

Occupational Health and Safety Management Systems--- Are they beneficial ?

Part 1

In late October 2010, the cement company Lafarge won a prestigious award in the United Kingdom for its health and safety policy, in particular its leadership in terms of training and management systems. A week later, the same company found itself being sentenced to a massive fine for serious violations of British law on health and safety at work. As a consequence of these violations, an electrical worker had been seriously injured after an electrical explosion in October 2008.

In the course of the trade unions' debates about health and safety, some questions never fail to elicit extremely varied responses, running from indignant rejection to enthusiasm. Health and safety management systems are one of those questions.

The initial explanation appears quite simple. In practice, setting up such systems is subject to a mass of variations. Sometimes they can be a way of getting round worker representation for health and safety, driving a disciplinary approach where the vision and priorities defined by the bosses shape the prevention policy or what serves in its place. And sometimes setting up such systems is a process which recognizes the potential of workplace safety issues to cause conflicts, reinforces transparency and paves the way for more systematic action by the workers' representatives. So the social way that such systems are used is very varied.

Another piece of the explanation also has to do with the concrete situation of each company within the production chains. A company issuing a contract does not necessarily see the introduction of such a system as having the same significance as a subcontractor, especially where the latter is forced to adopt a system in order to retain its market position.

The present paper seeks to help bring some order into the way the subject is tackled. It offers some criteria which are worth taking into account when weighing up the pros and cons of health and safety management systems. And shows how diverse such systems are. In that sense, it will help towards a more thorough-going analysis of the practices involved.

It has been devised by Kaj Frick and Viktor Kempa, and has benefited from the contribution of a network of trade unionists established at the initiative of our institute to explore these questions.

What are OHSM Systems – Structuring the issues

The basis and scope of this paper

This paper is analytical and descriptive, and even in parts prescriptive. It is mainly based on an overview of research, but also draws on union and other practical experience with OHS management systems (referred to hereinafter as "MS"), their varieties, their different political backgrounds and settings, and the little we know of their problems and successes. I will present some of the major studies in the reference list, and also try to support some of my claims with explicit references. However, the value of this paper lies in how the reader finds that it can broaden his/her perspectives of MS. I will focus more on what works in MS and what does not, and less on the practical requirements to develop an effective management system.

MS are not semi-independent "systems"

The term "OHS management systems" is used to describe all kind of practices. It can cover anything from ambitious continuous improvements towards the utopian goal of no health risks at work, to corporate smokescreens for controlling workers and busting unions that deliver rather poor OHS results. It is now such a common term that it is also used, for example, to describe how small firms in El Salvador handle OHS (Ramirez et al., 2006). This means that unless you are talking about a specific management system – i.e. one known to everyone involved in the discussion – you have to specify what MS or type of MS you mean. Otherwise, you can easily end up in confusion and with less chance to promote improvements to a good MS. The need to specify the MS often also occurs within organisations. Top managers may have a very different perception of the system they are trying to implement than OHS experts or safety representatives.

The confusion is also theoretical. MS on OHS and all other management "systems" (like ISO 9000) are not really systems in the scientific use of the term (von Bertalanffy, 1968). A scientific system is an entity of interacting units and functions that is striving to survive more or less independently of its surroundings. The purpose of a management system, on the contrary, is to integrate a function (e.g. better OHS or other quality) into the general management. An integrated management system is therefore an oxymoron. Either it is integrated or it is a system. It cannot be both. MS are thus only "systems"

in the vaguer common language sense of a complex set of interacting functions for a common goal, without the scientifically essential aspects of being independent and striving to survive (i.e. without the organism analogy). This theoretical misconception also has practical misleading results. It is much too easy – and common – to talk about an MS as if it is a separate organisation, not (simply) an aspect within the general management. "We leave this OHS problem to the MS", is a common excuse used by line managers who do not (or do not want to) understand that the MS has to be an integrated aspect of their own management, if it is to improve OHS.

The "standard" type of MS – ISRS, BS 8800, OHSAS 18001 and VPP

The issue of integrating consideration of OHS into daily management is important in the practice of all MS. However, before we go further into this and other possible risks with MS, we shall first briefly describe the management systems for OHS that are most well-known at international level (see also the comparative overview by Dalrymple et al., 1998). Early varieties of MS are safety management systems, like Lost Control, which was developed into the International Safety Rating System (ISRS; Bird & Loftus, 1976; Top, 2006). The 5 Star, or Five Star, program is an MS similar to ISRS. It is used by many employers in the likes of Australia (NSCA, 1995; www.nasca.org.au), North America (CAW, 2006) and South Africa (Eisner & Leger, 1988). Later, the chemical industry set up its own international guidelines for an MS, labelled Responsible Care. Since the 1990s, more and more national standards have also been issued on OHS MS. Dalrymple et al. (ibid) include standards, drafts of standards and guidelines on MS from Australia and New Zealand (AS/NZS 484), Ireland (draft), Jamaica (draft), the Netherlands (NPR 5001), Norway (draft), Spain (UNE 81900) and the UK (BS 8800). BS 8800 has also spread outside the UK. The recent US standard, ANSI-AIHA Z 10, from 2005, should also be added to this list.

In 1996, ISO failed to reach the necessary 2/3 majority to add a standard on how to manage OHS quality to the earlier ISO 9000 (on managing product quality) and ISO 14 000 (on environmental quality) (Zwetsloot, 2000). A similar attempt again failed to secure a qualified majority in 2000, but the issue has now been raised for a third time within the ISO. Yet the first failure made fourteen national standardization bodies and auditing firms (including the BSI from UK, and DNV from Norway) unite in 1999 on an international "semi standard" on MS, the OSHAS 18001 (OHSAS, 2006). OHSAS is the only global MS besides the ILO guidelines and DuPont's STOP (see below for these). OHSAS has also become one of the most widespread, with some 3,900 certificates in some 70 countries by the end of 2003. Several large corporations also use it in their plants, for example ABB, Akzo-Nobel, 3M and Unilever. The largest number of certified sites were in China, followed by Australia, Thailand, UK, Brazil, Italy, Japan, Iran, Korea and India (Bebek & Viages, ibid). One motive for OHSAS's popularity in poor countries with large exports may be the drive for corporate social responsibility. Large consumer corporations in the western world increasingly require their suppliers to demonstrate conformity with minimum labour and other standards (Frick & Zwetsloot, 2007). Yet various certificates do not always assure acceptable conditions of work at the suppliers (Mathiason, 2006).

Another main variety of MS are those produced and promoted by national OHS authorities. The state of California has mandated since 1991 that all employers must run an effective Injury and Illness Prevention Program (the Program Standard; www.dir.ca.gov/Title8/3203.html). However, outside the EU, Anglo-Saxon countries in particular have tried to promote effective internal management of OHS by voluntary means instead of through mandatory regulations. Sometimes they advise employers to implement an MS based on national standards, but many OHS authorities also produce and promote MS of their own design. OSHA's Voluntary Protection Program (VPP) in the US is probably the best-known example (OSHA, 1989). Other authorities have also created their own MS, e.g. the one in Taiwan since 1994 (Su et al, 2005). The different Australian OHS authorities pursue a strategy that is a hybrid of the voluntary MS and

mandatory OHSM (Saksvik & Quinlan, 2003). Formally the MS is voluntary and you may have fewer inspections if you do implement an MS. But if you do not set up an MS to handle risks at work, you still have to comply with the general duty of care, i.e. to operate a safe and sound workplace. In the US, this duty in the OSH Act is rarely used. But Australian labour inspectorates and courts refer to it more and more often. There are thus both positive and negative incentives to adopt the formally voluntary MS in Australia. And most Australian jurisdictions have produced their own MS, e.g. Safety Map from Victoria (VWA, 2002, first version in 1995, see also Dalrymple et al., *ibid*; though more streamlined guidelines on managing OHS were issued earlier by South Australia, Blewett, 1989). All in all, therefore, the introduction of an MS is thus in practice not so voluntary for Australian employers.

Obviously there are many differences between the various MS. Yet their specifications all include that the MS – as a minimum – should comply with national OHS regulations. In nearly all countries, this entails complying with a large number of often quite strict regulations on machine safety, prevention of exposure to hazardous materials and similar ordinances on noise, radiation, ergonomics, etc. The sum of all these mandatory requirements to protect workers against OHS risks is quite challenging. Careful inspections of workplaces – which are rare, as labour inspectors seldom have time enough for this – therefore usually reveal many violations of different OHS ordinances. Where there are mandatory regulations on OHSM – e.g. within the EU, but also in Brazil and many other countries – employers also have to comply with more or less strict requirements on how to manage OHS. These OHSM systems normally require similar prevention principles to the Framework Directive, discussed below. On top of the tough requirement to comply with material OHS regulations, we must therefore add similar challenging principles of how to manage the OHS.

Yet voluntary MS – from Five Star to BS 8800 to OHSAS 18001 to VPP – do not raise this as a problem. Full compliance with these extremely challenging regulations is mentioned only as a first step, without further comment. And the various advice and examples on how to implement the MS invariably reduce the prevention principles to something much less prominent. Safety is given much more attention than health, despite the fact that diseases cause far more ill-health and fatalities than accidents do. The prevention described more often revolves around the issuing of personal protective equipment (PPE) and behaviour control of "safe" procedures than the prescribed upstream prevention of illuminating risks at the design stage. And the worker participation described in these examples is more a top-down communication on why and how to obey management safety procedures than a genuine dialogue between management and workers on ends and means in an MS which aims to reduce OHS risks.

The ILO guidelines and behavioural safety are the two extremes of MS. There are two main exceptions to this general picture of MS as being very preventive in their specification but less so in their practical examples and advice. At one end, the ILO guidelines for OHS management systems (ILO, 2001) consistently stay close to regulated OHSM. Unlike other MS (except those from OHS authorities), these guidelines have not been developed by auditing firms or standardization bodies, which are dominated by producers and employers. What we find instead is a tripartite organization with equal votes for representatives from governments, employers and workers/trade unions. This is one main reason why organized labour has opposed an ISO

standard (like ISO 9000) on MS and instead supports development along the ILO guidelines. Many countries have formally adopted them, for example China, Indonesia, Argentina, Brazil, Malaysia and Ireland. And the guidelines have been used as templates for private corporate MS (e.g. ABB and Volkswagen) and for MS produced by non-governmental OHS organizations, such as the widespread JISHA guidelines in Japan (www.ilo.org/safework/normative/codes/lang--en/docName--WCMS_107727/index.htm).

Like all MS, the ILO guidelines are voluntary. They also embrace the major principles of the Framework Directive, i.e. legal compliance, worker participation, health and not only safety, and the prevention hierarchy. But unlike other MS, the guidelines are not ambivalent in practice, if they really support these principles. In his critical comparison between corporate standards on MS and the ILO guidelines, Bennet (2002) finds the latter to be much stronger in terms of worker participation, legal compliance as an absolute must, the specification of what to include in the MS (i.e. less chance for an employer to pick what suits him), and the audit to evaluate and improve the MS. The ILO guidelines are also more consistent, in the sense of on the one hand including health in OHS, and on the other upholding the prevention hierarchy.

Behavioural safety (BS) is in many ways the opposite to the ILO guidelines. There are many varieties. One of the most widespread is DuPont's STOP (Safety Training Observation Program; DuPont, 2007). Formally, BS systems are not MS, nor do they claim to be. Yet in practice very many employers adopting BS describe this as their MS for OHS. With its focus on downstream worker behaviour and minimizing/measuring (only) reported injuries, BS does not claim even on paper to adhere to the prevention principles of mandatory OHSM, e.g. the Framework Directive (see further below).

An overview of the differences between mandatory OHSM and voluntary OHSM systems

ILO, BS and the other MS alike share the characteristic of being voluntary and as such being separate from regulated OHSM. There is also confusion between the voluntary and the mandatory strategies to promote a more systematic management of OHS, which may be more serious than about the "systems" concept. Sometimes mandated OHSM is seen as the regulated variety of MS, i.e. with "management systems" being the general buzz-word. On the other hand, an MS is sometimes described as a special, extra complex, variety within general OHS management, which is mandatory in many countries. And sometimes mandatory OHSM and voluntary MS are treated as separate, although greatly overlapping, methods to specify how to manage occupational health and safety. There are thus overlaps in how one describes voluntary OHS management systems and regulated systematic OHS management. Nevertheless, politically/legally-based mandatory OHSM and market-based voluntary MS differ in important respects. In most countries, working life is influenced by both regulations on how to manage OHS and much marketing of voluntary MS. For example, in Brazil, there is extensively marketed voluntary MS but also regulation NR 9, which requires organizations to establish a program to manage risks (Dalrymple et al., 1998).

To explain the differences between these two strategies, we can start by looking at the EU Framework Directive (89/391/EEC). It was introduced early on and now covers the working life

of nearly half a billion people. It is therefore in many ways the template for public regulation of OHS management. This directive requires the member states, which currently number 27, to:

- establish the responsibility of all employers "to ensure the safety and health of workers at work", and to provide the necessary organization and means to do so;
- mandate that employers, taking into account the nature of their activities, assess and prevent or minimize OHS risks, as the primary means of fulfilling this duty;
- make OHS competence a compulsory base for employers' OHSM;
- mandate a prevention hierarchy, in which the elimination of risks ("safe place") comes first and personal protection and/or instructions ("safe person") comes last;
- define OHS risks broadly as "the work environment" which includes, for example, the organization of work;
- require employers to adapt OHS conditions to the varying needs of each individual worker; and
- give workers and/or their representatives legal rights to participate on all matters relating to OHS, without involving them in any costs. (See further Vogel 1994, Walters 2002, and Frick 2006).

If we compare these requirements to voluntary MS, there are some crucial differences. The first one is their different origins. You can use the definition of regulated OHSM as "a limited number of mandated principles for a systematic management of OHS, applicable to all types of employers including the small ones" (Frick et al., 2000, p. 3). This distinguishes OHSM from the more complex and highly specified MS. These systems usually have a voluntary/ private market origin, but OHS authorities have started to develop and promote their own MS. This is especially the case in Anglo-Saxon countries, such as the USA and OSHA's Voluntary Protection Program (VPP; OSHA, 1989) as the most familiar example. However, Australian OHS authorities are much more active in disseminating and promoting the use of their MS, for example the SafetyMap (VWA, 2002). Most of these voluntary MS, including those by authorities, include specifications that the MS has to comply with all relevant regulations. But while this is taken as a given, the real evaluation of the voluntary MS is how they comply with the specified procedures.

The most important difference between regulated OHSM and voluntary MS is therefore their goals. Mandatory OHSM is defined by its outcomes. Good OHSM is what works to prevent or detect and abate OHS risks. The procedures to that end are important, but if the procedures are correct and sufficient they are ultimately defined by how they help to improve OHS. An MS is instead defined by its means, by the correct introduction and application of its specified procedures. There is also a difference in structure. Mandated OHSM consists of a limited number of requirements, of principles on how to manage OHS. This is the only alternative when the regulations cover all employers (albeit usually with some differences in the formal requirements depending on size). Voluntary MS, on the other hand, contain a large number of specified procedures in a complex structure. They have usually been constructed to manage the risks for large accidents in big organizations. In such cases, the extensive specifications of the MS are usually needed to give enough rigour to an advanced OHS management. But such complex voluntary MS are not applicable to small firms in the service sector, for example. Another reason for the complexity and rigour of MS is that they often require to be open for

external certification, and have been created for this purpose by auditing and certifying organizations. Mandatory OHSM, on the other hand, can never be certified. No private consultant can guarantee the final outcome of an inspection by the OHS authorities. Whether or not a mandatory OHS management complies with the regulations can ultimately only be settled in court.

These principal differences between regulated OHSM and voluntary MS are accompanied by differences in their content. These are not absolute, and should not be exaggerated. In practice, most of what is called compliance with OHSM regulations falls far short of the high ambitions in the likes of the Framework Directive. But on the other hand, most voluntary MS start to deviate from these preventive principles even in their official advice and examples. A slightly exaggerated – but not totally unfair – comparison between mandatory systematic OHSM and voluntary OHSM systems therefore gives the following table.

Public systematic OHSM	Private M systems	Basis	Politics & Legal obligations	Markets & Voluntarism
Application All employers	Large organizations	OHSM specification	Low: Principles	High: Complex Certification
Cannot replace legal OHS inspection	Yes: Consultants evaluate procedures	Goal No OHS risks	Correct procedures	OHS Scope Health & safety mainly/only
Evaluated on Health & safety risk exposures	Behavioural figures, e.g. of WC, LTI	Prevention through Organization & Technology	Downstream through Behaviour control	Participation On ends and means in OHSM
MS may be used to control workers				

The risks of failure and misuse of MS

Major aspects of voluntary management systems for OHS

To compare the practices of MS to the ideals of mandatory OHSM is in one sense unfair. But apart from the ambivalence in the presentation of the MS themselves, their practices have to be evaluated against the high standards of the regulations if we are to see their weaknesses and how they can be improved. Such a close scrutiny is the purpose of this section. It will be divided into discussions of the following issues:

- the motive to introduce an MS, which may strongly affect most, if not all, aspects of how it is implemented;
- the pros and cons of certification for the OHS effects of an MS;
- how to measure the MS performance, from behavioural numbers to customer dialogue;
- the OHS scope of the MS: safety, technical, health or the broad work environment?;
- behavioural safety, or upstream prevention through the prevention hierarchy?;
- consultation to convince workers or to learn from them?;
- resources, auditing, learning and continuous improvement
- when you realize that a good MS is difficult and never finished.

External or internal motives?

No management – no human behaviour – is perfectly rational. Yet MS are a forceful attempt to increase the rationality of how OHS is managed in organizations. The real motives and purposes – as opposed to rhetorical ones – for the introduction of an MS are therefore central in establishing how the MS will operate in practice. The first question to ask when one tries to evaluate – or in other ways understand – an MS is therefore why was it introduced? As an MS entails a development of the general management, it is likely to have complex purposes, to be based on a mixture of both external and internal motives. And the same single OHS questions can often be described both as an external and an internal issue. The difference is thus very much a question of perspective. Still the external and internal motives for an MS are different.

The often overlapping external reasons for employers to introduce an MS may be:

- the MS certificate as "proof" of good OHS management, which improves the market image to customers and investors and the labour market. The certification business thrives on firms that are keen to use certificates for public relations purposes. Sometimes small firms even need a certificate to do business with large corporations;
- firms with a certified MS may be visited less frequently by the labour inspectorate, which is an incentive in countries such as Denmark, the USA and Australia;
- if a firm has serious OHS risks, the external motive for the MS may really be to reduce the risks. Otherwise internal OHS risks may become publicly known scandals;
- larger firms in particular need societal acceptance, as a "licence to operate", and an MS may be important to that end.

The internal motives to introduce an MS may be:

- to reduce the number of reported injuries etc, to save on worker compensation costs, and – especially in the USA – also on healthcare costs;
- to protect against disruptions to production due to absence and thereby to reduce indirect internal costs for poor employee health, i.e. actual costs, also for unreported ill-health, and not only to reduce claims or insurance rates; — a work environment that supports efficient work and reduces disturbances from poor OHS – such as accidents, noise or poor ergonomics – and thereby improves productivity, quality and profits;
- to ward off OHS litigation by improving prevention. Third-party lawsuits are conducted especially in cases involving asbestos (in the USA) but there also cases against the effects of such things as lead, PCBs and nuclear and other hazardous waste;
- to use the MS to strengthen management control of worker behaviour and communication with workers and thereby to reduce worker and union influence at the site;
- to make workers mainly responsible for avoiding injury by a focus on behavioural safety;
- management efficiency, to simplify or streamline the OHS, to spend less time and money to reach set OHS goals, and also better integration of OHSM into the general management;
- ethical motives: in a situation of complex OHS interests, managers may have an opportunity to let their personal ethics of not injuring employees influence the OHSM.

It is not only legitimate but even necessary for firms to manage their external relations in all important aspects. This unavoidably includes their management of OHS. A good MS image may be important to attract customers and investors and avoid labour inspectorate and media scandals. Employers who do a good job of reducing risks at work also deserve positive credit for their efforts. However, there is a risk that it may be more important for them to manage the external image of managing OHS, than to manage the internal prevention of OHS risks to their workers. To be effective, an MS therefore requires a strong internal motivation. Managers cannot only do it for the external reasons. They also have to believe that health and safety risks at work are bad for workers' morale, for a good production flow, for improving quality and productivity or for other important business goals. Or they may believe that the real internal OHS situation runs a very large risk of spilling over into a bad external OHS reputation.

The pros and cons of MS certification

Like other methods within the broad standardization movement, certification can be very useful in improving trade and other interaction. A certificate gives an outsider an assurance from third-party experts that the firm with the certificate has achieved a certain quality or other standard, in this case in how it manages OHS. Certification presupposes a standard with a complex set of quite strictly specified procedures, as a precise enough yardstick to audit the MS against. It is thus only possible for strictly specified and complex MS, which, however, nearly all MS are. Yet several MS have instead been formulated as guidelines and are thus not intended for external third-party certification. Certified MS are thus only possible for a small number of large worksites, which can implement (and benefit from) the likes of a standard for MS. These workplaces may employ a larger share of the workforce. Yet most workers are employed in smaller firms, which have very limited capacity to implement and certify an MS as a means to improve their OHS.

This is at best, assuming that MS certificates always guarantee good OHS conditions. In practice it is very likely that firms with a certified MS have considerably better OHS than other employers. Yet an MS is complex. Both the OHS risks and outcomes of improvements are hard to measure in quantitative terms, especially the health risks. Irrespective of this, the certificate assures compliance with the specified MS procedures, not good OHS outcomes. It is therefore not surprising that many cases have been reported of firms with certified MS that have still had severe deficiencies in how they managed OHS. For example, systematic management mistakes caused a fatal accident in a large Swedish company, which DNV had recently certified to be in accordance with the OHSM regulations (Arbetsmiljainspektionen, 2003). DNV claimed that they had nothing to do with the accident. They only audited and certified that the worksite had a system, but how the system was applied in practice was outside their remit and responsibility (Arbetarskydd, 2004). And in Australia, a major Esso plant blew up soon after the internal corporate auditors had praised its MS (Hopkins, 2000). Similarly, certified environmental MS are not always reliable (Poksinska, 2003).

Thus, while it is natural for firms to try to get the external credit for a certified MS, such a certificate is not enough for the internal purposes of reducing health and safety risks. While the motive for the employer to implement an MS is as much internal, the auditing process of

certification is more important than the resulting paper certificate. The external auditing can then be used as a learning process on what should be improved and how that can be done. Used in this double way, MS certification relates to the function of regular evaluation and improvement, which is essential for any MS (Dalrymple et al., *ibid*; see also p. 24).

MS performance – behavioural numbers or OHS effects and customer satisfaction?

Why an MS is implemented thus influences whether a certificate is used mainly to promote the external image or the certification process is also used for internal learning and improvement of how the OHS is managed. But the motives behind the MS also affect how it is measured and evaluated. There is a need for some kind of performance measurement of the MS. If the main motives underlying the MS are external – such as to reduce WC premiums, keep the inspectors out, and/or improve external image – the measured goal is usually the number of workers to report injuries or diseases, or to take sickness absence.

However, reported LTI, compensation claims etc, are poor indicators of OHS risks. Not all accidents that workers experience are reported to management. Managers have also been known to keep many of those reported out of the official OHS statistics. And employers may challenge the reports – such as on the very common cases of musculoskeletal diseases – as not being work-related and thus not to be included in the measured effects of the MS. Even work related fatalities may by definition be excluded from reported figures, such as traffic fatalities while driving on duty in the UK (Tombs, 2006). If few reported injuries is the goal, this can result in a management culture of suppressing these. Eisner & Leger (1988) found that after the ISRS safety management was introduced in South African mines, the fatality rate remained roughly the same while the number of reported smaller accidents halved. Their conclusion was that safety had probably not improved much but that there was more pressure not to report smaller accidents. Zoller (2003) describes the strong internal mechanisms, which make workers not report even considerable injuries. And Rosenmann et al. (2006) found that only a third of all work-related accidents show up in employer reports in the USA. Outright falsification of figures – with lower figures to OSHA and the world than for internal use – may also happen, even in large companies (UAW, 1987).

To measure the performance of an MS mainly on reported accidents and other such numbers may therefore be a stronger incentive for claims management – to minimize claims and other reports – than for prevention management. Yet the possibly huge gaps between reported numbers of injuries and the actual OHS risks in the workplace are rarely – if ever – discussed by those who produce and promote voluntary MS. Even OHS authorities with officially very broad OHS goals – such as those in Australia and Canada – usually evaluate the performance of an MS (and in general the OHS policies) only by numbers of reported injuries, with no comment on the poor validity of these measurements. Dotson (1996) also illustrates how broad OHS goals are reduced to one or a few figures, with more focus on safety than on health. His starting point is that "what gets measured, gets done". The corporation in which he is 19 Occupational Health & Safety Management Systems the safety manager therefore manages its OHS worldwide by Corporate H&S Management guidelines, and measures its safety performance by the "total recordable injury rate". This is relatively quite low, which is achieved with an "understanding that

most injuries in modern workplaces are caused not by unsafe conditions but by improper or improperly executed work procedures" (Dotson, *ibid*). When the company wanted to add a single metric to measure its occupational hygiene and other health aspects, it found that some 30% of its workers used respirators and nearly all used hearing protectors. However, Dotson did not report that this resulted in any prevention to reduce the massive exposure to health risks of chemicals and noise. The company instead measured the health effects of its MS by a figure on workers' behaviour in using the prescribed PPE.

Nevertheless, there is a need to measure the MS results. Without any idea of its OHS outcomes, we cannot distinguish between a paper MS and one which is implemented in practice. We thus have to search for better measurements than the narrow reporting numbers, which can be – and are – manipulated. As for any complex goals, we have to combine several indicators, like in a balanced scorecard (but the choice of indicators in such a scorecard is essential). The alternative indicators have to reflect the official MS goals (except in behavioural safety) of minimizing risk exposure. The MS should utilize competent exposure measurements and expert assessments. Labour inspectorate notices, both formal citations and advice about what to improve, are also important indicators of the OHS situation.

However, limited resources will make such expert-based indicators the exception, even in large workplaces, with internal OHS expertise, and with repeated visits from the labour inspectorate. And organizational risks – which are very important for both somatic and psychosocial health at work – are difficult to estimate by experts. The performance of MS should therefore mainly be measured through surveys issued to workers on how they perceive the risks and their work-related (ill-)health. As workers are the customers for any MS which really aims to improve OHS, such a survey is no different from any other form of customer dialogue. Worker surveys have also been demonstrated to be quite valid in their description of the OHS, if they have carefully crafted questions (Wikman, 2006). The surveys can be combined with experts' measurements and assessment, and also with injury statistics. As long as such statistics can be validated against other data, they too are part of a broad panel of evidence on which to evaluate the performance of an MS.

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