job strain" that in turn increases the risk for cardiovascular morbidity or mortality (Karasek and Theorell, 1990; Orth-Gomér et al., 1998). With regard to stroke, the evidence is less conclusive, but the risk factors for stroke are similar to those for ischemic heart disease, namely smoking, hypertension, poor diet and diabetes.

Reviewing the vast literature in the area of work-related stress and cardiovascular disease, the European Heart Network (1998) concludes that stress at work is related to CVD risk, particularly through high demands, low control, low social support and lack of reward for high effort. The proportion of CVD caused by work-related stress is estimated at 16 per cent of all CVD cases of male, and 22 per cent of female workers. Including sedentary work in the calculation raises the proportion of CVD cases caused by work to over 50 per cent.

Cancer

One-third of all males and one-quarter of all females in EU *develop* cancer before the age of 75. One-fifth of the men and one in ten women will *die* from cancer before that age (Eurostat, 1998).

Work-related stress per se probably does *not* cause cancer but is known to contribute to a variety of work-stress-related *behaviours* that secondarily increase the risk for that disease. The most important ones are tobacco abuse, eating too much and too fatty food, and promiscuous behaviour.

Musculoskeletal diseases

There is supportive evidence indicating that a combination of muscular tension (caused by work-related stressors) and multiple traumata to parts of the musculoskeletal system (caused by unsatisfactory ergonomic work arrangements), can contribute to frequent, lasting and incapacitating conditions of musculoskeletal pain, particularly in the upper extremities, the neck and in the lower back (Sauter and Swanson, 1996).

Gastrointestinal diseases

Early claims that peptic ulcer was work-stress-related have not been confirmed. On the other hand, it seems clear that many of its *symptoms* are found in frequent work-stress-related cases of *non-ulcer dyspepsia* (NUD). Similarly, the *irritable bowel syndrome* (IBS), with its painful spasms of the large intestine, is a rather common reaction to work-related stress (cf. Sapolsky, 1998).

Anxiety disorders

Anxiety is a common component of the stress reactions of many workers. *Anxiety disorders* include *acute stress disorder* with its pattern of anxiety and dissociation occurring during or immediately after a traumatic event, lasting for at least two days and resolving within one month. In contrast, *posttraumatic stress disorder* (PTSD) occurs in response to an overwhelming traumatic event and leads to debilitating reactions lasting more than one

month. Such reactions occur in combat veterans, victims of torture and survivors of natural disasters, but also in response to a workplace trauma in law enforcement, fire fighting, emergency rescue, retail banking (with its risk of armed robbery), workplace violence and suicide, and severe occupational accidents (cf. Quick et al., 1997)[1]

Depressive disorders

Sadness is part of the fabric of everyday life. Similarly, grief is a normal reaction to significant separations and losses. Neither equals, nor leads to, *clinical depression*, except in those - rather numerous - individuals who are predisposed to mood disorder. The latter include those with learned helplessness, who have been exposed to early separation, symbiotic dependence, or lack of tenderness combined with overprotection, and of course, those with a genetic predisposition (cf. Ottosson, 1995).

However, even in the absence of actual clinical depression, both sadness and grief, and their behavioural and/or psychophysiological concomitants, often lead to sick leave, medical consultations, and various types of medical treatments. Both are characterised by suffering and dysfunction in the individuals concerned, as well as in their families and at their workplace (cf. Levi, 1998).

Accidents, suicides

In the 15 - 34 age group, accidents and suicides represent more than half of the deaths in the European Union (Eurostat, 1998). It is likely that work-related stress is one of several factors contributing to the approximately 5 million accidents at work recorded in the EU in 1994, each resulting in more than 3 days absence, and to many of the approximately 48 000 annual suicides and 480 000 suicide attempts (Olsson et al., 1999).

Other diseases

In a recent WHO publication, Wilkinson and Marmot (1998), in collaboration with a group of other UK experts, analyse whether and to what extent social factors can influence or even determine morbidity and mortality. In their report "The Solid Facts" they conclude that

- social and economic circumstances strongly affect people's health throughout life;
- work-related stress increases the risk of disease, as do unemployment and job insecurity;
- social exclusion creates health risks, while social support promotes health and wellbeing;
- individuals may turn to alcohol, drugs and tobacco and suffer as a result of their use, but this process is also influenced by the wider social setting, which is often beyond individual control.

A great majority of the dominant diseases in today's European morbidity panorama have multiple causality. Work-related stress is one of many components (cf. Harrison and Ziglio, 1998) of such a causal pattern. Sometimes its contribution is rather insignificant. In other cases, it can play a key role in "tipping the balance", i.e. triggering manifestations of the

[1] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

disease and/or accelerating its course. Work-related stress may further modify the utilisation and outcome of therapy and health care by influencing compliance but also *the way situations, symptoms and signs are experienced and interpreted* (cf. page 15). Seen in such a perspective, *work-related stress can influence virtually every disease, its course and treatment.*

As mentioned above (cf. page 22), the pathways of such influences can be *cognitive*, in the sense that working conditions, as well as various signals in the worker's body, can be interpreted as pathogenic, and as signs of disease, respectively. They can also be *emotional*, in the sense that objectively trivial exposures and reactions are considered noxious or even life threatening. They can be *behavioural,* as manifested in acute (e.g. suicidal) or chronic (e.g. tobacco abuse) health-related behaviours. Additional effects concern *occupational accidents*. Workers who are exhausted, or frustrated, or scared may be more likely to disregard safety precautions, to take unnecessary risks or fail to observe an impending danger (Quick et al., 1997).

Work-related stress may further lead workers to suppress or deny symptoms and signs of disease, thereby delaying badly needed medical interventions. Or it may act not through the presence of negative influences but the absence of positive ones, creating a state of what could be called a psychosocial "hypovitaminosis", a deficiency disease.

Finally, the pathways can be *physiological*, through nervous, endocrine and/or immunological pathways, in their own right or superimposed on existing disease-related aches and pains.

For other reviews of such health effects, see, e.g., Levi (1975), Levi (1979), Elliott and Eisdorfer (1982), Kompier and Levi (1994), Levi and Lunde-Jensen (1996), Cooper (1996), Sapolsky (1998), Sauter et al. (1998), McEwen (1998), and Platt et al. (1999).

Scope of the problem in the EU

But is there, indeed, an environmental and health problem worth consideration by the parties on the labour market (cf. page 10)? The most recent European data relevant to this come from the Second European Survey of Working Conditions, by the European Foundation for the Improvement of Living and Working Conditions in early 1996.

Its report (Paoli, 1997) calls attention to the pronounced transformation of European working life, work organisation and workforce profile referred to above (cf. page 11).

As also mentioned above (cf. page 11), 45 per cent of the 147 million workers in the 15 EU Member States report having monotonous tasks; 44 per cent no task rotation; 50 per cent short repetitive tasks, while 54 per cent work at a very high speed, and 56 per cent to tight deadlines (Paoli, 1997).

Thirteen per cent of the total workforce complain of headaches, 17 per cent of muscular pains, 20 per cent of fatigue, 28 per cent of stress, and 30 per cent of backache (Paoli, 1997).

Although no causality is implied or demonstrated between the above conditions of work and the morbidity just described, it seems clear that

- a very sizeable share of the EU 15 workforce reports conditions of work that have been shown to be potential causes of stress and ill-health , and

- a sizeable share of the same workforce reports a number of symptoms and signs to which exposure to work-related stressors is known to contribute.

It should be in the interest of all social partners, cf. the London Ministerial Declaration (WHO, 1999) - see page 8 - to target these two sets of conditions. It seems likely that workers who enjoy their work, who consider it challenging, rewarding and contributing to lifelong learning, and who feel that they are treated like responsible and knowledgeable adults, will enjoy their work more, be more involved in their tasks and be more creative than those who describe their working life in the opposite manner. Similarly, it seems likely that a workforce with less anxieties and depressions, aches and pains, is more productive and less prone to cumulative wear and tear in their organism.

By definition, this would be an advantage for the workers themselves and for their families and other dependants. It would similarly create a competitive advantage for European enterprises and organisations. And it would place less burden on governmental social insurance systems and provision of health care.

In planning disease prevention and health promotion in this field, one issue to consider would be which general principles to apply (cf. WHO, 1999), such as the precautionary principle, legal compliance, democratic control, extended producer responsibility and the preventive principle. In establishing the policy, defined and measurable goals should be set, a timeframe determined and a scheme for monitoring, evaluation and auditing agreed, without allowing enterprises to externalise the costs of work-stress-related injuries and ill health, even when the enterprise itself is causing the costs.

High-risk groups

People are different. Every person has his or her own individual characteristics and peculiarities, and weak and strong points. Differences arise through both "nature" and "nurture".

Some determinants of individual *susceptibility* to work-related stress and ill health are "Type A" (hostile) personality, coping ability, socio-economic conditions, and social support. Other determinants are age, gender, and present illness or state of chronic disability (cf. Kompier and Levi, 1994).

The young

In the young, changes in social situation carry an increased risk for some types of people but not for others. Health and welfare problems of adolescents tend also to be overlooked. Transition into adulthood, entry into formal occupation (or the all too common European alternative of long-term unemployment) and movement away from family of origin all take place in a setting of rapid social changes and conflicting, often ambiguous, social values.

Single parents

A group likely to be vulnerable, but for somewhat different reasons, is *single parents.* The number of European single-parent families has vastly increased over the last two decades and it is likely that this trend will continue. The majority of single parents are women. The health of members of single-parent families may be poor as a result of various conditions prevailing in this type of family set-up (Council of Europe, 1998):

- the financial situation of single-parent families is very often precarious;

- the accumulation of social roles by single parents creates a physical and psychological overload that can also have repercussions on the children;

- the social and emotional life of members of single-parent families may have been thrown off balance by the pain of separation, divorce or bereavement.

Elderly workers

A third group at risk comprises the increasing number of European workers approaching retirement age. *Elderly workers* are subjected to multiple psychological and physical stressors but may lack some of the adaptive reserves available to their younger colleagues.

The present processes of dejuvenation (fewer children) and ageing (more elderly people) in the European Union will be reflected in a greying of the European workforce. The population of 40 years and over now amounts to 45 per cent. By 2015, it will probably have increased to 55 per cent. The 50 - 64 age group will increase from 32 per cent (1995) to 35 per cent by the turn of the century and to 51 per cent by the year 2025 (cf. Eurostat, 1998). And ageing is to some extent characterised as a progressive loss of the ability to deal with stress. Many aspects of the bodies and minds of old organisms work fine, just as they do in young ones - as long as they are not pushed (Sapolsky, 1998). But a significant proportion *is* being pushed (cf. Snel and Cremer, 1994).

The disabled

Almost a quarter of all persons living in households in the European Union report being at least to some extent "hampered" in their daily activities because of chronic physical or mental health problems, illness or disability. Eight per cent report being "severely" hampered, and 16 per cent "to some extent" (Eurostat, 1998).

This group at risk - the disabled - is rather difficult to define, because "disability" must always be considered in relation to both the psychosocial and physical ecosystem in which the individual is expected to function and his or her compensatory potential. As the environmental setting varies enormously from enterprise to enterprise, what constitutes a disability will differ accordingly. Among the "disabled" are the blind, deaf, physically disabled, mentally retarded or ill, drug addicts and alcoholics, those belonging to a minority group, migrants or transients. Appropriate support may not be available to many of them even though social, economic, and environmental factors may render them particularly vulnerable to acute and prolonged exposure to psychological and physical stressors.

Increased vulnerability and exposure

Increased vulnerability often coincides with an increased exposure to stressful occupational and other environments. In these settings, various segregational forces "sort out" precisely those individuals who are most in need of more favourable living and working conditions. In this way, maximal vulnerability is combined with maximal exposure to environmental stressors, increasing the risk of subsequent decline in health and wellbeing (cf. Levi and Andersson, 1974).

Legal framework of work-related stress within the EU

There are no legal provisions *specifically* aiming at work-related stress and the prevention of it and its effects. This is not surprising bearing in mind the rather broad scope of national and

EU formulations as applied to working conditions and workers' health. However, it is quite clear that both national and European formulations do *apply* to the field of work-related stress and health.

The most important and basic one is the EU *Framework Directive* (89/391/EEC). Under this Directive, employers have a "duty to ensure the safety and health of workers in every aspect related to the work", on the basis of the following general principles of prevention:

- avoiding risks;
- evaluating the risks which cannot be avoided;
- combating the risks at source;
- adapting the work to the individual, especially as regards the design of workplaces, the choices of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined workrate and to reducing their effects on health;
- developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment".

Clearly, "avoiding risks", "combating the risks at source" and "adapting the work to the individual" all relate to *primary prevention*. The formulation "in every aspect related to the work" also clearly includes the subject of this Guidance, namely all causes of *work*-related stress. Similarly, the employers' duty to develop "a coherent overall prevention policy" forms the basis for many of the proposals put forward in this Guidance for tripartite consideration.

Two EU Directives make specific reference to the need to consider mental stress when assessing risks - Directive 90/270/EEC on the minimum safety and health requirements for work with *display screen equipment*, and Directive 92/85/EEC on the introduction of measures to encourage improvements in the safety and health at work of *pregnant workers* and workers who have *recently given birth* or are *breastfeeding*.

In addition, the European Commission's (1996b) Guidance on "*Risk Assessment at Work*" points out the need to review "psychological, social and physical factors which might contribute to stress at work, how they interact together and with other factors in the work organisation and environment".

To implement this, strategies need to address the root causes (primary prevention), to reduce their effects on health (secondary prevention), and also to treat the resulting ill health (tertiary prevention). The Framework Directive emphasises particularly the first of these three preventive approaches.

As mentioned on page 4, the *Treaty of Amsterdam* states that *a high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities*. This is why this Guidance aims at *mainstreaming*, i.e. at an integration of prevention of work-related stress with other work and non-work oriented Commission policies and activities, for the benefit of both workers and enterprises.

Organisational consequences of stress

Ingvar and Sandberg (1991) have described how an enterprise and organisation, as well as their employees, can be minimally, optimally, or maximally aroused. At *minimal* levels, both the enterprise as a whole and the individual are understimulated, bored, even sleepy. Both individual and enterprise efficacy, effectiveness and productivity are low.

At *optimal* levels of arousal, awareness is high, as is preparedness for creative initiatives and flexible behaviour. This is particularly so if organisations and workers operate under conditions of mutual trust and allow a high level of decision latitude combined with responsibility.

In contrast, *overstimulation* (e.g. information overload), both in organisations and in individuals, leads to over-arousal, loss of creativity, inability to make effective decisions, confusion and collapse. All this can lead to very considerable direct and indirect costs, not only for the individual and for society, but also for the enterprise or organisation (cf. Ingvar and Sandberg, 1991; Levi and Lunde-Jensen, 1996; Cooper et al. 1996; Miller, 1998).

All work organisations, whether private or public, exist to produce products or deliver services to the society in which they operate. Their survival depends on their capacity to achieve their goals effectively and efficiently. They have a variety of resources and assets at their disposal, the most important being *the intellectual and social capital* of their employees (Edvinsson and Malone, 1997; Wilkinson, 1996). Employers and employees work for a common goal in a complex exchange relationship. Workers expect pay and other benefits in exchange for their contributions to the production of goods and services. They expect healthy workplaces, and opportunities for career advancement and development as a reward for their contributions. This "social contract" is of great importance for all parties on the labour market and for their common good. Individual health is one of several prerequisites for organisational health, and organisational health contributes to individual health through need gratification as well as opportunities for growth and development (Quick et al. 1997).

According to Mott (1972), a healthy organisation has three characteristics:

- *adaptability* - the ability of an organisation to change and to avoid becoming rigid in its long-term goal-attainment efforts;
- *flexibility*, in terms of ability to adjust to internal and external emergencies;
- *productivity*, in terms of the amount and quality of products or services provided.

Healthy organisations are self-examining and self-renewing with regard to people, structure, technology and tasks, with the various actors working in harmony. If they are not, there is a risk of organisational distress with a negative impact on valued outcomes from the point of view of both employers and employees. Quick et al. (1997)[ii] list the potential direct and indirect costs of organisational distress:

Direct costs include participation and membership. If an employee does not participate or chooses to leave the organisation, the latter pays a price for unperformed work. Examples are absenteeism and tardiness, strikes and work stoppages, and dysfunctional turnover.

Indirect costs include the following phenomena and their effects: (a) loss of vitality, responsiveness and resiliency; (b) low morale and motivation; and high dissatisfaction; (c) communication break-downs, with a decline in communication frequency and increase in distortions, (d) faulty decision-making with impaired judgement, (e) decreased quality of

work-relations with distrust, disrespect and animosity, (f) aggression and violence, both verbal and physical, and (g) "opportunity costs", by distressed employees not taking advantage of opportunities because all available energy is used for coping or survival (Quick et al., 1997)[ii].

Cooper (1998) has drawn attention to the fact that, paradoxically, the opposite of absenteeism, namely *presenteeism,* can create problems both for organisations and workers.

According to him, employees exhibiting presenteeism display four characteristics:

(1) job insecurity;

(2) a need to show organisational commitment even at the expense of their personal or family life - by working excessive hours, working at night and weekends, etc.;

(3) a need to be present at all high-profile meetings, even if their presence does not make any difference;

(4) a need to be seen to clock in early and leave late.

This can result in sick workers feeling compelled to go to work. Such presenteeism can result in (a) suboptimal performance; (b) denying the sick organism an opportunity to recuperate, (c) exposing co-workers to contagious diseases or dysfunctional behaviours, and (d) increasing the risk of long-term disability in the sick worker. All this may contribute to poor quality and quantity of performance, but also to grievances and accidents, rising health care costs and compensation payments.

Preventive action - obstacles and options

Some of the obstacles to preventive policies are probably due to the complexity of interactions within the worker-work system. If a workplace exposes its workforce to, say, lead, it is known beyond reasonable doubt that this can result in lead poisoning - always, in every worker, if he or she is sufficiently exposed.

In the area of work-related stress, things are more complicated.

True, it is well documented on a *group* level that exposure to, e.g. conditions of work characterised by high demands, low decision latitude and low social support are stress inducing and, subsequently, also increase the risk of work-related morbidity and mortality. However, the causality chain is more complex and multifactorial here than is the case in lead poisoning. There are more intervening and interacting variables, and more uncertainties about the outcome, but also *more targets for preventive action.*

To begin with, all stakeholders (cf. British Government, 1999) can target the *social structures and processes* at the workplace (Figure 2, box 2), e.g. by adjusting "anorectic" work organisations, increasing the decision latitude of the workers, and improving social support (Figure 2, box 8).

They can further try to facilitate that these - objective - structures and processes are experienced and *appraised* (Figure 2, box 2-3) by the workers in a realistic manner. A third -

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[ii] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

complementary - approach, can be to increase workers' resilience and decrease their vulnerability (Figure 2, box 4). The latter could probably be achieved by programmes to improve their fitness through physical exercise, healthy dietary habits, life-style modifications with regard to their consumption of alcohol and tobacco etc. (secondary prevention).

A fourth approach, again within the framework of secondary prevention, would be to intervene against pathogenic emotional, cognitive, behavioural and/or physiological stress mechanisms (Figure 2, box 5; counselling, medication). Tertiary prevention would mean identifying and treating precursors (Figure 2, box 6) and work-stress-related diseases (Figure 2, box 7). Further, one could try to improve

- the workers' coping repertoire (box 8),
- their sense of coherence (box 2-3-4), and
- their skills for life (box 4 and 8).

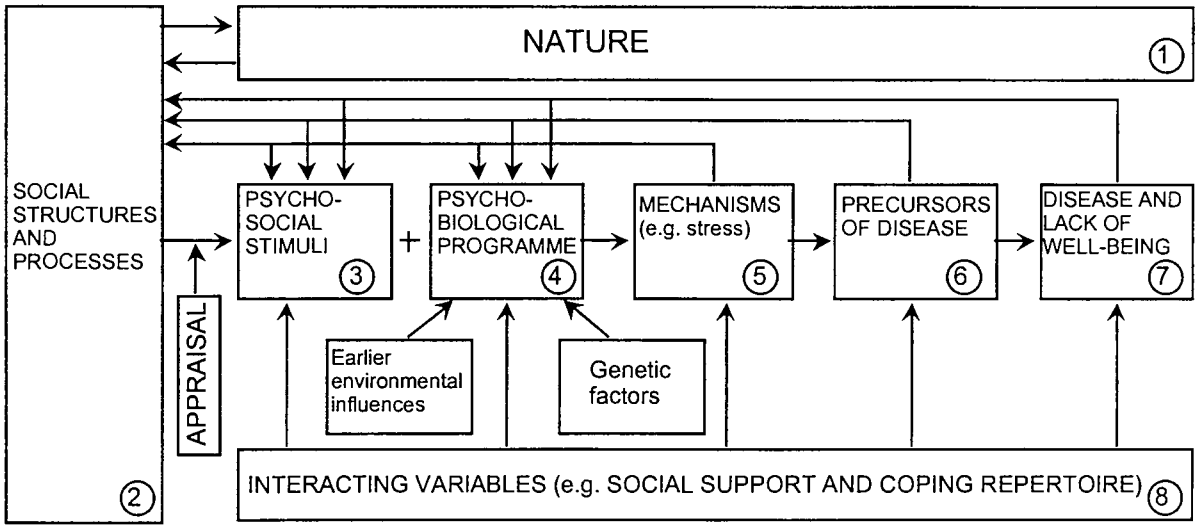

Figure 2. Human ecological system. Human element detailed (adjusted from Kagan & Levi, 1975). Explanation see text.

The latter two may need further explanation.

Sense of coherence, and skills for live

Sense of coherence (SOC), as proposed by Antonovsky (1987), is related to a "salutogenic" approach to the person-environment ecosystem. How come that many workers develop ill health if exposed to "the slings and arrows of outrageous fortune", at work or outside it, while others remain healthy or even thrive? According to Antonovsky, one of several explanations may be found in their differing SOC, acting like having (or lacking) access to nautical charts and a compass when navigating on the "ocean of life". SOC comprises three components: (a) understandability, (b) manageability, and (c) meaningfulness. If a worker understands what he or she has been, is, or will be exposed to, and why, and can do something about the exposure, and sees some meaning in the experience, it has been shown to make a difference with regard to patho- or salutogenic outcomes. SOC can be measured in surveys, and influenced both preventively and therapeutically.

Skills for life are components of the "European Network of Health Promoting Schools" programme (WHO, European Commission and Council of Europe, 1997). Within this framework, pupils are offered opportunities to learn, for example, to:

- communicate effectively,
- make decisions,
- solve problems,
- think critically,
- hold their own,
- resist peer pressure,
- manage their own worry, depression and stress,
- adapt to new environmental demands, and
- get to know themselves.

Acquiring such skills - at any age - and making use of them in working life, makes people more likely to cope more effectively with most of the work-related stressors they may encounter.

In a *comprehensive* approach (cf. British Government, 1998, 1999), the three parties on the labour market can target all relevant components of the worker-work ecosystem (Figure 2) or any part of it. Actions will have to be adapted to the needs, resources, socio-economic, political and cultural conditions etc. of a specific workplace. There are no "magic bullets" that will solve all problems or guarantee success in each specific case. It is for example, conceivable that an authoritarian, top-down application of some of these actions would be less effective (or even counter-productive) in achieving the desired outcomes, precisely because the solutions are being forced on the workers without giving them the opportunity to introduce their own experiences, needs and preferences into the process. The need for a *participative* approach will be discussed in more detail below (cf. page 52).

Another reason for the reluctance of some employers to invest in primary or secondary prevention of work-related stress may be embedded in an obsolete view of worker-employer relationships. Henry Ford (1863-1947) is said to have complained of his workers' bringing "their whole persons" to the workplace - where he would have preferred to hire "only their hands". Such an attitude can no longer be upheld, partly because of the gradual replacement of the old industrial system by the new service sector and information economy. In the latter, the worker is not selling a certain number of working hours, at a certain price. He or she is selling a certain amount of knowledge and its application to productive problem solving at work (cf. Edvinsson and Malone, 1997).

Investment for health and productivity

Additional explanations for a reluctance to invest in primary prevention of work-related stress include:

- *lack of awareness*, in one or more of the three parties on the labour market, of the risks created by work-related stressors for workers' health, wellbeing and productivity;
- a misconceived or *oversimplified view* of "stress" as equated with "rush" or time pressure;

- a strictly *partisan approach* to problem solving in the workplace, without understanding the win-win-win options for all parties if they collaborate in a give-and-take spirit instead of believing that every benefit for one party is extorted at the expense of a corresponding loss for the other parties; and

- *lack of understanding* of the developmental potential open to an ever better educated workforce in these respects.

Other inhibiting factors include (Karasek, 1992)

- schemes that direct attention away from difficult working conditions, and attempt to treat *symptoms only*;

- totally *technical* solutions imposed from the top;

- cases where *management* retains constant *control* over the dialogue.

Additional obstacles to successful interventions are

- failure to understand the need to match interventions to the particular *conditions* prevailing in the company;

- failure to adjust the intervention to fit company *needs*;

- *lack of participation* of some levels of management, and

- backing from just some, but not other departments.

Related problems include: lack of genuine senior management support; low priority given to the programmes; susceptibility to cuts when savings are required; the perception of some lifestyle initiatives as being invasive of privacy; suspicions of the companies' motives; problems in disseminating information; and lack of resources and facilities (Campbell-Keegan, 1989).

Wynne (1990) also mentions: lack of government and key agency commitment; lack of a supportive structure and culture; lack of adequate training at all levels; lack of knowledge of the potential benefits; and lack of a clearly defined responsible agency.

Some Governments have introduced - implicit - legal provisions for stress-preventing programmes. More important, however, there is now a growing awareness that the introduction of such programmes could be beneficial to all concerned, being a true *investment* - *both* for health and productivity.

The word "investment" is usually defined as a "commitment (of money, or capital, technology, human resources etc.) in order to gain a return, to spend or devote for future advantage or benefit". Seen in such a way, an *investment* does not constitute a burden, but an opportunity for increasing returns - in the best of cases, for all concerned (cf. Levi, 1998b).

PART II

THE CHALLENGE

Based on the background information provided in Part I, Part II describes the challenge to stakeholders in terms of multifaceted organisational and individual approaches as well as their key elements, targets and effectiveness.

Stress prevention programmes

As mentioned briefly on pages 29, 32 and 72, stress prevention programmes can aim at a variety of targets, and be based on various philosophies. If the working conditions - the "shoe" - do not fit the worker - the "foot" - one (political) approach is to influence the "shoe factories" (the three parties on the labour market) to manufacture a wide variety of "shoes" in different sizes and configurations to fit every, or almost every, conceivable "foot". Whenever possible, the instructions to the "shoe factories" should be *evidence based* - based on measurements of a representative, random sample of all "feet", all "shoes", and of the existing "fit" (cf. Orth-Gomér and Perski, 1999). An example of such measurements is found in "A survey of jobs posing special risks to health" by the Health Risks Study Group (Vågerö et al., 1990). This is a first - diagnostic - step in a primary prevention approach on a *population* level.

Another approach, again based on primary prevention, aims at *finding* the right "shoe" for each individual "foot" - putting "the right person in the right place".

A third approach is that the owner of each "foot" should have access to and be encouraged to utilise a "lasting device" to adjust available "shoes" to fit his or her "feet". Here, the emphasis is on *empowerment*, on active, responsible workers, able, willing and encouraged to make adjustments - within reasonable limits - to their working conditions, to improve the work-worker fit.

Presently, in the European Union and elsewhere, most work stress prevention approaches are oriented towards secondary or tertiary prevention only (cf. Stuart, 1999). Most of them involve e.g. the provision of on-site fitness facilities, smoking cessation programmes, dietary control, relaxation and exercise classes, health screening, psychological counselling, or some combination of these, packaged as a multimodular programme available to employees and possibly their spouses (Malzon and Lindsay, 1992; Cartwright et al., 1995; Kompier and Cooper, 1999). In a survey of some 3,000 worksites, the U.S. Department of Health and Human Services found that although more than 60 per cent of worksites with 750 or more employees offered some form of stress management or health promotion activity, they were usually of a secondary or tertiary prevention type. It has further been estimated that more than 75 per cent of all Fortune 500 companies and about 12,000 smaller U.S. companies operate so called *employee assistance programmes* (EAPs), usually employee- rather than organisation-directed. This "band-aid" approach would be like merely offering "corn plaster" to the owners of sore feet - or painkillers, or tranquillisers, or psychotherapy - to deal with the outcomes of the lack of fit between the worker and his or her conditions of work.

This in no way implies a criticism of secondary and tertiary prevention approaches, particularly not as long as the latter constitute a part of a larger *package* that includes primary prevention.

A multifaceted approach

An obvious difficulty with primary prevention lies in the fact that "one size does not fit all". It follows that we need a *multifaceted* approach to stressor prevention and to the objective of healthy workers in healthy companies. An attempt to design such an approach has been made by the US National Institute for Occupational Safety and Health (NIOSH) in its National

Strategy for the Prevention of Work-Related Psychological Disorders (Sauter et al., 1990). It addresses:

- *workload and workpace* - to avoid both under- and overload, allowing recovery from demanding tasks, and increasing control by workers over various work characteristics;

- *work schedule* - designed to be compatible with demands and responsibilities outside the job, addressing flexitime, job sharing and the design of rotating shifts;

- *job future* - avoiding ambiguity in opportunities for promotion and career or skill development and in matters pertaining to job security;

- *social environment* - with opportunities for employee interaction and support; and

- *job content* - with job tasks designed to have meaning, provide stimulation and an opportunity to use existing skills and develop new ones.

In the present context, *primary* prevention can be perceived as modifying relevant organisational and work environment stressors. *Secondary* prevention aims at changing individual responses to such exposures. *Tertiary* prevention attempts to minimise the amount of individual and organisational distress resulting from such exposures.

An example may illustrate the difference between these approaches. An office worker in a computer booth may face the task of feeding a seemingly endless series of numbers and letters into her computer, being paid for each correct key stroke and facing deductions for each incorrect one. If performed on a full-time basis and under time pressure, such a task may cause recurrent and prolonged aches and pains in the upper extremities and the neck. To counteract this, primary prevention could mean introducing job enlargement, job rotation or recurrent breaks in the work routine, i.e. changing the actual conditions of work. Secondary and tertiary prevention may involve, e.g., relaxation, meditation exercises or painkillers.

A key question, of course, concerns what is indeed preventable in terms of occupational stressors. Many tasks are intrinsically stressful *but still need to be performed* for the public good, e.g. night work in an emergency ward. It can further be debated how much of the stress reactions depends on excessive occupational demands and how much on individual vulnerabilities of the worker. In practice, however, there is an abundance of occupational stressors that *the great majority* of the labour force would experience as noxious and pathogenic. It is in the interest of all parties on the labour market to prevent or minimise worker exposure. If, for one reason or another, this turns out to be unfeasible, a complementary approach is to try to reduce exposure time, or to buffer or otherwise decrease the noxious effects.

Secondary or tertiary prevention can involve improving the worker's coping repertoire. If "deep and troubled waters" cannot be eliminated, the attempt here is to teach people to "swim", i.e. to cope (cf. Figure 2). *Coping* is a cognitive and behavioural process of mastering, tolerating or reducing internal and external demands (Lazarus and Folkman, 1984). It can be *problem* focused, trying to change the actual exposures, *emotion* focused, trying to modify the resulting emotions, or both.

Organisational and individual prevention

Organisational stressors to be targeted can relate to the task, role, physical conditions and interpersonal demands at the workplace. They can be approached through (Quick et al., 1997)[iii].

- o job and task redesign,
- o participative management,
- o flexible work schedules,
- o career development,
- o redesign of physical settings.

Various options for organisational prevention are discussed on page 50.

Similarly, *individual* preventive stress management (cf. Figure 2) can be

- o *stressor directed* (box 2), comprising the adjustment of the actual work organisation and environment;
- o *response directed* (box 3-4-5), including perceptions of stress, modifications of pathogenic lifestyles, relaxation training, emotional outlets, physical fitness, nutrition, and spirituality, and
- o *symptom directed* (box 5-6-7), comprising psychological counselling, traumatic event debriefing and medical care.

The organisational methods are used to "eliminate unnecessary demands while sharpening the focus of necessary demands and helping employees to manage them in healthy ways" (Quick et al. 1997). Corresponding individual approaches provide an effective complement but are usually not a substitute.

Strategy options for health promotion in the workplace

Working people spend almost half of their non-sleeping hours at work. What they do during those hours is therefore of major importance to their health. Smokers who work where smoking is not allowed are likely to reduce their tobacco consumption. Provision of healthy food in the canteen is similarly likely to be generally favourable. A worksite programme to encourage physical exercise and to eliminate or help workers cope with stress will similarly be beneficial, possibly by improving conditions and behaviours outside the workplace too (WHO, 1995). On the other hand, unsatisfactory conditions of work tend to spill over into the private life sector (cf. Gardell, 1976).

If well-planned, directed and implemented, health promotion programmes can be very effective with little investment, and their cost-benefits are indisputable. This is why enlightened companies have realised that such programmes are not a luxury but a necessity - a basic strategy in improving efficiency, because they

- o provide returns for the company;

[iii] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

- improve the quality of life of every worker; and
- are one of the most effective approaches to stimulating healthier lifestyles in the population as a whole.

Having said that, we need to know "*how to go about it*". A universal blueprint cannot be devised because the situation in each country and even in each workplace varies widely.

The major killers in Europe are no longer infections but chronic, degenerative diseases, including complex health problems with both psychosocial and physical components (WHO, 1995). Medical science has so far been less successful at treating such diseases once they have become established, partly because they have complex causal factors, some of which originate in socio-economic conditions and lifestyles. According to WHO's Ottawa Charter (1986), a range of complementary strategies would be needed, which fall into five main categories aimed at: building healthy public policies; creating supportive environments for health; strengthening community action; developing personal skills; and reorienting health services.

Similarly, a European Commission (1998a) Staff Working Paper refers to the Programme of Community action on health promotion, information, education and training, pointing out, inter alia, that

- Health promotion is concerned with healthy lifestyles and the creation of supportive environments. It involves inter-sectoral and multidisciplinary approaches in a variety of settings.

- Emphasis is placed on health determinants rather than diseases. The creation of supportive environments and healthy alternatives is fostered as well as opportunities for individuals and communities to take control over their health.

In its Green Paper "Our Healthier Nation", and its subsequent White Paper "Saving Lives: Our Healthier Nation", the British Government (1998, 1999), similarly argues for health action across both societal *sectors* and societal *levels*, targeted at (a) social and economic factors, such as employment, poverty, social exclusion; (b) environmental factors, such as social environment, housing, air and water quality; (c) lifestyle factors, such as smoking, alcohol consumption, physical activity; and (d) access to services, such as national health, social and educational ones. There is a strong emphasis on *combining* top-down and bottom-up approaches to achieve optimal outcomes.

The concept of "*workplace*" is taken here to encompass "any place where paid employment is carried out". It has further become increasingly difficult to delineate the border between work and non-work, e.g. in the case of telecommuting, but also with regard to work in the knowledge sector, where work spills over into leisure time.
In this context, there should be moves to (WHO, 1995)

- reduce disease, injury, disability and absence from work resulting from exposures to workplace hazards such as dust, chemicals and stress;

- ensure that all employees have access to occupational health services;

- facilitate the adoption of work practices and routines that contribute to the health and wellbeing of workers;

- promote healthy lifestyles such as healthy nutrition, physical exercise and non-smoking;

- co-operate with relevant interest groups and sectors in the formulation and implementation of strategies.

Within the framework of research on unemployment as a cause of ill health, it has become increasingly clear that "*a good job*" can be an important social determinant of good health, i.e. be a salutogenic factor. It can be so by contributing to (1) goal and meaning in life; (2) structure and content of the working day, week, year and life, (3) identity and self-respect of the worker; (4) social networks; and (5) material rewards (cf. Jahoda, 1979; Levi and La Ferla, 1993; Levi, 1998a; Levi, in press).

This may be why the WHO (1995) considers that *work can be a health promoting activity* in its own right. Satisfying work in a safe and pleasant environment is a source of health and wellbeing, in addition to providing income to buy food, shelter and many other prerequisites for health. At the same time, conditions of work can result in occupational accidents and diseases, a sizeable proportion of which are preventable. Last but not least, the workplace offers ready access to a large proportion of the adult population.

Overall, an estimated 10-20 per cent of all diseases are calculated to have a causal work component (WHO, 1995). In addition, there are potentially preventable health problems that may have their origins outside work but that affect the employee's ability to work. An example would be the 10 or so per cent of the male working population who could be termed problem drinkers, likely to have high absenteeism, reduced productivity and high risk of accidents, whatever the reason for their alcohol abuse. Another example is cardiovascular disease with contributory factors both inside and outside the work environment (European Heart Network, 1998).

The Luxembourg Declaration on Workplace Health Promotion

The Luxembourg Declaration (1997) on Workplace Health Promotion (WHP) in the European Union, adopted by the European Network for Workplace Health Promotion, has the following key points:

- WHP includes individual-directed and environment-directed measures from various fields. It combines the strategy of risk reduction with the strategy of developing health protection and promotion factors and health potentials (*comprehensiveness*);

- management principles and methods which recognise that employees are a necessary success factor for the organisation instead of a mere cost factor;

- a culture and corresponding set of leadership principles which include participation of the employees and encourage motivation and responsibility of all employees;

- work organisation principles which provide the employees with an appropriate balance between job demands, control over their own work, level of skills and social support;

- a personnel policy that actively incorporates health promotion issues;

- an integrated occupational health and safety service.

WHP is based on multisectoral and multidisciplinary cooperation and can only be successful if all the key players are committed to it.

WHP can achieve its aim of "healthy people in healthy organisations" if it applies the following guidelines:

- All staff have to be involved (*participation*);
- WHP has to be integrated in all important decisions and in all areas of organisations (*integration*);
- All measures and programmes have to be geared to a problem-solving cycle: needs analysis, setting priorities, planning, implementation, continuous control and evaluation (*project management*).

The European Network for WHP regards the following priorities as a basis for future activities:

- Increase awareness of WHP and promote responsibility for health with regard to all stakeholders;
- Identify and disseminate models of good practice;
- Develop guidelines for effective WHP;
- Ensure commitment of the Member States to the various policies;
- Address the specific challenges of working together with small and medium-sized enterprises.

Key elements for stress prevention at the workplace

Key elements for stress prevention can be selected on the strength of theoretical considerations, such as the demand-control-support model, and/or the effort-reward model (cf. Luxembourg Declaration, 1997 and Tokyo Declaration, 1998). Both models have been carefully researched, tested empirically and can be considered as evidence-based. Both provide a good theoretical and practical basis for choosing "key elements", such as

- environmental *demands*;
- the *control* exercised by the worker;
- the *social support* available to the worker;
- the *effort* he or she has invested;
- the *reward* obtained for this investment.

A complementary, more practice-oriented approach is provided by the Swedish Metal Workers' Union and its local branches at the ASEA Brown Boveri (ABB) and Volvo groups in Sweden. It is a typical "bottom-up" strategy, based on extensive discussions with hundreds of ordinary metal-workers, initiated by P.O. Bergström of the Swedish Metal Workers' Union, and implemented by the workers themselves with the aim of preparing and applying an evaluation instrument to promote "a fulfilling work organisation". Although it is geared primarily to industrial production, with its 22 factors reflecting the collective experience of ordinary workers at the shopfloor level, it may deserve wider consideration. It assigns varying numbers of "points" to these "factors" that jointly describe the working conditions under review (Bergström, 1999):

Factor 1: *Work organisation - authority.* The points here range up to a high of 10, assigned to a work setting where workers decide independently on their own work goals, the investment to be made, and the budget for the operations. The primary task for the manager here is to create optimal *conditions* for such decision-making. At the lower end of the scale the workers have no authority, all decisions being made by management (1 point).

Factor 2: *Work organisation - planning.* Here, those who perform the job also conduct the planning, ranging from "the individual or group carrying out the planning of virtually all operations, both long and short term" (5 points) to "all planning being carried out by special staff" (1 point).

Factor 3: *Work organisation - staffing.* The highest level (10 points) means that the work can be carried out at an optimal pace, with overtime work being more the exception than the rule. There are provisions for statutory and contractual leave of absence with adequate staffing, flexible work arrangements and options for workers to find the best way of meeting their own needs and getting the work done. At the lower end of the scale a workplace is characterised by constant understaffing, by regular overtime, and, in practice, by making statutory and contractual leave of absence either impossible or possible only by making fellow workers carry a heavier burden, with no options for worker-decided compensatory mechanisms (1 point).

Factor 4: *Work organisation - responsibility for functions.* At the positive end (5 points), administrative and service tasks are integrated with the core production. Every worker is offered the opportunity to enlarge his or her responsibilities on a rotating schedule and is offered the necessary training for this. At the lower end (1 point), all administration and service is carried out by white-collar workers, supervisors or specialists.

Factor 5: *Work organisation - development.* Here, at one end (5 points), workers take an active part in organisational development, reflected in revised job descriptions, individual training schemes and pay systems, thereby getting the opportunity to take on new tasks, exercise greater authority, expand their competence, and qualify for higher pay. At the lower end (1 point), there is no employee-powered development.

Factor 6: *Work organisation - work rotation.* If both manual and administrative tasks are rotated between the members of the working group, supported by training where necessary, 5 points are awarded. In the lower end situation, there is no work rotation whatsoever (1 point).

Factor 7: *Work organisation - group coordinator/representative.* Optimally (5 points), this assignment is part of the group's common work, is open to everyone, and is rotated between group members who have been trained for this task. At the lower end of the scale, there is no group coordinator. The work is supervised by a foreman (1 point).

Factor 8: *Work organisation - customer contact.* At the top end (5 points), most workers have frequent contacts with, and feedback from, customers, participating in marketing, sales and follow-up, including reciprocal visits. At the lower end, there are no such contacts (1 point).

Factor 9: *Work organisation - ongoing improvements.* Individual workers and the entire organisation are encouraged to become involved, with a high level of autonomy, in informal networks or organised project groups (5 points). 1 point is given when no encouragement is provided, and specialists only are in charge of all such development.

Factor 10: *Work organisation - exclusion.* At the positive end (5 points), the work organisation provides allowances even for workers who find it difficult to adjust to the overall quantity and quality performance demands characterising their working group. Everyone is

encouraged to perform in accordance with his or her capacity. At the lower end of the scale (1 point), there is no room for people with reduced working capacity. They have to leave the company, and no such people are ever recruited.

Factor 11: *Training - planning.* This factor is concerned with lifelong education and training, to ensure both personal and organisational development and lifelong employability. The range here is from availability of scheduled training for all existing tasks, based on individual training plans (5 points), to the lower end (1 point), where there is virtually no such training.

Factor 12: *Training - staffing.* To be effective, training necessitates adequate staffing levels, allowing such training to be carried out during normal working hours (5 points). In the opposite situation (1 point) staffing is inadequate. Although training is offered in principle, the load on the remaining staff becomes such that, in reality, it cannot be implemented.

Factor 13: *Technology - workplace and equipment.* Optimally, the workplace has been designed and equipped to allow challenging and developing tasks to be performed without unnecessary technical obstacles (5 points). In the opposite situation there is no access to resources necessary for individuals or groups to develop and carry out such independent and self-sufficient work (1 point).

Factor 14: *Work organisation - information technology equipment.* The workplace is well equipped with e.g. computers, fax machines and telephones, and the individual worker or work group have access to it to perform the work autonomously and independently (5 points). At 1 point, the workplace lacks such equipment for such objectives.

Factor 15: *Work organisation - information technology programmes.* At the positive end (5 points), the workplace has appropriate access to all necessary functions. All employees receive adequate training for their use and have access to adequate support. All employees have their own e-mail addresses and both the knowledge and opportunity to search for information and to communicate on the inter- and intranet (5 points). At the negative end (1 point), the equipment is inadequate and slow, no training is provided, and the opportunities are lacking.

Factor 16: *Pay system - individual component.* Here, the optimal situation (15 points) is characterised by the individual wage component to be determined by the content and requirements of the job, with a wage system that is transparent to everyone. At the other end, the individual wage component is based on the manager's assessment only (1 point).

Factor 17: *Managers - performance appraisal.* Optimally, performance appraisals are carried out at least annually by the manager in charge, with an in-depth discussion with each employee of his or her performance, abilities and qualities, and ways to improve the latter (5 points). At the lower end, feedback is reflected only in the remuneration, determined by the manager in a non-systematic, impressionistic manner (1 point).

Factor 18: *Managers - training.* Optimally, training is regular and aimed at increasing management's ability to develop both the work organisation and the employees (5 points). At the lower end of the scale, workplace managers are never given such training and are not recruited according to such competence (1 point).

Factor 19: *Managers - commitment.* At the positive end (5 points), managers at all levels are enthusiastic, actively supportive, well coordinated and ensure that decisions are implemented. At the lower end, they do not care, are badly integrated, obstructive and try to ensure that decisions are not implemented (1 point).

Factor 20: *Trade union activities - organisation.* Optimally, the local trade union is completely adjusted to the new way of organising work and with frontline representatives in every working group. The union tries to improve all relevant aspects of work organisation and conditions and works proactively (5 points). At the lower end, there is neither the interest nor the knowledge to develop work organisation. The entire focus is on getting higher pay for union members (1 point).

Factor 21: *Trade union activities - working methods.* Optimally, the trade union has developed both a willingness and the necessary competence to prepare its own written proposals and policy documents, based on discussions with all union members concerned (5 points). At the lower end, the trade union is completely passive and not even reactive to proposals regarding development of work organisation etc. made by management (1 point).

Factor 22: *Trade union activities - commitment.* At the positive end (5 points), union leaders are enthusiastic, supportive and make sure that decisions are implemented. At the lower end (1 point), they drag their feet and try to see that decisions are not implemented.

The above 22 factors are presented here as an example of a "grassroots" initiative and as food for thought, as a *menu* to be chosen from and adjusted to the conditions of a specific company or organisation.

They are quite similar to the "Quality Criteria of Workplace Health Promotion", recently published by the European Network for Workplace Health Promotion (1999 b).

A checklist of work-related stressors

The following list of 14 types of work-related stressors serves a similar purpose by stimulating ideas of what could be improved, and how: top-down, bottom-up, or - ideally - in a combined manner.

Work over- and underload

Work *over*load is one of the most common complaints across countries, occupational branches and economic sectors. This applies to the rapidly expanding and largely consumer driven *high competence* sector in the broad area of information economy, but also to the *mass production* sector and to *person-to-person services* both in public and private organisations. High competence enterprises have difficulties in recruiting enough staff to cover the ever-expanding demand for services and may be tempted to overload their staff, or to allow their highly motivated staff members to overload themselves. Although staff members here may be relatively young, well paid and working under a very considerable degree of freedom and decision latitude, their over-employment, often complicated by the additional load created by a simultaneous career as parents of small children, can increase to a level where there is a risk of burnout (cf. Maslach, 1998). Other professionals at risk include employees in person-to-person services in the educational and caring professions. During the 90s, these and many other workplaces have often been exposed to a repeated "right-sizing", the resulting work overload often being combined with a perpetual fear of losing one's job. With regard to the latter, as demonstrated in a recent review by Platt et al. (1999), the perceived intensity of *employment insecurity* is strongly associated with psychosomatic symptoms, aches and pains.

A special case of overload of a qualitative type is created by being involuntarily moved to another position (as an alternative to being laid off), without the necessary training required for the new assignment. Under such conditions, even quite a modest quantitative workload

can become very heavy, because of the lack of competence for the new job and the resulting feelings of chronic uncertainty, insecurity and failure.

The most obvious case of work *under*load is *unemployment*, still widespread in the European Union and regarded as one of its major challenges. Other examples concern people working part-time involuntarily because no full-time employment is available. This is so for 20 per cent of those who have part-time jobs (Eurostat, 1998).

Insufficient time for good job performance

According to Parkinson's Law, "work expands so as to fill the time available for its completion". A memo can be prepared in three years, three months, three weeks, three days or three hours. If it has to be completed in, say, three minutes, it may still be a memo, but the experience for an ambitious worker may be very frustrating, knowing that he or she had to deliver a substandard product. A teacher teaching ever larger classes, a geriatric nurse attending to ever larger groups of demented patients, and the surgeon having to speed up his operating performance to meet ever increasing demands, may similarly experience considerable stress. As will the pupils, the clients and the patients.

Discrepancy between responsibility and rights

An example of this could be a lorry driver carrying toxic chemicals across the European continent. He may be painfully aware of the dire consequences of a traffic accident but sees no way to reduce his speed or increase the number and length of breaks for rest and sleep, because the merchandise has to be delivered "just in time". Accordingly, he has a heavy responsibility but very restricted rights to adjust to this responsibility. Another example would be an auxiliary day care nurse in charge of toddlers. She may be obliged to supervise the children's crossing of several heavily trafficked streets to reach the town park. As the group becomes bigger and bigger, she faces a situation where she has no choice but to take some risks with regard to guiding her children through aggressive traffic flows.

Unclear instructions and role

An example: the manager tells a subordinate to "fix" something. The manager may, or may not, know what he or she means by "fix", and the subordinate can see quite a number of possible interpretations and may lack the opportunity to ask, or the courage to do so. Sometimes it may further be unclear who is in charge of what - the specialist in the staff position, or the generalist in the line. Sometimes, several workers are asked to perform the same task, which ends up being done twice - to their great dismay when they find out. Or they rely on the other party doing the job, which may then remain undone. The opposite extreme - with very rigid roles and hairsplitting decisions - can also be both inefficient and stress provoking.

Unclear organisational and personal goals and meaning

An obvious goal of any *commercial* activity is to secure an acceptable and sustainable bottom line. One of the *individual* worker's goals in carrying out a work task is to receive acceptable remuneration for it. Important as these goals may be, they are usually not of the kind that make employees tick. Aware of this, many commercial, public and other organisations have formulated a "mission statement" indicating what should be achieved, for whom, and why. Top management often takes for granted that these statements are not only well known by all staff members, but also accepted, and enacted. This may not be so. In addition, overriding goals may have to be broken down into several sets of second order goals. The interpretation of the latter may be conditioned by a variety of explicit and implicit vested interests. Not

surprisingly, the resulting multitude of vectors may create a confusing pattern for the conduct of individual workers and group of workers. Even if the goals are clear and agreed upon, the meaning of various operations and achievements and their interpretations may not be clear to the individual worker. Objectively, a janitor at a hospital may have a very important role to play for the smooth operation of the entire organisation, but may not have been made aware of this. If he sees his work as meaningless and worthless, this is likely to have a negative impact both on the quantity and quality of his performance and on his health and wellbeing.

Lack of support

Support, and the lack of it, can originate from superiors, fellow workers and subordinates. In some organisations, only peak performances are appreciated and rewarded. If so, competition between employees may become part of the game, and fellow workers see little reason to help one another because eventually everyone who helps someone else is at the losing end. At the same time, many tasks presuppose that people *do* collaborate with one another, for the common good. Furthermore, under conditions of "right-sizing", workers may become increasingly unwilling to help and support one another, because "one man's meat is another man's person". Another example of unnecessary stressors in this category relates to managers who consider absence of criticism to be the same as praise. If they offer any feedback at all, this tends to be negative only. Last, but not least, it is often forgotten that the boss too needs some support. It is usually lonely at the top. And never hearing any praise from his or her co-workers, except from those who have a vested interest in expressing it, may become very frustrating.

Lack of appreciation or reward

As already mentioned, absence of criticism does not equal appreciation or praise. Neither does praise replace tangible rewards for a job well done. If an employee feels that his or her efforts and corresponding achievements are not matched by rewards in terms of appreciation, praise, remuneration, status, advancement etc., stress is created (cf. Siegrist, 1996; and page 20).

Lack of influence/decision latitude

This is a crucially important factor. Workers may be both able and willing to tolerate a high workload, provided they feel that they are trusted to decide how best to cope with it. The production targets may have been set by management, after negotiations with labour, but the individual workers may be allowed, or even encouraged, to decide how to reach them. This creates a *challenging* work situation, instead of a *distressing* one.

Exposure to violence or threat of violence

Such exposures may be part of everyday working life for employees who work alone, or in close contact with the public, or with valuables and cash, or with people in distress, or in environments increasingly "open" to violence (cf. Chappell and Di Martino, 1998). Even if the threats do not materialise, the verbal abuse and impending danger may still be highly stressful.

Discrimination and bullying

Member States of the European Union are facing continued and probably increasing immigration, also from non-European countries. Presently, some 11 million non-nationals belong to the latter category (Eurostat, 1998). Particularly under conditions of high unemployment and relative poverty in the host country, competition for limited, decreasing or

insufficient resources may trigger xenophobia, discrimination, persecution, and bullying against members of any "outgroup". This can be based on race, religion, ethnicity, sex, or virtually any other characteristic. The manifestations of these actions can be active (verbal and physical abuse, exclusion from networks etc.), or passive, in the sense of denying someone a work permit or a job, in spite of the applicant having all the relevant qualifications.

Noxious physical work exposures

These may influence the workers directly, through their physical, chemical and biological impact on the organism. The distress and suffering caused by such exposures may add to their stress-inducing effect. Last but not least, the *fear* of potential pathogenic outcomes may act as an independent stressor. If, for example, the worker knows, believes or suspects that he or she is exposed to physical, chemical and/or biological pathogens, the resulting stress can be as powerful as any caused by the actual physical exposure (cf. Levi, 1984 and 1997; Giel et al., 1990).

Inadequate capacity and skills

Occupational skills have their "expiry dates" no less than foodstuffs. In the absence of *lifelong learning*, the intellectual capital (Edvinsson and Malone, 1997) of workers soon becomes obsolete, even in people with a high formal educational level. In addition, the rapid and accelerating restructuring of working life may force workers fearing unemployment to accept and adjust to positions they have not chosen, and/or lack the qualifications for, or are under (or over) qualified for. In addition, much of today's education and training is badly geared to today's and tomorrow's needs (cf. Reich, 1993). As a result, many workers have to accept tasks that do not match their capacity and skills.

Mistakes causing high costs or risking other people's life or health

In many professions, e.g. operators of nuclear plants, air traffic controllers, and health care staff, small misjudgements and mistakes can have detrimental effects both economically and in terms of other people's health and wellbeing. If such situations are combined with heavy work pressures, tight deadlines and constant fear, the effects are likely to add up to be highly stressful.

Risk of losing one's job

Across the European Union, job tenure is becoming an increasingly rare commodity. Many workers have fixed-term contracts (presently 12 per cent of the EU's working population, Eur-Op News, 2, 1999, p. 7), are doing agency or part-time work, are freelancing or are self-employed (Platt et al., 1999). Some countries and their parties on the labour market have tried to protect at least some parts of the workforce by agreeing to, or legislating on, a "last hired, first fired" system. Even so, large proportions of the workforce live under conditions of constant, or fluctuating, or increasing, threat of redundancy. For the young, healthy, well educated and resourceful part of the workforce, particularly for those in the information economy sector, this may create a challenge rather than a burden. For those who have not yet entered the workforce because of young age, low educational level, disabilities or refugee status, and for those who have been marginalised because of being 55+, or lacking the necessary qualifications, or having the wrong sex or ethnicity, this threat is very real. And some 18 million EU citizens are already unemployed.

The situation is further complicated by the fact that *national social security systems* are not adjusted to the present situation in and outside the labour market.

Throughout this Guidance the point being made is that these and other stressors can be reduced and in many cases even prevented. Some matter-of-fact approaches to achieve this are described below.

Health promotion, and prevention of stress-related disease

Theoretically, environment and lifestyle-related disease may be prevented at any of the links in the pathogenic chain (cf. Figure 2, page 33). Thus, environmental stressors might be eliminated, reduced, or avoided by adjusting, e.g. the work environment, organisation, and content. Preventive interacting variables might be promoted (e.g. by improving social networks, or developing coping abilities). Pathogenic emotional, cognitive, behavioural and physiological mechanisms might be counteracted (e.g. by drugs blocking adrenergic beta-receptors, tranquillisers, antismoking campaigns, psychotherapeutic counselling). Precursors of disease might be detected and treated so that they do not progress to overt disease. And positive health might be promoted in "Healthy Workplaces" initiatives.

In order to safeguard workers' rights, prevent the perpetuation of harmful or useless measures, limit losses to the community's or enterprise's purse, and advance knowledge for the future, any of these actions (and others) ought to be *evaluated* when implemented. Such evaluation is the modern, humane substitute for nature's slow and cruel "survival of the fittest", and is a means of enabling man to adapt with minimal trauma to a rapidly changing work environment and to control some of its changes (Kagan and Levi, 1975; Levi, 1979, 1992). An everyday application of this at a micro level is Internal Control (see page 67). But let us start by considering both macro and micro level approaches.

Organisational prevention

Reviewing studies of a wide range of workplace health promotion interventions and their outcomes, Platt et al. (1999) conclude that "stress management interventions targeted at individuals can be effective in reducing physical and psychological symptoms. Organisational outcomes, however, require interventions which address the sources of stress in the total work setting".

Even so, good intentions do not necessarily guarantee good outcomes. In addition, what may be good from one point of view (say, economy) or for one party (say, the enterprise) may not be good from another point of view (say, health) or for another party (say, the employees). Having said that, it is still both feasible and highly desirable to try to improve conditions of work. However, if poorly implemented or mismanaged, such interventions can lead to increased rather than reduced stress. Briefly then, all this speaks in favour of a *well planned, comprehensive intervention* which needs to be monitored and evaluated.

Quick et al. (1997)[iv] have described organisational prevention under the following five headings:

- *Job redesign,* by restructuring one or more work core dimensions to improve person-job fit;
- *Participative management*, by increasing the individual's amount of discretion and autonomy at work;

[iv] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

- *Flexible work schedules,* as a means of adjusting structural conditions of work to enhance the individual's control and discretion;

- *Career development*, aiming at individual growth and development through self-assessment as well as analysis of opportunities within the organisation;

- *Design of physical settings.*

Below, they will be discussed one by one.

Job redesign

The job characteristics model (Hackman, 1977) forms a basis for attempts to optimise skill variety, task identity, task significance, autonomy and feedback. The first three of these dimensions are likely to lead to work being experienced as meaningful. Autonomy increases the likelihood of perceived responsibility for work outcomes. Feedback provides knowledge of the results of work activities. All this promotes high internal work motivation, high quality work performance, a high level of satisfaction with the work, and low absenteeism and turnover.

According to Hackman (1977), this can be achieved by applying the following five approaches:

1. *Form natural work units* of people whose work is interrelated;

2. *Combine tasks,* by despecialising a job and allowing individuals to do several different activities;

3. *Establish client relationships*, enabling the worker to interact with the people who use or are affected by his or her work;

4. *Use vertical loading,* by allowing the worker more responsibility and discretion.

5. *Open feedback channels*, by increasing feedback from the work process to the worker.

Like other components, job enrichment is no magic bullet. For workers whose work is stimulating and offers a variety of challenging tasks, additional job enrichment might lead to overstimulation. If, on the other hand, conditions of work are monotonous, repetitive, with a short work cycle, then job enrichment can be beneficial, although *task redesign* may be a more attractive approach (Quick et al., 1997).

Participative management

Participative management has several aims. One is to incorporate the ideas and knowledge of individuals and groups into the decision-making processes of the organisation. There is no other effective manner to promote such incorporation of intellectual capital (Edvinsson and Malone, 1997) and other intangible assets but to promote decision latitude, combined with responsibility. The other aim is to allow people to make their own adjustments to their work conditions because of their first hand knowledge of these conditions. The third one concerns the worker's resulting *experience* of being in control, demonstrated to be a component of both wellbeing and productivity.

Leaders can be participative, autocratic or laissez-faire. The participative ones have been reported to improve productivity, reduce turnover, absenteeism and tardiness, reduce

grievances and improve management-labour relations, increase the readiness to accept change and improve the quality of decision-making (Tannenbaum and Massarik, 1950). It still means formulating goals and standards that need to be met, but allowing the workers to choose the route to and the methods for reaching these goals, within defined limits. Such decentralised decision-making, at the lowest practical organisational level in peer groups is a component of *quality circles* (Ouchi, 1981).

An important component of participation is referred to as *empowerment*, which is about sharing power within an organisation. Empowerment is about a sense of self-efficacy, personal beliefs in one's own competence, performance, effectiveness and responsibility. Empowered employees may experience more challenge from the demands for responsibility and self-management that accompany the empowerment process, but they have less distress associated with a restrictive and narrowly defined work environment (Quick et al., 1997). The introduction of empowerment should be gradual and be accompanied by corresponding competence development and availability of necessary resources. Ideally, the approaches should combine top-down and bottom-up strategies. Empowerment is not something created "by order of the commanding officer". It should also allow sufficient time, provide incentives and rewards, stable working relationships, shared goals and values, sufficient training and education, and attention to conflicts of interest.

Flexible work schedules

Every employee has to fulfil several social roles which may be competing with one another. He or she may be a spouse, a parent of small children, the son or daughter of an elderly and frail parent, a member of several formal and informal networks, in addition to being an employee in a work organisation. Rules and regulations governing the latter role may help to accommodate the total set of demands or can make this impossible. Flexitime, flexible working hours, telecommuting, and a four-day working week are ways to accommodate such demands, while taking into account that some tasks are interdependent.

Flexitime aims to reduce the stress of commuting in congested urban locations, reducing the commuting time by avoiding peak hours and by allowing better adjustments to requirements outside the occupational setting, such as delivering and picking up children at day care nurseries.

Telecommuting allows employees to work one or more days at home and the remaining days at the workplace by using electronic means of communication, again facilitating flexibility and attention to both work and non-work obligations of the employees.

Career development

In most cases, but not all, it may be in both the employer's and employee's interest to maximise the employee's potential over time by regular reviews of past, present and future options for development, and to implement some of these options. To achieve this, one of Sweden's leading insurance groups (Skandia) has signed an agreement with its trade unions to secure continued investment in professional development. (It also offers the same type of package to other companies as a *competence insurance*, in which an enterprise and its employees jointly allocate money to pay for regular full-time continued education, e.g. one hour of education for every ten hours of work.) If employees leave the enterprise prematurely, they can bring their own investment, but not the corresponding investment made by the enterprise. This creates an interesting form of a social contract, likely to increase mutual loyalty, trust and competence development. This is complemented by regular self-assessment of the individual's needs, interests, skills, abilities, and knowledge and a corresponding analysis of the opportunities provided by the enterprise.

Design of physical settings

Quick et al. (1997) point to six functions of physical work settings, namely to provide shelter and security, social contact, symbolic identification, task instrumentality, pleasure, and growth. Adjustments to promote health and prevent disease in this field can include *structural* changes (with regard to points of entry and exit, wall placement and height, ceiling height and angle, windows and lighting, floor angles and elevations, and furniture, fixtures and fittings), *acoustical* changes (such as wall coverings, finishing and insulation, cushions and draperies, floor coverings and finishing, ceiling coverings and finishing, plants and natural additions) and *lighting* changes (such as natural light, placement of artificial lights, intensity of lighting, colour of interior furnishings, plants and natural additions).

There is no doubt that stress at work can be created by unfavourable *hygienic factors*, whose existence can create distress and ill health. Correcting them is, of course, a necessary but not sufficient component of any stress prevention programme.

Frequently considered physical workplace factors are: noise and vibration; machinery and tools; odours, illumination, climatic factors; and buildings and premises (Levi, 1984):

Noise and vibration

Modern technical machinery has considerably decreased the physical burden of work. An unfavourable side-effect of this largely favourable development has been the creation of noise and vibration. Noise hampers the intelligibility of speech and masks acoustical signals. It disturbs attention and concentration. The importance of noise as an irritation and disturbance in working life has been amply documented. A great deal is also known concerning the harmful effects of noise on hearing. Far less is known, on the other hand, about the connection between work noise and other aspects of physical and mental health.

It seems likely that, in the dawn of history, noise often served as a signal of danger or was otherwise a characteristic of a situation requiring muscular activity. In order to cope optimally with a challenging or hostile situation or even to survive, the human organism responded to noise by preparing for action, inter alia, with a non-specific adaptive reaction pattern, namely stress.

It still does. Many studies have documented the influence of noise on various nervous and hormonal functions. The impacts on these functions lead in turn to secondary reactions in a large number of organs and organ systems.

The connection between noise and *disease* other than hearing loss is considerably less certain. It is true that, in animal experiments, it has been proved that noise is capable of producing more or less permanent disruptions of various bodily functions. But the noise levels in these studies have often been extremely high, besides which the sensitivity of various animal species to noise differs appreciably from that of man. Epidemiological studies, however, provide some support for pathological effects. But these findings have to be interpreted with caution. Working environments with high noise levels may have *other* negative characteristics too, and various selection phenomena may be at work among these groups of employees, just as in other cases.

Closely related to noise is *vibration*. This is caused by various impact, rotary and impact rotary tools. Many of these cause *local* vibration, including choppers, hammer drills, pneumatic and riveting hammers, ramming machines and many others (Polezhayev et al., 1974). In mechanised transportation and in several industries, workers are exposed to *generalised* vibration. Here, not only the vibrating object but also the body and its organs are

displaced in various planes, horizontally, vertically or at any angle. Both types of vibration clearly have unfavourable effects. They involve a considerable expenditure of nervous energy and cause fatigue. Extreme exposure may even lead to disorders of the nervous and vascular systems and of internal organ activity.

Machinery and tools

There are two kinds of muscular activity: *dynamic* (rhythmic work) and *static* (postural work). The latter rapidly leads to painful fatigue and is a waste of energy. In spite of this well-known fact, many workers work in one or more of the following situations:

- in stooping or unnatural body positions, flexing the trunk or the head;
- with their arms constantly extended, either forwards or sideways;
- in a standing position, where sitting would be preferable;
- in a working area of insufficient height, making it difficult for them to see clearly what they are doing and to keep a comfortable body posture;
- with hand grips, levers, tools and other equipment which are difficult to clasp, locate or move, particularly in simultaneous operations;
- with display instruments (pointers, dials, counters) that are difficult to read with regard to absolute values and changes.

All this contributes strongly to the stress of working life, acts as a threat to health and wellbeing and decreases productivity.

Odours, illumination, climatic factors

Workers frequently attach great importance to *odours*. Although their significance as warning signs of technical incidents must not be overlooked, there is no simple relation between the strength and/or unpleasantness of a smell given off by a substance and its possible toxicity (Levi, 1981).

Another focus of common complaints concerns insufficient or too strong and, in particular, glaring *illumination* which may lead not only to fatigue but also to headache, dizziness and an increased risk of accident.

A third area of complaint concerns exposure to *temperature extremes*. The human organism tries to maintain a temperature balance which heat, radiation, convection and conduction often disturb. Thus the temperature balance may be disturbed by standing on a cold concrete floor, sitting on a cold metal chair or handling cold tools.

Air moisture is of great importance for the experience of temperature. Deviations from optimal levels (40 to 60 per cent) occur in many work environments. Another important factor concerns *air velocity*, which is usually recommended to be 0.2 m/s unless the temperature is high and greater velocities are preferred.

Whether or not climatic conditions cause stress and distress depends further on the *interaction* between the heaviness of the work to be performed, the physical and mental state of the worker, and the existing temperature, humidity and velocity of the air.

Buildings and premises

It has been said that buildings act as a "*third skin*" (the second being clothing) - a selectively permeable interface between organism and environment, affecting and being affected by both. Buildings also have social functions. They permit, encourage or even impose the congregation of people and their interaction, or at least their sharing of the same experiences. Their cellular structure may also be used to maintain boundaries between persons (Abercrombie, 1976).

Further, buildings have a *symbolic* value. Churches, government offices and city halls are usually intended to be beautiful or at least impressive. This is not generally the case with industrial buildings and premises, because, consciously or unconsciously, less consideration is given to the aesthetics of the buildings erected for industrial purposes. It is hardly surprising that this in turn influences the way the worker sees himself, his workplace, and the interaction between the two.

The same applies to the more immediate environment of the individual worker. The physical design of the workplace can *obstruct communication* between fellow workers (distance, walls). This may decrease group cohesion and support, while safety requirements are easily threatened. Many jobs are carried out by single workers, isolated from the rest of the community. This easily results in social deprivation. An important element in this is that the worker loses the opportunity to demonstrate to other people his existence and achievements and the quality of his performance. All this can lead to alienation, apathy and work-related stress.

The opposite extreme may be equally stressful, namely when the situation is characterised by *lack of privacy*, e.g. in an open plan office. Here, the worker may be forced to interact with a large number of people, without any opportunity to withdraw from communication or conflict even for a short period.

In summary, enterprise buildings and premises can have a powerful influence on those working in them, for good or bad. As Winston Churchill once put it, "first we shape our buildings; thereafter they shape us".

Combined environmental stressors; reciprocal impact of occupational and other influences

More often than not, every type of exposure and its possible effects is considered separately. However, real-life conditions usually lead to a *combination* of many exposures. These might become superimposed on each other in an additive way, or synergistically. In this way, the "last straw" may be a rather trivial environmental factor which, however, is added to a very considerable pre-existing environmental load.

Social structures and processes outside work can influence health and wellbeing in the work setting as well as outside it. For example, although inadequate housing is in no way the only factor making it difficult for a shiftworker to sleep during the day, attention to housing factors may facilitate his or her going to sleep and staying asleep.

The following are other examples of structural factors outside work, the effects of which need to be considered and their modification evaluated (Levi et al., 1982).

Long distances between workplace and home, as well as inadequate public transport, force the worker to spend much time commuting, often in crowded, dangerous or unpleasant conditions that are difficult to control.

Insufficient or inadequate day care for pre-school children may considerably add to the stress experienced by working parents and their children.

The design of industrial and office buildings can make it difficult or impossible for *disabled workers* to fulfil their duties.

Briefly, conditions outside work can influence stress, health and wellbeing. Similarly, work-related stress can result in a *spill-over* into the workers' existence outside work. Studies have shown that narrow and socially isolated jobs create passivity or social helplessness. Workers who never participate in planning or decision-making, who rarely co-operate with or talk to other people during the workday, who are doing the same old routine day in and day out, probably learn to act in basically the same way in situations outside work as well. One set of studies shows that when the exercise of discretion in work is curtailed by spatial, temporal or technical restrictions built into the work process, the individual's ability to develop active relations during his or her spare time will diminish. People whose jobs entail serious constraints with respect to autonomy and social interaction at work participate far less in those organised and goal-oriented activities outside work that require planning and co-operation with others (Meissner, 1971; Gardell, 1976; Westlander, 1976).

An early survey of the Swedish male labour force showed that workers doing psychologically unrewarding work participated much less in various organised leisure activities than people who did not have such jobs. This finding was especially true for cultural, political and trade union activities of a kind which require active participation and communication with others. The leisure activities of the workers examined centred on the nuclear family, sports and outdoor life, and the television set (Karasek, 1981). This study was repeated six years later. It was found that those whose jobs had changed during the period to give them a richer job content and a greater say in the job showed increased participation outside the job in voluntary associations, study and trade-union and political activities. In contrast, those whose jobs had become more narrow and confined during the period participated less in such outside activities (Karasek, 1981).

As emphasised throughout this Guidance, most of these negative working conditions are accessible to primary preventive interventions, by all players on the labour market.

Improving relationships

Preventive and promotive interventions in this area include (Quick et al., 1997)[v]:

- *Role analysis* concerning clarity, consistency, too many expectations or too few, fit between expected and enacted role with regard to superiors, peers and subordinates;

- *Goal setting*, by specifying major areas of responsibility and performance goals in each area, as a way to help eliminate anticipatory stressors by focusing attention on goal accomplishment instead of an uncertain future. Such goals need to be: reasonable, challenging, measurable, timebound, and individual or group specific, with feedback to alleviate uncertainty and conflicting or confusing expectations, and be based on a negotiated agreement between employees and management;

- *Social support*, as a way to create social capital and to buffer the impact of stressors, providing individuals with a perception that they are cared for and loved, esteemed and

[v] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

valued and that they belong to a network of communication and mutual obligation (cf. pages 17 and 18);

- *Team-building* as a way to promote social cohesion and resolve interpersonal conflicts by promoting communication, team-goals, member interaction and interdependence. Mentoring and newcomer socialisation are among the interventions to be considered;

- *Diversity programmes*, to ensure that the diversity of talents and perspectives within an organisation are valued and used.

Improving shiftwork schedules

As mentioned above (cf. page 19), temporal demands made on the shiftworker by his or her work schedules can carry a considerable stressor potential. Although it may be impossible to eliminate such demands, because a number of goods and services need to be available around the clock, there are ways to improve shiftwork schedules and conditions (cf. Åkerstedt and Landström, 1998; Åkerstedt, 1998b) - thereby probably improving the health and wellbeing of shiftworkers and improving their performance. To achieve this, the social partners might wish to consider the following measures (Rosa and Colligan, 1997):

- Avoid a permanent (fixed or non-rotating) night shift;
- Keep consecutive night shifts to a minimum;
- Avoid quick shift changes;
- Plan some free weekends;
- Avoid several days of shift work followed by "mini-vacations";
- Keep long shifts and overtime to a minimum;
- Consider different lengths for shifts;
- Examine start and end times;
- Keep the schedule regular and predictable; and
- Examine rest breaks.

Examples of successful intervention programmes

Many examples of successful interventions can be found in International Labour Office (1992); Murphy et al. (1995); Cooper et al. (1996); Kompier and Cooper (1999); Breucker (1998); European Network for Workplace Health Promotion (1999a), Gründeman and Vuuren (1998). Below are some illustrative examples.

The Swedish T50 Programme

One such example (Kvarnström, 1992) concerned a group of female blue-collar workers with very high sick leave rates, high personnel turnover, high incidence of musculoskeletal disorders and low productivity. They were given the opportunity to improve their skills through an ambitious apprenticeship system and to put this improved competence to proper use through work rotation and enrichment, including increased responsibility for product control and packaging, planning of material, and coordinating production.

The main components of this intervention were increasing (a) competence and (b) decision latitude.

The intervention resulted in dramatic decreases in absenteeism and turnover, and an equally dramatic increase in productivity and work satisfaction.

The success of this programme for all concerned led the enterprise - the Swiss-Swedish Asea Brown Boveri (ABB) - to utilise the experience to formulate its T50 programme, aiming to reduce the lead time - the time needed from order to delivery - by 50 per cent, implicitly by applying the principles inherent in the Swedish Work Environment Act and the European Commission's Framework Directive. Again, this produced a win-win situation, with increased productivity, improved worker competence, improved job satisfaction, and better occupational health and wellbeing.

The Belgian PRA Programme

Another example (Van Emelen, 1996) of such an intervention comes from the Belgian Ministry of Labour, whose housekeeping (cleaning) department was found, in an external audit, to be "ineffective, inefficient, have a high sick leave rate and a low quality output".

Instead of abolishing this cleaning section (61 mostly female employees) and contracting a private enterprise (as recommended by the auditor), two workgroups were created to work out the reasons for the problems and eliminate them in a systematic manner (described in more detail on page 69).

Thirty-four of the employees participated in conducting the analysis. More than 60 work-related problems were identified by the two groups, and visualised in a comprehensive "problem tree" (roots = structural problems, top = output and outcome results or risks, leafs = intermediary problems).

In this interactive manner, a good understanding was achieved of the problems, their causes and consequences. Based on this, the participants formulated 50 concrete proposals aiming at solving the problems, and subsequently carried them out, in cooperation with the management. This Participative Risk Analysis (PRA) has since been successfully used in some 50 workplaces (Van Emelen, 1996). This "bottom-up" approach makes use of employee knowledge and experience, the group dynamics in problem analysis and solving, and the commitment of the participants to make this happen. It is also an exercise in applied democracy.

The A2000+ Programme

A third example of a successful intervention made use of a *salutogenic* (health-promoting) approach. Telia Företag AB - a big Swedish telecommunication company - had not noted any pressing environmental or health problems among its employees. Instead, their A2000+ Programme, initiated and conducted by Sandberg and Nygren (1999), aimed to improve the already satisfactory social conditions in the workplace, and to further increase creativity, motivation and participation among their employees with a focus on their communicative skills and knowledge of group dynamics.

The team leaders received two weeks of training for their task with subsequent additional guidance every second to third week, to support the team leaders in their everyday situations.

In a next step, these "salutogenic agents", in their interaction with the other 995 participants of this study, applied what they had been taught. The latter were asked, at the beginning of

the study and two years later, about their perception of and expectations regarding the organisation and the specific work group each of them belonged to. Health was assessed by six separate instruments monitoring depression, stress, type A behaviour, and general health.

Sandberg and Nygren (1999) found that the salutogenic intervention had been very favourably received by both management and employees. Significant positive changes were demonstrated with regard to codetermination, participation, self-efficacy, information handling and effectiveness. There was no significant change in the participants' perception of the work organisation as a whole. Health was found to be excellent at the first measurement and slightly less so two years later - but still remained high in comparison with the general population. This slight decrease could possibly reflect the increased awareness among team leaders, especially the female ones, of the importance of communication and group dynamics, including some of their demanding and frustrating aspects.

The authors propose that in future studies this comprehensive approach should be further enriched by additional emphasis on employee lifestyles, conflict handling and mediation.

Look after your Employee

Other initiatives, private or public, include, e.g. the "Make Health your Business" award scheme launched in Wales, followed by the "Look after your Employee" scheme in England, workplace charters in which public and private organisations introduce at least three of ten specified health promotion initiatives. The "Look after your Employee" initiative was organised by the Health Education Authority in London and included, inter alia,

- adoption of practical *management practices* to provide staff with an environment conducive to good health;
- *identification of sources of stress*, and ensuring *better support* for employees with problems at work;
- *provision of information* for staff about the "Look after your Heart" workplace project and other aspects of healthy living, using the house newspaper or magazine;
- introduction of a *physical activity programme* and encouraging staff to take exercise;
- promotion of *sensible drinking*, and development and implementation of a comprehensive alcohol policy;
- provision of opportunities for all staff to have *health checks* and appropriate follow-up.

A tripartite approach

To achieve an optimal outcome both in terms of health and productivity, stakeholders who should cooperate in such joint ventures should include (WHO, 1999):

- government ministries and enforcement agencies;
- employers and their organisations;
- employees and trade unions;
- financial and insurance institutions;
- occupational health services;

- o non-governmental organisations and professional associations , and
- o education and training institutions.

Some of these stakeholders deserve to be presented in more detail.

Employees and their representatives

To find out where the shoe pinches, one may wish to ask the person who wears it. It follows that the employees who are exposed to the pros and cons of a workplace are the real experts with regard to problems and assets, abilities and needs, challenges and ways to cope. If encouraged to have a voice and a say, they can often contribute to win-win solutions to problems created by their work environment, and the content and organisation of their work. If treated like ignorant or naughty children, they are likely to behave accordingly. If treated with respect and dignity, they are likely to perform as well as they can in collaboration with all concerned. This can be true for the individual worker at the shop floor (cf. page 67, internal control), up to the level of the board of his or her national trade union (cf. page 10, Belgian agreement), and the ETUC. In the best of cases, trade unions and the individual members do not wait for proposals to be made by management but act *proactively*, trying to create their own agenda, identifying problems as well as areas for potential improvement and proposing steps to be taken (cf. pages 45-6).

Employers' associations and individual companies

Many work organisations and many employers' associations similarly do not wait for problems to develop and become serious but try to nip them in the bud or - better still - to promote healthy workers in healthy companies. One hundred such examples are found in a compilation by Ahlkvist (1992) at the Swedish Confederation of Employers, of companies who have actively tried to create "healthy work" for their employees. A corresponding list of the "100 Best Companies to Work for in America" has been compiled by Levering and Moskowitz (1994). This list was updated and published by FORTUNE in 1998, and updated again in 1999. Related approaches, also in the United States, are the "100 Best Companies for Working Mothers" and "The Best Companies for Minorities". A recent initiative has been taken by the Swedish SPP Insurance Group under the heading of "The Connection", namely between conditions of work, workers' health and a healthy enterprise economy, inviting Swedish organisations to compete for an award by applying, more or less, what this Guidance is about.

Almost without exception, these initiatives have the combined aim of promoting workers' health and wellbeing *and* healthy profits for the company - with a fitter workforce with less sickness absence and which is competent, motivated, happy and efficient. If successful, such policies create benefits for all stakeholders, and do so for a rather low cost - a true "win-win-win" situation.

Occupational health services, health insurance agencies

Occupational health services and public and private health insurance agencies can also act as a springboard for innovative activities. An example from Germany is the Confederation of Sickness Insurance Companies (BKK) who has developed, in collaboration with the WHO, *The European Information Centre of Company Health Promotion*. The Centre provides a data bank and a newsletter publishing examples of good practice, in addition to a network of experts for research and implementation of health promotion in the workplace.

Are health promotion strategies effective?

Common criteria for evaluating the efficacy of health promotion strategies are, e.g.

- o change in various indicators of health and behavioural risk factors of employees:
- o psychosocial conditions at the workplace;
- o accident rates;
- o absenteeism;
- o staff turnover;
- o productivity;
- o satisfaction and wellbeing of the workforce; and
- o changes in health care costs.

An analysis of possible effectiveness could be geared to the three components of health promotion implicit in the WHO's Target 25:

- o the reduction of work-related *disease and injury*;
- o the encouragement of more *satisfying* work in a safe and pleasant environment as a direct determinant of health; and
- o making workplaces more *supportive* of changes in personal lifestyles in workers' day-to-day lives.

But are the approaches described above likely to be effective in these respects? Let us examine them one by one.

Tackling health hazards at work, with the aim to reduce hazardous exposures. Such effects have been well documented with regard to occupational safety measures (Cox, 1993) and to ergonomic workstation redesign to reduce musculoskeletal health problems (Spilling et al., 1986).

Promoting work as a positive influence. Can such influences stimulate personal growth and contribute to improve the health of employees? Would there be positive spin-offs for the company, and/or the country? It has been demonstrated that lack of content in the job and lack of control over planning and working methods increase the risk of work being experienced as constrained and meaningless, thus leading to dissatisfaction and stress, which, in turn, could result in impaired physical and mental health. The existence of such relationships has recently been summarised by Wilkinson and Marmot (1998), confirming an earlier analysis of 19 case studies on stress prevention through work reorganisation in many countries, compiled by the International Labour Office (1992). Compilations have also been published in the United States, see Pelletier, 1997; Pelletier et al., 1998).

This illustrates the point made by Edvinsson and Malone (1997), according to whom there has been a dramatic shift from the 19th century on with regard to factors that promote growth, profits and added value in enterprises, organisations, and nations. Initially, the major assets were the *real estates* being the basis of agriculture. With the introduction of industrialism, *machines and raw materials* took over most of this role. In 1992 in the United States, investments in *immaterial values* became greater than in material ones (Lev, 1996). Today, the immaterial types of investments are increasingly becoming the *dominating* ones. No enterprise can survive without a gradual renewal and efficient utilisation of the intellectual capital of its employees, or without their commitment to and involvement in the company's

goal. These are some of the reasons why investment in values such as these should be seen not only as a cost to be carried by an organisation, but also as an *investment* for the future, as an indispensable *asset*.

It follows that development of competence, social capital and enhanced opportunity to make decisions represent not only important determinants of occupational safety and health but also important *investments* to promote organisational health, success and potential for the future. Such investment includes an increase of worker control through a combination of democratic participation by the local union in strategic decisions and the setting up of (semi-autonomous production groups in which workers participate in decisions about production. This leads both to richer job content, increased dignity and feelings of solidarity among the workers and decreased psychological stress, and to improved product quality, customer service, flexibility, and initiative taken by employees and capacity to meet deadlines.

Supporting lifestyle changes. Here the emphasis is on interventions to promote healthy lifestyles, particularly popular in North America (Fielding and Piserhia, 1989; Fielding, 1990) and demonstrating high-cost effectiveness. Examples of interventions (cf. Breslow et al., 1990) include

- group and self-directed lifestyle-change activities;
- awards; and
- workplace climate shifts to support behavioural changes (such as smoking policies that favoured non-smokers, and healthy food choices available in the cafeteria and vending machines).

Other examples of lifestyle interventions are attempts to shape healthy eating patterns (Poulter and Torrance, 1993), to control hypertension (Foote and Erfurt, 1983; Alderman et al., 1983; Logan et al., 1979), and programmes tackling hypertension, obesity and smoking, using social support offered by clubs, plant-wide "smoke-outs" and the setting up of a "buddy" system.

European programmes

But much remains to be done (WHO, 1995).

In 1990 and 1991, the WHO investigated the extent of lifestyle-related health promotion activities in Europe by surveying the 30 largest work organisations in each of 34 countries. 67 per cent of the organisations reported anti-smoking activity, 65 per cent alcohol and drug programmes and 23 per cent activities concerned with maternity care. The most widely used method was *health counselling*, followed by the use of *pamphlets and literature* (Malzon and Lindsay, 1992). Systematic evaluation of these and related programmes was the exception rather than the rule.

An overview provided by the European Foundation for the Improvement of Living and Working Conditions of "Innovative Actions for Health at Work in Germany, Greece, Ireland, Italy, the Netherlands, Spain and the United Kingdom from 1989-1991" showed a low level of actions that could be classed as innovative. Furthermore, awareness of both general and workplace health promotion issues was low in all seven countries, with the exception of The Netherlands (Wynne, 1990; Anderson, 1990/91).

Across Europe, a WHO study demonstrated that only 50 per cent of the workforce had access to occupational health services, leaving 100 million workers not covered by *any* services, and a further 100 million who had only basic coverage. In contrast, in Sweden some 70 per cent of all employees have such coverage. In addition, most Swedish workplaces also have *safety representatives* with the authority to influence working conditions. Even so, most services seem to be involved primarily with *physical* health hazards and safety measures only. In the psychosocial field, much remains to be done, even in the Nordic countries where some initiatives have been taken.

Three reviews

In his review, Burke (1993) differentiates between two approaches to minimising the adverse consequences of occupational stress: (a) making individuals more resilient and (b) minimising workplace stressors. His review considers 10 studies reporting the findings of *organisational*-level interventions designed to reduce stress at work experienced by managers and professionals. Each focuses upon a distinct approach, including reduction in role stress, increased job autonomy, reduced work-family conflict and reduction in stress following downsizing and rationalisation (e.g. mergers). Overall, the author concludes that the interventions have a beneficial effect and points out that targeting of "individual coping responses may be less useful than higher-level strategies involving groups of workers or entire units or organisations."

A review by Murphy (1996) covers only *stress-management* interventions, i.e. techniques designed to help employees modify their appraisal of stressful situations or deal more effectively with stress symptoms. Sixty-four studies met the criteria for inclusion: workplace based, assessing a health outcome and published after peer-review. The most common techniques were muscle relaxation, meditation, biofeedback, cognitive-behavioural skills and combinations of these techniques. While effectiveness was found to vary according to the health outcome that was addressed (e.g. cognitive-behavioural programmes were more effective for psychological outcomes, but muscle relaxation was more effective for physiological outcomes), *combined* techniques were more effective across health outcome measures than single techniques.

According to Platt et al. (1999), it is interesting to note that none of such interventions was consistently effective in producing effects on job- or organisation-relevant outcomes, such as absenteeism or job satisfaction. To produce benefits with regard to these types of measures, stress interventions will need to alter or modify the *sources* of stress in the work environment.

The latter is the main focus of the Commission's Framework Directive as well as of this Guidance.

A comprehensive proposal at national level

A recent Green Paper by the Swedish Working Life Delegation (1999) has chosen such a comprehensive and cross-sectoral approach to the promotion of healthy workers in healthy workplaces. Its recommendations to the Swedish government include a number of what is referred to as "relay-race batons" to achieve this. Among them are:

- employment for all citizens of working age; and prevention of social exclusion;
- adjustment of social security legislation to changing conditions of working life;

- adequate funding for life-long learning;
- healthy worklife education for managers;
- occupational health services in all workplaces;
- guidance and support for SMEs;
- quality assurance of work environments;
- investment in research, and monitoring;
- legal protection against discrimination, bullying and harassment;
- creation of a national resource centre for the latter purpose.

PART III

THE ACTIONS

Part III of this Guidance is devoted to the full scope of options for action at various levels. It includes Belgian, Norwegian and Swedish examples from the workplace, diagnostic measures, and primary, secondary and tertiary prevention approaches, targeting both individuals and organisations.

Internal control - a feasible way to create a healthier workplace

Some players seem to have the impression that prevention of work-related stress must be complicated, time consuming and prohibitively expensive. This need not be so. One of the most common-sense, down-to-earth and low-cost approaches to such prevention is known as "Internal Control".

Basically, internal control simply means introducing a "self-correcting loop" into the worker-work eco-system. It means "learning from experience", in a systematic step-by-step manner.

The first step, in any workplace, in any sector, in any part of the European Union and elsewhere, is to identify whether there is, indeed, a problem in the working population - in terms of incidence, prevalence, and severity of work-stress-related ill health - e.g. headache, sleep disturbances, difficulties in concentrating, short temper, upset stomach, absenteeism, job dissatisfaction, low morale etc.

If the answer turns out to be that the incidence, prevalence, and/or severity is low, there may still be reasons to anticipate such problems in the future, given present developments. If this is not so either, it is, of course, permissible either to stop the inquiry at this stage, or, better, to discuss how *positive* occupational health could be promoted (cf. page 62).

If, on the other hand, an unacceptable type or level of morbidity is found in a well-designed and administered survey, or in available reliable statistics, the next step is to try to identify working conditions that co-vary with this morbidity, and to discuss with all concerned which one(s) of these conditions, if any, are likely to be necessary, or sufficient, or contributory in causing such a morbidity. The analysis should, of course, also consider whether such condition(s) are *accessible to change*, and whether such changes are *acceptable* to the concerned parties.

In a third step, an intervention (or an integrated package of interventions) is designed and implemented in an attempt to eliminate, as far as possible, the root causes of the problem(s). Whenever possible, such an intervention should be implemented using a combination of top-down and bottom-up approaches. This means that top management should, indeed, agree to what needs to be done, but also that the employees on the shop floor or in the office and their representatives propose, agree to and actively participate in such activities.

The outcomes of the implementation need to be *evaluated*, preferably in terms of (a) stressor exposures, (b) incidence and prevalence of ill health, (c) indicators of wellbeing, and (d) quality and quantity of production of goods or services. Also to be considered are the costs and benefits of the intervention(s) in (e) economic and other terms.

If the intervention shows no effects, or negative ones, in one or more respects, one should reconsider what should be done, how, when, by whom and for whom. If, on the other hand, outcomes are positive, this may justify continued or expanded endeavours along similar lines.

Basically, it simply means *learning from experience.*

Norway

In two Nordic countries, Norway and Sweden, this process is part of the respective Work Environment Act and its implementation. In *Norway*, the Internal Control Regulation came into force in 1992, and is now mandatory for *every* enterprise in the country, regardless of trade and number of employees. The Norwegian Work Environment Act states (Article 12) that work shall be organised so that it allows for the development of competence, social contacts and opportunity to make decisions but also to avoid repetitive work and work that is paced by machine or assembly line. Internal control in this context is *defined* as systematic actions at the enterprise level to ensure and document that the activities for health and safety are performed in accordance with requirements specified in the Work Environment Act, in order to reduce stress and occupational ill health, injuries and workplace absenteeism (Saksvik and Nytrø, 1996).

The Norwegian Internal Control Regulation was inspired by the success of voluntary measures of similar scope in Norwegian off-shore oil companies, especially with regard to safety control systems on platforms in the North Sea. Traditional on-site inspections by the Labour Inspectorate were considered too costly, which is why this system for *self-regulation* and systematic follow-up was introduced. Its philosophy is related to Total Quality Management (TQM). However, whereas TQM focuses on products and services fulfilling certain specifications and customer expectations, Internal Control embraces the domain of health, safety, and occupational environment (cf. Nilsson, 1997).

Both approaches are based on substantial "*organisational learning*" taking place, utilising knowledge acquisition, information distribution, information interpretation and implementation and organisational memory, with strategic problem formulation, active experimentation, learning and relearning. The organisation thereby acquires the ability to learn, unlearn, or relearn, based on its past behaviours and their outcomes. Norwegian experiences so far (Saksvik and Nytrø, 1996) indicate that internal control as implemented in a representative sample of 915 workplaces has, indeed, contributed to increased health, improved environment and safety awareness, clearer lines of responsibility, more and/or better risk assessments, better integration with TQM, better documentation, and new strategic plans, in 42 to 69 per cent of Norwegian enterprises.

Sweden

In its guidance on internal control, introduced in Sweden in 1993, the Swedish Trade Union Confederation (Nilsson, 1997) describes the process in the following seven steps:

- establish and document routines to be followed;
- distribute tasks, authority and resources;
- identify and monitor risks and deficiencies;
- formulate goals to be achieved;
- formulate, implement and evaluate action plans;
- provide introduction, instruction and other information;
- provide follow-up routines and improve them as required.

These activities are based on the Swedish Work Environment Act and on the subsequent regulation by the Swedish National Board of Occupational Safety and Health (AFS 1996:6). According to the latter, internal control is defined as "systematic planning, execution and follow-up to secure the fulfilment of the requirements regarding the work environment". It

should cover "all conditions of importance for the work environment" (see also National Board of Occupational Safety and Health, Newsletter, 2/94, pages 1-2).

Both in Norway and in Sweden, the main responsibility to conduct internal control rests with the employer. To live up to this responsibility, the employer needs resources, authority and knowledge. A work environment policy has to be formulated, and annual reports issued on occupational conditions and health. Action plans have to cover all aspects of work, including physical, mental and social aspects, work organisation, training, working time, rehabilitation, and adjustment of conditions of work.

Belgium

A related approach has been described and applied in *Belgium* by Van Emelen (1996), cf. page 59, and referred to as Participative Risk Analysis (PRA), comprising the following steps:

1. A "coach", trained for the PRA purpose, introduces the problem area to one or more representative groups of employees. The latter are given 3-5 cards each and asked to write down, as succinctly, briefly and correctly as possible, the main problems, if any, in their workplace.

2. The coach collects the cards and reads them to the group, one by one, asking for additional explanation and joint discussion of the problems, their causes and consequences.

3. Based on this discussion, the coach writes down every original or reformulated problem on a flip chart, for additional reflection and discussion. In this way, at the end of this first joint meeting, problems, as well as their causes and consequences, have been identified collectively.

4. Following this, the coach designs a "tree structure", putting cards and flip charts in the shape of a tree, with the fundamental and structural *causes* being the *roots*, and the outcomes/consequences being the top - the coach, however, being free to fill in missing links, to be discussed in a second joint meeting.

5. The latter aims to (a) identify possible *clusters of problems* and (b) proposing *actions* for solving them. Every group member receives an alphabetical list of problems and is asked to evaluate them in terms of (a) the *importance* of each problem, (b) its *frequency*, and (c) the *feasibility* of possible solutions. By multiplying the figures for importance and frequency, one gets a measure of the *impact*. The subsequent joint search for solutions, still within the framework of the second meeting, includes a brainstorming session, during which every suggestion is written down and discussed.

6. Summarising the results of these steps in the two meetings, the coach now prepares *a logical scheme*, visualised on a chart, to be used as a summary report of the entire analysis - for the coach and the groups, as a basis for subsequent actions and as a tool for subsequent evaluation.

7. At this stage, a concrete *action programme* is designed, describing the PRA method used, the participants of the process, the problems identified, the problem tree, the categorisation of problems in clusters, the action chart, and the concrete action programme.

This "PRA Method" has since been applied in many Belgian organisations and enterprises, both public and private.

Stress risk assessment tools

The European Foundation for the Improvement of Living and Working Conditions commissioned the preparation of a Guide for Small and Medium-Sized Enterprises on "Stress at Work: Causes, Effects and Prevention". This guide (Kompier and Levi, 1994) proposes the following materials to be applied for such assessments:

- checklist for *job content* (19 items)
- checklist on *working conditions* (16 items)
- checklist on *terms of employment* (13 items)
- checklist for *social relations at work* (10 items)
- questionnaire on *stress* at the worksite (45 items), and
- questionnaire on *health* complaints (13 items).

These tools are available in most EU languages. They, and related ones, should be seen as a *menu* to choose from, for diagnostic purposes. When the diagnosis has been established, therapeutic and/or preventive interventions could and should follow as described above, when deemed appropriate. Their outcomes are then *evaluated,* using the same diagnostic procedures.

There are literally thousands of checklists, questionnaires and rating scales available for this purpose in all EU languages, in addition to the ones mentioned above and below. The important issue here is to choose a set which both fits the "climate" of the organisation under study, and has documented *validity* (it measures what it intends to measure) and *reliability* (across individuals, settings and occasions). It is also important to use it in an appropriate manner and to sample the population under study in such a way that the results represent the entire target population. A useful description of selected instruments employed in four Nordic Countries has been published by Lindström et al. (1995) for the Nordic Council of Ministers (see page 71).

Diagnostic measures

A great variety of measures have been described, proposed and applied to measure many aspects of work-related stressors, individual and organisational stress responses, individual and organisational modifiers of such responses, and the resulting outcomes in terms of individual and organisational health and wellbeing.

For the sake of comparability, it would be desirable to have a set of standard measures for all these variables. The measures should ideally be transculturally and transsectorally applicable and should fit the wide variety of branches and professions and tasks within each branch. They should further have high *validity* (i.e. they should measure what they intend to measure) and *reliability* (i.e. they should provide similar answers irrespective of who is administering them, in what setting, and how many times).

In reality, all this may be difficult to achieve. A practicable first step would be to consider the sets of measures described above (Kompier and Levi, 1994), available in the nine EU languages of that time. A caveat in this context is that not all language versions of these

instruments have been tested with regard to validity and reliability and found to be satisfactory in these respects. Although the items are available in a number of other EU languages, it does not automatically follow that they have retained the original validity and reliability. The reader may wish to approach the European Foundation in Dublin (for address etc., see page 72), for specific and updated information regarding this.

Other relevant sources of instruments to be considered are

- the Report of the Joint ILO/WHO Committee on Occupational Health: Psychosocial Factors and Health: Recognition and Control. Geneva: International Labour Office, Occupational Safety and Health Series No. 56, 1986.

- International Labour Office: Preventing Stress at Work. Geneva: ILO, Conditions of Work Digest, Volume 11, No.2, 1992.

- Kompier M and Cooper C (eds.): Preventing Stress, Improving Productivity. London and New York, Routledge, 1999.

- Quick JC, Quick JD, Nelson DL and Hurrell, Jr JJ: Preventive Stress Management in Organizations. Washington DC: American Psychological Association, 1997.

- Lindström K et al.: Measurement of Psychological and Social Factors at Work. Copenhagen: Nordic Council of Ministers, 1995. (Nord 1995:39; ISBN 9291207683).

- European Network for Workplace Health Promotion (Breucker, G.): Questionnaire for self-assessment. Essen: BKK Bundesverband, 1999c (available in English and German).

However, not even the above sources of measures will be able to satisfy all needs, simply because the latter vary from country to country, from branch to branch, and from workplace to workplace. This is why it may be justified to make use of locally available methods of measurements of proven validity and reliability in the national or local setting where they are to be applied, even if some of the options for comparing outcomes between countries and other groups are lost. The reader may wish to consult with a national university department of occupational safety and health, or the national Labour Inspectorate.

A further option is to use the instruments applied by the European Foundation for the Improvement of Living and Working Conditions in the Foundation's first and second surveys (Paoli 1992, 1997). The latter of the two covered all of the present 15 EU Member States, so the instruments are available in all languages presently (1999) relevant, in addition to having undergone necessary validity testing. An improved set is presently being prepared for a future (third) European Survey. These instruments are available through the European Foundation in Dublin. The reader is welcome to approach the European Foundation for the Improvement of Living and Working Conditions, Wyattville Road, Loughlinstown, Co. Dublin, Ireland; tel: +353-12043100; fax: +353-12826456; e-mail: postmaster@eurofound.ie.

From assessment to intervention

One of the cardinal sins in the area of occupational health is to conduct elaborate studies, describing in considerable detail the work-related stress of the employees, its causes and consequences - and then leave it at that. To diagnose, but not to treat and even less to prevent. If this is done it adds insult to injury.

In accordance with the philosophy of the European Commission's Framework Directive, the primary task of every employer would be to try to *eliminate the stressor(s),* i.e. the root cause(s) of the work-related stress reactions. If, for example, it seems likely that most of the stress phenomena in a workplace are due to work overload in combination with a low decision latitude, a logical first step would be to promote a more *optimal* set of work demands (thereby decreasing the overload), in addition to allowing and promoting a higher decision latitude, e.g. with regard to the planning and organisation of the work to be performed. In this way, two crucially important work dimensions are improved, aiming at decreasing the stressors, the resulting stress reactions, and the subsequent stress-related ill health.

Presently, as shown above (cf. page 37), if any action at all is taken in EU Member States, it is usually aimed at modifying the stress response (secondary prevention) or the stress-related health outcome (tertiary prevention). An example of the former is providing opportunity for physical exercise, meditation, relaxation, or cognitive restructuring. Other approaches commonly chosen by European enterprises are to encourage employees to stop smoking, consume alcohol in moderation only, and eat healthy food etc. Of course, these are highly commendable approaches. They are useful but probably insufficient, because they do not address the core causes of the stress reactions, and focus only on symptoms or outcomes.

Another common weakness in some of today's work-related stress prevention and management activities concerns the rather low level of ambition chosen to alleviate work-related stress. Examples are having a consultant presenting a brief lecture or two, or providing posters or leaflets in "one-off " approaches. True, this may be a first step to increase awareness among the employees about issues worth being addressed, but basic stress-producing structures and processes at work will, of course, remain unchanged. Even if the intervention restricts itself to aiming at health-related behaviours such as overconsumption of tobacco, alcohol, unhealthy food etc., more ambitious and sustained programmes are usually required to be effective (cf. Platt et al., 1999). Otherwise, stressed employees with their aching muscles, palpitations, anxieties and depressions will soon realise that such simplistic and short-term approaches will not suffice to alleviate their stress.

Another common drawback is that programmes to reduce work-related stressors, stress, and ill health are conducted *only* through one type or another of employee assistance programmes (EAP), without active participation from management at all levels, and even less so from labour unions and the workers themselves. Or programmes are administered top-down - 'we know what is good for you, you simply comply and everything will be fine'. This does not work very well with adult workers who know their situation much better than any consultant, coming from the outside for a week or two and then disappearing forever.

Primary prevention for individuals

The focus of this guidance is on primary prevention at the national and organisational level. However, as a complement, the three parties on the labour market may also wish to promote and facilitate corresponding activities for, and by, individual workers. Here are some of the options (Quick et al., 1997)[vi]:

Stressor-directed primary prevention:

- managing the personal *conditions* of work (e.g. planning and time management, social support);

[vi] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

- managing personal *perceptions* of and reactions to stressors and stress (e.g. cognitive restructuring, changing determinants of Type A behaviour patterns).

Response-directed secondary prevention:

- managing one's *lifestyle* (e.g. maintaining a balance between work and leisure, moderation with alcohol, tobacco etc.);
- *relaxation* training (e.g. meditation, autogenic training, progressive relaxation);
- *emotional* outlets (e.g. talking with others, writing or acting it out);
- *physical* exercise;
- *spirituality* and faith;
- *nutrition*;
- *sleep*.

Symptom-directed tertiary prevention:

- career counselling;
- traumatic event debriefing;
- medical care.

Three targets, four questions

Interventions can be directed at the *psychosocial and physical stressors* in the workplace. They can further aim at already manifest *work-related ill health*, absenteeism and impaired work capacity, or at intervening variables preceding such outcomes. Or they can target *promotion of positive health* at the workplace (Geurts and Gründeman, 1999).

Quoting a study by Wynne and Clarkin (1992), Geurts and Gründeman (1999) base their analysis on the following four key questions:

- *What are the motives?* Are they based on (a) a humanistic-idealistic quest for "The Good Working Life" and "The good Society"; (b) a wish to improve the health and wellbeing of the working population; (c) promotion of autonomy and democratic values; or (d) a concern for company profit and competitiveness (cf. Gardell, 1980)? Or a combination of any two, or more, of these motives?

- *What is the nature* of the intervention? Is it (a) to eliminate as many of the relevant stressors as possible, (b) to modify some, or all, of their ill effects by increasing worker resilience, coping ability, and/or social support; or (c) to promote positive health, by using the salutogenic potentials of good working conditions?

- *Who are the participants?* Are they: management; unions; workers; in-house or external occupational health professionals; and/or actors from other sectors whose actions could have a beneficial effect on workers' health?

- *What are the company characteristics?* Such as: private or public; size and location(s) of organisation; producing goods and/or services; exposed to international competition; oriented towards routine mass production; person-to-person services, or information economy; consumer-driven; static or dynamic?

Enlightened self-interest

Quick et al. (1997)[vii] have proposed *five guiding principles* for such programmes:

1. *Individual and organisational health are interdependent*, in the sense that organisational stressors can create substantial ill health among employees, and distressed employees can create substantial organisational dysfunction. It follows that organisations are unlikely to achieve a high level of productivity and adaptability without vital, motivated, and healthy workers. Similarly, workers may find it difficult to maintain their health and wellbeing in unproductive, rigid, unchanging, and/or overdemanding organisations. Individual resources should meet organisational goals and requirements, but organisational resources should also meet individual needs. This person-organisation fit, necessitates a *reciprocal adaptability* .

2. *Leaders have early responsibility for individual and organisational health* (as is indicated in the European Commission's Framework Directive). Although this responsibility can be based, partly, on altruism, it can also be rooted in enlightened self-interest - workers who are highly distressed and/or suffer from work stress-related ill health are likely to be less productive than those who are not, and *vice versa.*

3. *Individual and organisational distress are not inevitable.* Although many of the demands of working life *are* inevitable, distress resulting from noxious working conditions is not. It is not "the price of success" or "a necessary evil of work". It follows that all parties on the labour market, but in particular the employers, may wish to identify and remedy preventable sources of organisational and individual distress.

4. *Each individual and organisation reacts uniquely to stressors.* There are considerable individual differences in the demands that are *perceived* as stress inducing, in the *response* to these demands, in the *toleration* of the resulting distress, and in *response to anti-stress* interventions.

   However, from a *practical* point of view, it is very difficult to adjust the conditions of work and the work environment to the differing abilities and needs of every single individual worker. This dilemma can be dealt with in two ways. *First*, in a top-down approach, one can target particularly those occupational stressors, whose pathogenic potential is pronounced and concerns most workers. *Second*, in a bottom-up approach, every worker can be allowed and encouraged to adjust - within reasonable limits - his or her work situation to improve its fit. By *combining* these approaches, healthy workplaces for healthy workers can be promoted, allowing all players to choose the right mix of organisationally and individually oriented actions.

5. *Organisations are ever changing, dynamic entities.* This is why actions cannot be seen as one-off events, even if shown to work as expected in a short perspective.

Working life is ever changing. So are the organisations operating in its many settings, and the individuals who fulfil a variety of roles in them. An expanding organisation on a bullish market is adjusting in a manner different from the same or another organisation downsizing on a bearish market or on the verge of being shut down. Similarly, an employee may exhibit widely varying abilities, needs and expectations over his or her career cycle.

[vii] Adapted with permission from Quick et al: Preventive Stress Management in Organizations. Washington, D.C.: American Psychological Association, 1997.

It follows that actions need to be adjusted, and readjusted, in line with what has been described in the section on Internal Control (cf. page 67).

Safeguards for individual workers

Prevention of work-related stress and subsequent ill health needs to be adjusted to national, local and enterprise conditions, preferences and culture. It follows that there are *no quick fixes or simple cookbook rules* that can be applied across all 15 EU Member States. Rather, this Guidance should be seen as a *menu* to choose from, based on tripartite negotiations in the 15 national labour markets within the European Union.

As already mentioned, the point is sometimes made that "stress" is in the eye of the beholder, i.e. that the reactions depend entirely on the individual experience and interpretation of the stressors to which he or she is exposed. In practice, however, there is an impressive body of evidence delineating what at least *the vast majority* of workers indeed experience and react to as stressful. This Guidance has a focus on such *common denominators*. Furthermore, it chooses to focus on primary prevention, and on an organisational or even a population level.

It should also be kept in mind that the great majority of the actions proposed are likely not only to prevent work-related stress but also to promote health and wellbeing in general, *in addition* to promoting job satisfaction, social cohesion, productivity and competitiveness.

Even so, good intentions, even if based on supportive evidence, do not guarantee a positive outcome, for all concerned, and in all respects. This is why it is so important to include preventive actions in a framework of *internal control* as described above. In this way, pros and cons of all relevant policies, in all relevant respects, will become visible. Utilising such information provides the system with a "self-corrective feedback loop". There will be a *sustainable learning from experience*, making it likely that actions will be evaluated, the outcome reviewed, and the subsequent action will then be based on an improved knowledge base and understanding (cf. Kagan and Levi 1975, Levi 1979).

Information, instruction and training

The present state of scientific knowledge in the field of this Guidance justifies implementation of its main principles in a programme of prevention of work-related stress, cf. Costa (1996). On the other hand, it seems clear that many players, in many settings, presently lack the necessary awareness, knowledge and skills to implement the scientific evidence. For obvious reasons, this is particularly so in small and medium-sized enterprises.

It follows that there is a great need for EU-wide, national and local programmes not only for research, but also for surveillance and monitoring, education (cf. Cohen and Colligan, 1998), training and information to all concerned, in order to narrow the science-policy gap.

The Tokyo Declaration (1998) formulated the following specific proposals for healthier work in healthier workplaces and considered that there is a need for increased co-operation between all relevant "actors" with regard to

- *Implementation* of the very considerable body of current information on prevention measures to reduce stress-related illness and injury in the workplace and promote the health and wellbeing of workers, and *research* to address gaps in such knowledge. Such research needs to specifically address the contribution of psychosocial factors directly related to working conditions in the aetiology of work related injury and illness. It is

important to *bridge the gap* between current knowledge and implementation of that knowledge at all levels - international, national, regional, local and individual. The role of agencies such as NGOs, labour organisations and health services will be critical in facilitating the narrowing of these gaps.

- *Surveillance* at individual workplaces and *monitoring* at national and regional levels, in order to identify the extent of work stress-related health problems and to provide baselines against which to evaluate efforts to ameliorate them. It is recommended that workplaces assess both workplace stressors and health outcomes known to result from such exposures on an annual basis. Materials (references) on how to accomplish these tasks should be developed and provided on the WWW.

- *Education and training* of occupational and other key professional groups to facilitate their participation in researching, developing and implementing programmes to reduce work-related stress and to evaluate the outcome of such approaches.

- *Methodological developments* for the production of valid and reliable methodology kits for intersectoral and interdisciplinary monitoring, clarification and action by all concerned.

- Creation of a *Clearing House* for all relevant information using state of the art technology, video, curricula, leaflets, hotline, etc. This would include use of the WWW to collect, review, integrate and disseminate information concerning such activities. Such a Clearing House is being created by the European Agency in Bilbao, Spain.

- Addressing the *stress-related consequences of unemployment* on the individuals concerned and their families and the communities in which they live. This will mean minimising unemployment and underemployment, minimising overemployment, promoting "the healthy job" concept, and humanising organisational restructuring.

Because these issues do not respect national borders, and in order to proceed meaningfully with respect to the above mentioned objectives, it will be necessary to develop more formal interactions and partnerships between international, EU and national authorities, bodies and organisations with an interest in reducing the economic and health burden of stress-related ill health in the workplace.

Roles and tools for workers, managers and their representatives

To make possible a complementary "bottom-up" approach in primary prevention of work-related stress and ill health, workers on the shop floors and in the offices etc. need to become informed about the basic interrelationships between work-related stressors, the most important stress reactions, the health outcomes and the modulating effects on this process of interacting factors such as coping repertoire and access to and utilisation of social support. A number of materials have been prepared to achieve this but need to be *advertised* and *disseminated* much more widely than has been the case so far. Recent examples of such materials are: European Foundation, 1994; HSE (1995, 1998 a & b); NIOSH (1999); HSC (1999).

ETUC, UNICE and their member organisations do have the necessary awareness and technical knowledge but need to disseminate it to their local branches and from there on to the individual members, particularly those who share a responsibility for occupational health and safety issues.

Spice of life or kiss of death?

Stress is inevitable. What is *not* inevitable is prolonged, recurrent and/or intense distress.

Sometimes the human organism needs to "step on the gas", to "rev up" in order to be able to perform optimally. As emphasised in the context of the demand-control-support model (cf. page 18), high demands plus high control equal *challenge.* There is no need to prevent the latter - it makes proper use of the stress-induced energy and is seen by most people as a "spice of life". Admittedly, even this can be taken too far, leading to an increased rate of wear and tear in the organism (cf. the example of John, on page 3). Such a phenomenon can be dealt with by introducing and using occasional or regular opportunities for unwinding, ranging from power-naps to sabbaticals.

What needs to be prevented in the first place is the stress created by over-, under- or malstimulation in combination with no opportunities to take control over the situation and lack of social support, and a bad fit between effort and reward.

The World Health Organisation has defined health as "not only the absence of disease and infirmity, but also a state of absolute physical, mental and social wellbeing". The qualification "absolute" is, of course, more visionary than practical. Otherwise, this definition may well be the basis for preventing work-related stress and promoting workers' wellbeing and productivity.

The stress process begins with organisational demands and stressors that trigger the stress response, whose intensity, duration and frequency are influenced by a number of individual and interpersonal modifiers. The process ends in either healthy or unhealthy individual and organisational outcomes. The model has a diagnostic component, but also forms a basis for individual and organisational intervention strategies (cf. Figure 2, page 33).

Healthy stress - more of a challenge than a burden - is characterised by health, productivity, vitality, and wellbeing, on both the individual and organisational level.

Distressful consequences can be psychological, behavioural or physiological. All can lead to decreased occupational health and safety affecting both individuals and organisations.

All this can be influenced by comprehensive approaches by executives, unions, educators, central and local governments and by each and everyone at all European workplaces.

Glossary of Selected Terms[viii]

Activation
To set in motion; make active.

Adrenaline (epinephrine)
Hormone secreted from the adrenal medulla (its inmost portion) in response to physical or mental stressors.

Anxiety
A state of uneasiness and apprehension.

Arrhythmia
Irregularity in the force or rhythm of the heart beat.

Assembly line work
An arrangement of workers and machines where each worker makes only a rather small part of a product.

Automated work
The automatic operation or control of a work process, equipment or system.

Autonomous work teams
Teams of employees allowed or encouraged, within defined limits, to make their own decisions regarding the structure, content and conditions of their work.

Behaviour
Actions or reactions in response to external or internal stimuli.

Benefits
(in cost-benefit analysis) The gains in economic welfare from the project that is appraised.

Cardiovascular
Relating to the heart and blood vessels.

Cerebral cortex
The convoluted layer of grey substance that covers each hemisphere of the brain.

Circadian
Exhibiting approximately 24-hour periodicity.

Cognition
Mental process or faculty of knowing, including aspects such as awareness, perception, reasoning, and judgement.

Control
To exercise authority or dominating influence over someone or something.

Coping
To contend or strive, especially on even terms or with success.

[viii] Based in part on The American Heritage Dictionary of the English Language, as modified by personal knowledge and experience (cf. also Levi and Lunde-Jensen, 1996)

Cost-Benefit Analysis (CBA)
A technique for evaluation of the total costs and benefits in society of a specific project, in monetary terms. If all significant *socio-economic costs* and *benefits* were included and valued in a coherent way, a comparison of costs and benefits would point at the solution that maximises welfare in society. However, the data requirements to describe and value all components relevant for welfare are immense. Most published "CBAs" are *partial*, using the framework to organise available data in a coherent way.

Decision-making latitude
Freedom to choose the way to do something.

Dehumanisation
Taking away people's good human qualities, e.g. kindness and individuality.

Depression
A state of inability to concentrate, insomnia, and feelings of sadness, defection and hopelessness.

Discretion
Having the freedom or authority to decide if and how to act.

Dyspepsia
Indigestion.

Dysphoric
Emotional state characterised by anxiety, depression and restlessness.

Ecological
Referring to relationships between people, animals, plants and their environment, and to the dynamics of these relationships.

Ecosystem
All individuals in a particular area, and the complex interrelationships between them and their environment.

Emotion
Any strong feeling, as of joy, sorrow, reverence, hate or love.

Endocrine system
The integrated body system of glands, tissues and cells, having hormonal secretions that pass directly into the bloodstream (cf. Hormones).

Epidemiological
Relating to the scientific study of the occurrence of diseases in different groups.

Ergonomics
The applied science of equipment design intended to optimise productivity by reducing operator fatigue and discomfort.

GPHESM
Good practice in health, environment and safety management.

Gastrointestinal
Of, or relating to the stomach and intestines.

Genetics
The biology of heredity - how qualities and characteristics are passed on from one generation to another by means of genes.

Handicap
A characteristic, event or situation that creates a disadvantage.

Hormones
Highly active chemical substances discharged primarily by ductless glands into the blood stream and circulating there to affect the organs of the body.

Hypothalamus
The part of the brain below the thalamus, and regulating autonomic bodily activities.

Immune system
The integrated body system of organs, tissues, cells and cell products that identifies nonself and neutralises potentially pathogenic organisms or substances

Intellectual capital
The knowledge, applied experience, organisational technology, customer relationships and professional skills of any labour force.

Interdisciplinary
Involving several academic subjects in an integrated manner.

Job enrichment
Task redesign to motivate and stimulate the workforce.

Lifestyle
Living conditions, behaviours and habits that are typical of, or chosen by, people.

Mass production
Production of goods in large quantities.

Monotony
Something being repetitive and boring.

Morbidity
Disease rate.

Non-ulcer dyspepsia (NUD)
Indigestion without any concurrent peptic ulcer of the stomach or duodenum (the beginning portion of the small intestine).

Noradrenaline (norepinephrine)
A hormone and neurotransmitter, secreted by the adrenal medulla (its inmost portion) and the nerve endings of the sympathetic nervous system.

Palpitations
Irregular or rapid beating of the heart.

Pathogenic
Causing disease.

Physiology
The biological study of the functions of living organisms and their parts.

Piece work
Work paid according to the amount of work performed.

Presenteeism
A term used to describe persons who are present at work but not productive, either due to sickness or to lack of motivation.

Programming
Setting the controls of an organism so that it will function in a particular way.

Psychosocial
Of or pertaining to psychological phenomena that originate in the appraisal of social structures and processes.

Psychosocial stimulus
A psychologically appraised social agent, action or condition that elicits or accelerates a physiological or psychological activity.

Psychosomatic
Of or pertaining to phenomena that are both physiological and psychological and to their interrelationships.

Retirement, premature
Occurring prior to the assigned time, usually before 65 years of age.

Rotating shifts
A change or relay of workers in a uniform sequential order.

SMEs
Small and medium-sized enterprises.

Salutogenic
Promoting health.

Segregation
Keeping people of different races, religions, ethnicity or genders apart.

Shift work
Working in shifts, for a set period, before being replaced by another group.

Sickness absence
Spending time away from work because of illness or injury.

Skill discretion
Freedom to use one's skills as one considers fit.

Social capital
Feature of social life - networks, norms, and trust - that enable participants to act together more effectively to pursue shared objectives (cf. Putnam, 1993).

Socio-economic costs
In a cost-of-illness framework, socio-economic costs add up welfare losses that are undesired by-products from the economic processes (externalities). In the economic literature, the term "*social costs*" are also used. If socio-economic costs can be avoided, they can be used to quantify the benefit side in a cost-benefit analysis.

Stress
The common denominators in an organism's adaptational reaction pattern to a variety of influences and demands (stressors).

In this Guidance, work-related stress is *defined* as a pattern of emotional, cognitive, behavioural and physiological reactions to adverse and noxious aspects of work content, work organisation and work environment. It is a state characterised by high levels of arousal and distress and often by feelings of not coping.

Stress hormones
Hormones from the pituitary, adrenal cortex and medulla, and other endocrine glands, released in response to stressor exposures.

Stressors
Demands and influences taxing the organism's adaptational capacity.

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