A GUIDE TO MEASURING HEALTH & SAFETY PERFORMANCE

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MEASURING HEALTH AND SAFETY PERFORMANCE

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INTRODUCTION

This new document developed by HSE provides practical guidance for people who understand the principles of health and safety management and wish to improve the measurement of health and safety performance in their organisations. We would welcome feedback on the ideas presented here.

The guidance on measuring health and safety performance is organised under these main headings:

- Why measure?
- What to measure.
- When to measure.
- Who should measure.
- How to measure.

The guidance expands on the *Measuring performance* chapter in HSE's publication HSG65 *Successful health and safety management*,[1] which provides guidance on managing health and safety. The chapter *Planning and implementing* from HSG 65 has been included with this guidance to provide background information which will put it into context. You may find it useful to read this chapter first.

How will this guidance help me?

Measuring health and safety is not easy and there are no simple answers. But this guidance provides:

- HSE's emerging views on this dynamic and important subject;
- information to help you improve your organisation's health and safety performance measurement; and
- an opportunity for HSE to share ideas with others across the world. We would like to capture your views and experience in order to develop and expand the ideas further.

There are key questions which the most senior managers in an organisation should be asking themselves. These are:

What information is available to assure me that throughout the organisation arrangements to control health and safety risks:

- are in place;
- comply with the law as a minimum; and
- operate effectively?

This guidance aims to give you some useful information to help you address these questions. It provides:

- a framework for measuring health and safety performance;
- guidance on developing health and safety performance measures relevant to your organisation; and
- useful references to information sources on performance measurement generally, including tools and techniques.

What the guidance is not

This guidance does not provide:

- a simple checklist for measuring health and safety management;
- a simple answer to the question 'how do we measure our health and safety performance?'; or
- a definitive list of health and safety performance measures suitable for all organisations.

Why is guidance necessary?

Measurement is a key step in any management process and forms the basis of continual improvement. If measurement is not carried out correctly, the effectiveness of the health and safety management system is undermined and there is no reliable information to inform managers how well the health and safety risks are controlled.

In the UK, the HSC and Government's *Revitalising Health and Safety*[2] strategy and the requirements of the Turnbull Report[3] on corporate governance provide a renewed focus on health and safety performance and the control of health and safety risks.

Although there is much information available on performance measurement generally, there is little which looks at health and safety in particular which organisations can apply to their own circumstances.

HSE's experience is that organisations find health and safety performance measurement a difficult subject. They struggle to develop health and safety performance measures which are not based solely on injury and ill health statistics.

The traditional approach to measuring health and safety performance

If managing directors or CEOs were asked how they measured their companies' performance, they would probably mention measures like percentage profit, return on investment or market share. A common feature of the measures quoted would be that they are generally positive in nature - reflecting achievement - rather than negative, reflecting failure.

If the same people were asked how they measured their companies' health and safety performance, it is likely that the only measure quoted would be injury statistics. While the general business performance of an organisation is subject to a range of positive measures, for health and safety it too often

comes down to one negative measure, injury and ill health statistics - measures of failures.

Health and safety differs from many areas measured by managers because success results in the absence of an outcome (injuries or ill health) rather than a presence. But a low injury or ill-health rate, even over a period of years, is no guarantee that risks are being controlled and will not lead to injuries or ill health in the future. This is particularly true in organisations where there is a low probability of accidents but where major hazards are present. Here the historical record can be a deceptive indicator of safety performance.

Organisations need to recognise that there is no **single** reliable measure of health and safety performance. What is required is a 'basket' of measures or a 'balanced scorecard', providing information on a range of health and safety activities.

As organisations recognise the importance of managing health and safety they become aware of the problems with using injury and ill-health statistics **alone** as the **only** measure of health and safety performance.

Some problems with injury/ill health statistics

- Under-reporting - an emphasis on injury and ill-health rates as a measure, particularly when related to reward systems, can lead to such events not being reported so as to 'maintain' performance.
- Whether a particular event results in an injury is often a matter of chance, so it will not necessarily reflect whether or not a hazard is under control. An organisation can have a low injury rate because of luck or fewer people exposed, rather than good health and safety management.
- Injury rates often do not reflect the potential severity of an event, merely the consequence. For example, the same failing to adequately guard a machine could result in a cut finger or an amputation.
- People can stay off work for reasons which do not reflect the severity of the event.
- There is evidence to show there is not necessarily a relationship between 'occupational' injury statistics (eg slips, trip and falls) and control of major accident hazards (eg loss of containment of flammable or toxic material).
- A low injury rate can lead to complacency.
- A low injury rate results in few data points being available.
- There must have been a failure, ie injury or ill health, in order to get a data point.
- Injury statistics reflect outcomes not causes.

Because of the drawbacks associated with the use of injury and ill-health data alone as a means of measuring performance, some organisations have recognised they need more proactive or 'up stream' measures of performance. Generally this is translated into a search for things which can be

easily counted, such as numbers of training courses or numbers of inspections.

What is usually absent is a systematic approach to deriving these measures and how they link to the risk control process. This is similar to the period before the appearance of health and safety management system models, when there was activity on health and safety but little understanding of where that activity fitted within the overall health and safety management framework.

The scatter-gun or random approach, based purely on what is easiest to measure, is of limited value. The resultant data provides no information on how the figure was arrived at, whether it is 'acceptable' (ie good/bad) or the quality and effectiveness of the activity. A more disciplined approach to health and safety performance measurement is required. This needs to develop as the health and safety management system develops.

This is important not only to ensure that measurement is effective but also to ensure effective use of the resources used to measure performance. The rest of this guidance provides a framework to help you develop a more disciplined approach to health and safety performance measurement.

WHY MEASURE PERFORMANCE?

Introduction

'You can't manage what you can't measure' - Drucker
'If you don't know where you are going, chances are you will end up somewhere else' - Yogi Berra

Measurement is an accepted part of the 'plan-do-check-act' management process. Measuring performance is as much part of a health and safety management system as financial, production or service delivery management. The HSG 65 framework for managing health and safety, illustrated in Figure 1, shows where measuring performance fits within the overall health and safety management system.

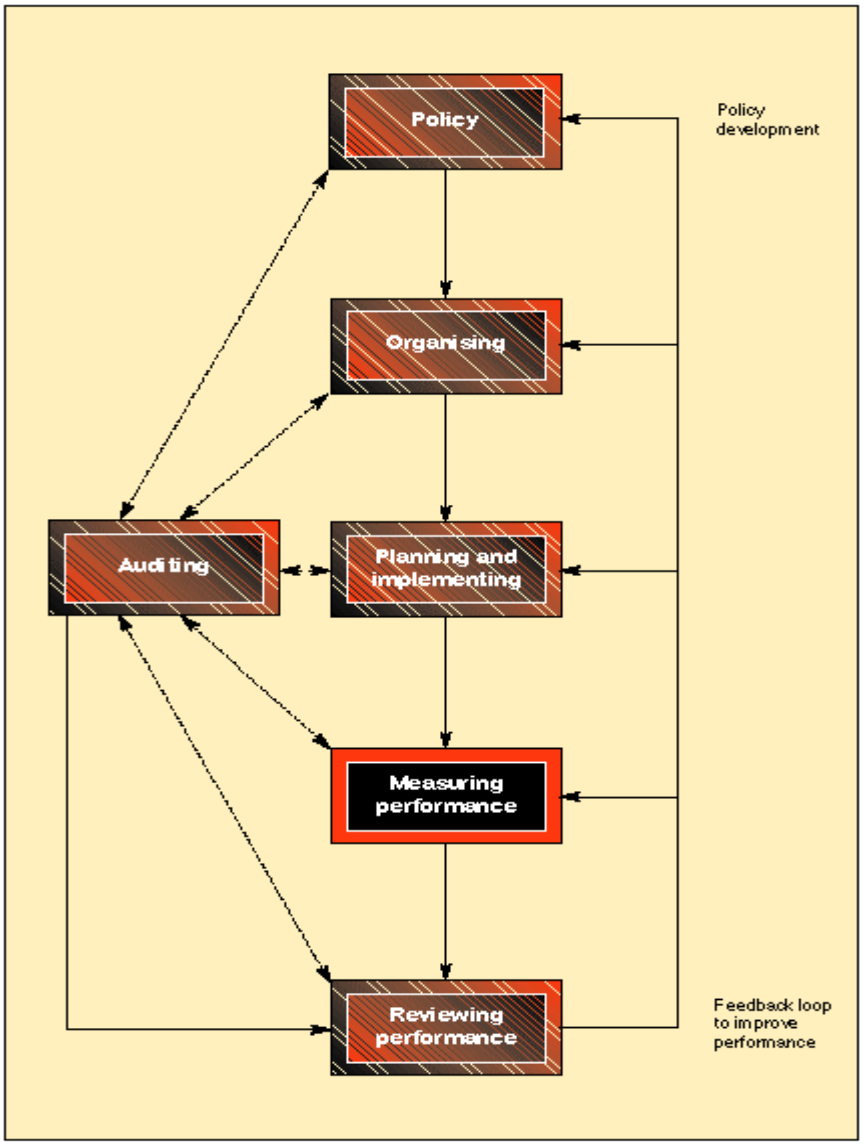

Figure 1

Figure 1: Performance measurement within the health and safety management system

Providing information

The primary purpose of measuring health and safety performance is to provide information on the progress and current status of the strategies, processes and activities used by an organisation to control risks to health and safety.

Measurement information sustains the operation and development of the health and safety management system, and so the control of risk, by:

- providing information on how the system operates in practice;
- identifying areas where remedial action is required;
- providing a basis for continual improvement; and

- providing feedback and motivation.

Effective performance measurement provides information on both the level of performance and **why** the performance level is as it is.

'Only when you know <u>why</u> you have hit the target can you truly say you have learnt archery'- Chinese proverb

If the information derived from measurement cannot be used as a means to understand the basis of performance then it is of little use.

Answering questions

Health and safety performance measurement should seek to answer such questions as:

- Where are we now relative to our overall health and safety aims and objectives?
- Where are we now in controlling hazards and risks?
- How do we compare with others?
- Why are we where we are?
- Are we getting better or worse over time?
- Is our management of health and safety effective (doing the right things)?
- Is our management of health and safety reliable (doing things right consistently)?
- Is our management of health and safety proportionate to our hazards and risks?
- Is our management of health and safety efficient?
- Is an effective health and safety management system in place across all parts of the organisation (deployment)?
- Is our culture supportive of health and safety, particularly in the face of competing demands?

These questions should be asked not only at the highest level but also at the various management levels and across the organisation. The aim should be to provide a complete picture of the organisation's health and safety performance.

Decision making

The measurement information helps in deciding:

- where you are relative to where you want to be;
- what progress is necessary and reasonable in the circumstances;
- how that progress might be achieved against particular restraints (eg resources or time);
- the way progress might be achieved; and

- priorities and effective use of resources.

Addressing different information needs

Information from health and safety performance measurement is needed by the people in the organisation who have particular responsibilities within the health and safety management system. These will include directors, senior managers, line managers, supervisors, health and safety professionals and employees/safety representatives. They each need information appropriate to their position and responsibilities within the health and safety management system.

For example, what the CEO of a multinational organisation needs to know from the performance measurement system will differ in detail and nature from the manager of a particular location. And this may differ in detail from a departmental manager in that location.

There needs to be overall coherence in approach so that individual measuring activities are aligned within the overall performance measurement framework. In effect this results in a hierarchical set of linked measures which reflect the organisation's structure.

Because performance measures should be derived principally to meet an internal need, there will be a limit to the number which can be used meaningfully from organisation to organisation (ie for external benchmarking purposes) rather than within the context of a particular organisation.

'Each organisation must create and communicate performance measures that reflect its unique strategy' - Kaplan

Although the primary focus for performance measurement is to meet the internal needs of the organisation, there is an increasing need to demonstrate to external stakeholders (regulators, insurance companies, shareholders, suppliers, contractors, members of the public etc) that arrangements to control health and safety risks are in place, operating correctly and effective.

While the higher hazard industries may have recognised that they have in effect been granted 'license to operate' by their local community and society, pressure for accountability is reaching other sectors through routes such as corporate social responsibility.[4] The challenge for organisations is to communicate their performance in ways which are meaningful to their various stakeholders.

WHAT TO MEASURE

Introduction

In order to achieve an outcome of no injuries or work-related ill health, and satisfy stakeholders, health and safety risks need to be controlled. Effective

risk control is founded on an effective health and safety management system. This is illustrated in Figure 2.

Figure 2

Figure 2: Effective risk control

The health and safety management system comprises three levels of control:

- **Level 3** - effective workplace precautions provided and maintained to prevent harm to people at the point of risk.
- **Level 2** - risk control systems (RCSs): the basis for ensuring that adequate workplace precautions are provided and maintained.
- **Level 1** - the key elements of the health and safety management system: the management arrangements (including plans and objectives) necessary to organise, plan, control and monitor the design and implementation of RCSs.

In addition, a positive health and safety culture supports each level. A detailed description of this three-level system is given in the *Planning and implementing* chapter of HSG 65.

To effectively answer the question 'What is our health and safety performance?', performance measurement should cover all elements of Figure 2. It should be based on a balanced approach which combines:

Input: Monitoring the scale, nature and distribution of hazards created by the organisations activities - **measures of the hazard burden**;
Process: Active monitoring of the adequacy, development, implementation and deployment of the **health and safety management system** and the activities to promote a positive health and safety culture - **measures of success**; and
Outcomes**:** Reactive monitoring of adverse outcomes resulting in injuries, ill health, loss and accidents with the potential to cause injuries, ill health or loss - **measures of failures**.

The following sections describe this approach to performance measurement based on Figure 2.

Measuring the hazard burden

The range of activities undertaken by an organisation will create hazards, which will vary in nature and significance. The range, nature, distribution and significance of the hazards (the hazard burden) will determine the risks which need to be controlled.

Ideally the hazard should be eliminated altogether, either by the introduction of inherently safer processes or by no longer carrying out a particular activity, but this is not always practical.

If the hazard burden is reduced and if other things (variables) remain constant, including consistent operation of the health and safety management system, this will result in lower overall risk and a consequent reduction in injuries and ill health. For example, the inventory of hazardous materials might be reduced so that the associated risks are reduced.

Of course, the hazard burden may increase as the organisation takes on new activities or makes changes to existing ones. For example, increasing the throughput on a chemical plant might involve larger inventories and larger pipe diameters resulting in potentially larger releases.

Measuring the hazard burden answers the questions:

- What are the hazards associated with our activities?
- What is the significance of the hazards (high/low)?
- How does the nature and significance of the hazards vary across the different parts of our organisation?
- How does the nature and significance of the hazards vary over time?
- Are we succeeding in eliminating or reducing hazards?
- What impact are changes in our business having on the nature and significance of hazards?

This information provides an important input into planning and review processes to ensure that proportionate effort, prioritisation and emphasis are given to the control of risks.

Measuring the health and safety management system

Overview

The health and safety management system is the process which turns uncontrolled hazards to controlled risks. The key elements of:

- policy;
- organising;
- planning and implementation;
- measuring performance; and

- audit and review

illustrated in Figure 1 all need to be in place to control risks effectively. These are described fully in HSG 65. The performance measurement system must cover each element of the health and safety management system.

Policy

The measuring process should establish that a written health and safety policy statement:

- exists;
- meets legal requirements and best practice;
- is up to date; and
- is being implemented effectively.

The information to demonstrate that the policy is being implemented effectively will be collected through the overall process of measuring health and safety performance and from the auditing process.

Organising

The measurement process should gauge the existence, adequacy and implementation of arrangements to:

- establish and maintain management **control** of health and safety in the organisation;
- promote effective **co-operation** and participation of individuals, safety representatives and relevant groups so that health and safety is a collaborative effort;
- ensure the effective **communication** of necessary information throughout the organisation; and
- secure the **competence** of the organisation's employees.

Planning and implementation

The measurement process should gauge the existence, adequacy and implementation of the planning system. The planning system should be able to:

- deliver **plans with objectives** for developing maintaining and improving the health and safety management system;
- design, develop, install and implement suitable **management arrangements, risk control systems and workplace precautions** proportionate to the needs, hazards and risks of the organisation;
- provide **effective prioritisation** of activities based on risk assessment;
- ensure the correct **balance of resources and effort is being targeted proportionately** according to the hazard/risk profile across the

organisation (for example, is disproportionate effort being expended on slips/trips relative to control of major accident hazards or fire safety?);
- **operate, maintain and improve** the system to suit changing needs and process hazards/risks; and
- promote a **positive health and safety culture.**

Over a period of time the information from the various measuring activities and from other sources (notably audit) will demonstrate how well the planning system delivers suitable management arrangements and risk control systems. These should be:

- effective, ie they are doing the right thing and in the right place at the right time?
- reliable, ie they are consistently applied? and
- efficient, ie they are doing the right things right?

More detail is provided in the section *Planning and implementing - a more detailed look*.

Measuring performance

The measuring process itself is an essential element of the health and safety management system, so its operation of will also need to be monitored.

Audit and review

Audit and review form the final steps in the health and safety management control loop, so their existence, adequacy and implementation need to be included within the measuring process.

Measuring failure - reactive monitoring

So far we have dealt with measuring activities designed to prevent the occurrence of injuries and work-related ill health (active monitoring). Failures in risk control also need to be measured (reactive monitoring), to provide opportunities for organisations to check performance, learn from failures and improve the health and safety management system.

Reactive monitoring arrangements include systems to identify and report:

- injuries and work-related ill health;
- other losses such as damage to property;
- incidents, including those with the potential to cause injury, ill health or loss;
- hazards and faults; and
- weaknesses or omissions in performance standards and systems.

Guidance on investigating these events is outside the scope of this guidance but investigations should:

- establish what happened;
- identify the reasons for substandard performance;
- identify the underlying failures in the health and safety management system;
- learn from events;
- prevent recurrences; and
- satisfy legal and reporting requirements.

The reactive monitoring system should answer the following questions:

- Are failures occurring (injuries/ill health/loss/incidents)?
- Where are they occurring?
- What is the nature of the failures?
- How serious are they?
- What were the potential consequences?
- What are the reasons for the failures?
- What are the costs?
- What improvements in the health and safety management system are required?
- How do all the above points vary with time?
- Are we getting better/worse?

Measuring the health and safety culture

The health and safety culture of an organisation is an important factor in ensuring the effectiveness of risk control. The health and safety management system is an important influence on the safety culture, which in turn impacts on the effectiveness of the health and safety management system. Measuring aspects of the safety culture therefore forms part of the overall process of measuring health and safety performance.

Many of the activities which support the development of a positive safety culture need to be measured. They are included under the headings (the 'four Cs': see *Organising*):

- control;
- communication;
- co-operation; and
- competence.

The term 'health and safety climate' has been used to describe the tangible outputs of an organisation's health and safety culture as perceived by individuals or work groups at a point in time. Health and safety climate is amenable to measurement, and HSE has developed a *Health and safety*

climate survey tool[5] to allow organisations to canvass the views of their employees on some key aspects of health and safety within their organisation.

The health and safety related behaviour of individuals at all levels of the organisation is influenced by the health and safety culture, and the behaviours in turn shape the culture. Behaviours which support and promote a positive health and safety culture and an effective health and safety management system need to be included within the measurement process (an HSE Contract Research Report[6] on behavioural safety is currently in preparation).

Planning and implementing - a more detailed look

The following sections provide more detail on performance measurement in relation to plans and objectives, management arrangements, risk control systems and work place precautions (the levels 1,2 and 3 in Figure 2).

Measuring progress with plans and objectives

One of the key outputs of the planning process is plans and objectives to develop, maintain and improve the health and safety management system. The various plans across the different parts of an organisation need to be aligned to meet the organisation's overall aims and to provide a coherent approach to effective risk control. The overall goals set at the highest level in the organisation need to be put into effect by a series of linked plans and objectives. These should cascade down the various levels within the organisation.

A prerequisite of effective health and safety plans and objectives is that they should be SMART, ie:

- **S**pecific;
- **M**easurable;
- **A**ttainable;
- **R**ealistic/**R**elevant; and
- **T**imebound.

So the first check in the measurement process is whether plans and objectives meet this test.

Measuring progress with plans and objectives is facilitated by defining **who** does **what**, **when** and **with what result.** This means that regular checks on progress can be made at appropriate intervals against a defined performance standard.

These checks need to take place at successive levels within the organisation at corporate, site, local and individual level, reflecting the appropriate hierarchical structure of the organisation. At individual level, the information gathering may form part of a performance appraisal system, which holds people accountable for their health and safety responsibilities and rewards

them appropriately. Measuring progress with plans and objectives provides a useful input to reporting health and safety performance at various levels within the organisation

An important part of the measurement process is to monitor compliance with remedial actions where areas for improvement have been identified. These actions can arise from audits as well as active and reactive monitoring.

Measuring management arrangements and risk control systems

Measuring management arrangements and risk control systems (the levels 1 and 2 of Figure 2) should cover three aspects:

- capability;
- compliance (implementation); and
- deployment.

Capability

In many organisations, their health and safety management system has evolved over time rather than being designed from first principles. This contrasts with the organisation's physical processes or production processes, where careful and systematic consideration will have been given to ensure they are designed to deliver the desired outcomes.

The same discipline needs to be applied to management arrangements and risk control systems. The performance measurement system must include checks on whether the particular management arrangement (eg the accident investigation system), or risk control system (eg the system to control contractors) has the **capability** to deliver the required outcome and is fit for purpose. In practice, this information might be collected by audit or a review of arrangements and systems which are already in place.

Unless the performance measurement system includes these checks, there will be a natural limit on the performance of the health and safety management system. Because of the limitations in its original design there will be no guarantee that the desired outcomes will be achieved. There are essentially two aspects to consider:

(a) is there a **system** in place? and
(b) Is the system **'technically adequate'** for the required application?

(a) To establish that a **system** is in place means checking that there is a plan-do-check-act process so that:

- clear scope and objectives are defined for the outcome, ie what the system is intended to deliver;

- clear responsibilities are assigned to individuals within the system, which they are held accountable for;
- the competencies of people operating the system are defined;
- people who are expected to implement the system have had the opportunity to provide input to its design;
- there are procedures which define how the system is to be implemented and the performance standards expected;
- the methods of monitoring compliance and effectiveness of the system are defined;
- there are arrangements for reviewing the design and operation of the system and taking appropriate action to correct deficiencies and for continual improvement; and
- adequate resources are provided to operate the system effectively.

(b) The presence of the plan-do-check-act elements alone is not sufficient. The system needs to be **'technically adequate'** or fit for purpose relative to the application. For example, arrangements for investigating accidents will be of limited value if the investigation system does not identify root causes of the accident.

Similarly a system aimed at controlling the risks associated with managing change on a chemical plant will be of limited value if the only changes included are engineering or material changes, but changes such as personnel, organisational structure, instrumentation or recipe are not included.

The yardsticks for checking 'technical adequacy' are relevant legal requirements and best practice including the consideration of human factors issues (see HSE guidance *Reducing error and influencing behaviour*[7]). Information on best practice might be obtained through published guidance or through benchmarking with others (see HSE leaflet *Health and safety benchmarking*[8]).

The procedures for implementing the system should be realistic and achievable in terms of the demands placed upon the people who have to carry them out. For example, can people actually do what is required of them to the standard required in the time available? Procedures should also be compatible with other procedures the organisation has in place to manage other aspects of the business.

Compliance

No matter how well the management arrangements and risk control systems are designed, they can never deliver the desired outcome if they are not implemented or complied with. Performance measurement must provide information to determine the level of compliance with the management arrangements and risk control systems.

It is vitally important that employees understand how the particular management arrangement or risk control system is expected to operate. It is useful to be able to capture the implementation process as designed in a

process flowchart. This can be used to decide what aspects of the process need to be measured to check that the process is being implemented as intended (see *Deriving performance measures*).

The basis for the active monitoring of compliance are performance standards (see HSG 65) which define **who** does **what**, **when** and with **what result**.

Deployment

In larger organisations senior management will need information to determine that the health and safety management system elements are in place and operating effectively across the organisation rather than in isolated parts. So a measurement of deployment will be required. This should include information on the levels of compliance with the particular management arrangement or risk control system across various parts of the organisation.

Taken together, measuring capability, compliance and deployment effectively provides information on three dimensions of the management arrangements and risk control systems. This is illustrated in Figure 3.

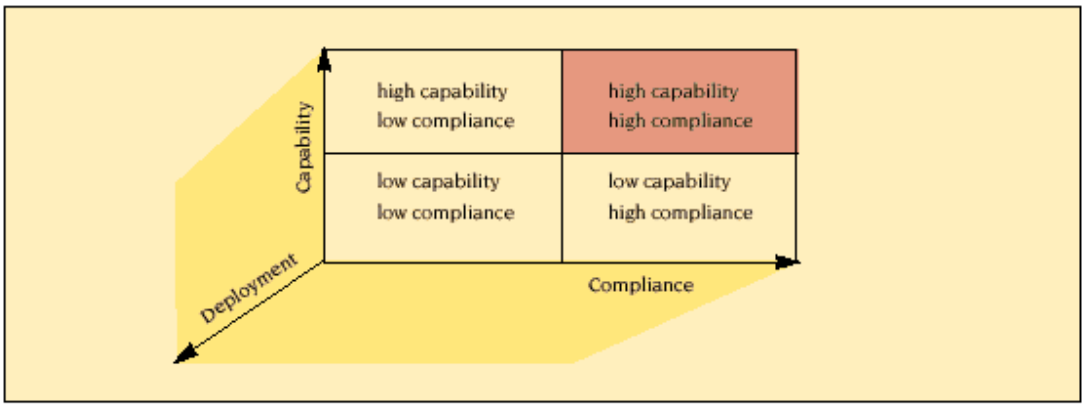

Figure 3

Figure 3: Three dimensions of measurement

The aim would be to be in the dark shaded area of Figure 3, ie high capability and high compliance effectively deployed across the organisation.

This approach provides management with a way to gauge performance which they can apply at different levels. For example, looking at a specific management arrangement (eg competence) or risk control system (eg entry into confined spaces), or looking at a range of management arrangements and risk control systems at a particular site or across the organisation .

Measuring workplace precautions

The output of risk control system design is having suitable workplace precautions (level 3 in Figure 2) in place at the point of risk for the hazards and risks associated with work activity. The risk assessment process is at the

core, because when done correctly it will define the precautions needed to control particular risks which must be included in the risk control system.

The compliance measurement should provide information to determine whether the workplace precautions are:

- in place;
- operating; and
- effective.

Measurement means comparing the 'as is' against a defined standard or yardstick. The definition of the workplace precautions to control a particular risk forms the basis of measuring performance in controlling that risk. It is useful to consider workplace precautions under the following issues (the 'four Ps'):

- premises,
- plant and materials,
- procedures,
- people.

This is illustrated in Figure 4.

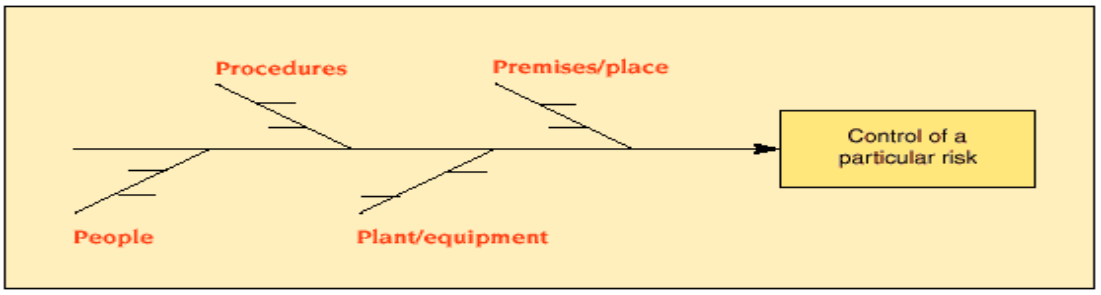

Figure 4

Figure 4: Workplace precautions

The following example uses the risks associated with workplace transport but the principles can be applied to other risks. For workplace transport, the workplace precautions under each of the headings might include:

Premises

- Defined roadways/one way system.
- Need for reversing eliminated/minimised.
- Roadways in good condition.
- Speed bumps.

Plant

- Vehicle selection eg good driver access/visibility.
- Vehicles maintained in good condition - tyres/brakes.
- Seat restraints fitted.

- Reversing aids provided.

Procedures

- Speed limits set for vehicles.
- Vehicles chocked appropriately.
- Reversing controlled.
- Authorised drivers.
- Drivers in safe position during loading.

People

- Competent drivers.
- Drivers following the speed limit.
- Pedestrians using designated walkways.

Each of the precautions defined will then fall within the scope of what to measure. (See also *How to measure performance*). Monitoring compliance with defined workplace precautions is the major element in day-to-day measurement activity.

WHEN TO MEASURE PERFORMANCE

Measuring health and safety performance is an ongoing activity, so in one sense the measurement process is continuous. But like any other activity measurement should be both efficient and effective, so the frequency with which it takes place needs to be planned appropriately. You should consider the following factors:

- **Suitable intervals to ensure that specific planned milestones are achieved**

If health and safety plans and objectives are SMART, they will include specific times when specific milestones will be achieved. Monitoring the progress with the plans should be aligned with the particular timescales for achievement.

- **The potential for change from one state to another over time**

For example, the design of a particular management arrangement or risk control system does not change from day to day so that the checks on the design might be appropriate at:

- the initial design phase;
- whenever changes are made which could impact on the operation of the systems;
- when information is obtained which indicates that the system as designed has failed in some way (eg when there has been an injury); or
- when data from the monitoring of the operation of the system indicates the design is flawed.

Similarly, the state of a particular work place precaution, for example the integrity of a fixed machine guard, might not be expected to vary significantly

from day to day once it has been put in place. A check at greater intervals might be more appropriate.

Suppliers of plant and equipment will often prescribe inspection and maintenance intervals to ensure optimum performance.

- **The relative importance of the activity or particular precaution relative to the overall control of risk**

Some precautions needed to control a particular risk may need to be monitored on an almost continuous basis, eg the flow of cooling water, the presence (or absence) of oxygen, air flow, flammable gas levels, and require effective instrumentation. Systems to control risks associated with high hazards will need to be monitored at more frequent intervals than those for low hazards.

- **Where intervals for monitoring are prescribed by legislation**

Some legislation requires monitoring to take place at specific intervals, for example, inspection of lifting equipment.

- **Where there is evidence that there is non-compliance**

Where monitoring has discovered evidence of non-compliance then once remedial action has been taken, it may be appropriate to introduce more frequent monitoring to check that the remedial action has been successful.

- **Where there is evidence of compliance**

Where monitoring has provided evidence that there is regular compliance with a particular requirement,it may be appropriate to consider reducing the frequency of that monitoring and targeting resources elsewhere.

- **The relative frequency and time at which a particular activity takes place**

Some work activities only occur at particular times of the day or night or periods of the year. It is important that the measurement process covers these activities effectively and is not just confined to frequent ‘9 to 5’ activities.

WHO SHOULD MEASURE PERFORMANCE

Health and safety performance needs to be measured at each management level in an organisation, starting with the most senior management. Senior managers must guard against a culture of management, or measurement of health and safety, by exception. This means that unless a problem or deficiency is brought to their attention they presume that everything is working as intended and do not inquire any further.

The dangers of this approach have been highlighted in several reports of official inquiries into major incidents in the UK and abroad. Senior managers must satisfy themselves that appropriate arrangements to control health and safety risks are:

- in place;
- complied with; and
- effective.

Organisations need to decide how to allocate responsibilities for both active and reactive monitoring of performance at different levels in the management chain. They should also decide what level of detail is appropriate. The decisions will reflect the organisation's structure. Managers should be given responsibility for monitoring the achievement of plans and objectives and compliance with standards for which they and their subordinates are responsible. Managers and supervisors responsible for direct implementation of standards should monitor compliance in detail and be competent to do so.

Above this immediate level of control, monitoring needs to be more selective but provide assurance that adequate first line monitoring is taking place. This should reflect not only the quantity but also the quality of subordinates' monitoring.

There needs to be performance standards (who does what when, to what effect) for managers to indicate how they will monitor.

HOW TO MEASURE PERFORMANCE

Introduction

The foundation of effective performance measurement is an effective planning system which produces specifications and performance standards for the management arrangements and risk control systems. These provide the yardsticks for the measurement process.

The measurement process can gather information through:

- direct observation of conditions and of peoples' behaviour;
- talking to people to elicit facts and their experiences as well as gauging their views and opinions; and
- examining written reports, documents and records.

These information sources can be used independently or in combination. Direct observation includes inspection activities and the monitoring of the work environment (eg temperature, dust levels, solvent levels, noise levels) and people's health and safety related behaviour.

Each risk control system will have a built-in monitoring element if it has been designed correctly to define the frequency of monitoring (see *Capability*). Rather than monitoring particular risk control systems and associated workplace precautions in isolation, it may be more efficient to combine the individual monitoring activities where it makes sense to do so.
This may be achieved by developing a checklist or inspection form which covers the key issues to be monitored in a particular department or area of

the organisation within a particular time period. It might be useful to structure this checklist using the ‘four Ps’ (note that the examples are not a definitive list: you should be able to think of others to fit your circumstances):

- **Premises, including:**

Access/escape.
Housekeeping.
Working environment.

- **Plant and substances, including:**

Machinery guarding.
Local exhaust ventilation.
Use/storage/separation of materials/chemicals.

- **Procedures, including:**

Permits to work.
Use of personal protective equipment.
Procedures followed.

- **People, including:**

Health surveillance.
People’s behaviour.
Appropriate authorised person.

In order to get maximum value from inspection checklists, they should be designed so that they require objective rather than subjective judgements of conditions. For example, asking the people undertaking a general inspection of the workplace to rate housekeeping as good or bad begs questions as to what does good and bad mean, and what criteria should be used to judge this.

The checklist or inspection form should facilitate:

- the planning and initiation of remedial action, by requiring those doing the inspection to rank deficiencies in order of importance;
- taking remedial actions, with names and timescales to track progress to implement improvements;
- periodic analysis to identify common features or trends which might reveal underlying weaknesses in the system; and
- information to aid judgements about changes in the frequency or nature of the monitoring arrangements.

Deriving performance measures

There is online source material available for deriving performance measures, introducing a performance measurement process and interpreting and displaying performance data (see *Further information*).

Organisations need to guard against the danger of having a performance measurement process where there is measurement for measurement's sake. Just because something is amenable to measurement does not mean that it has to be measured. Like any activity, measurement has associated costs and so needs to be undertaken efficiently and to best effect.

'The single biggest mistake organisations make is to have too few performance measures. The second biggest is to have too many' - Mark Graham Brown

There is general agreement on the key steps in developing a performance measurement system. It is important that all those who are involved in the processes or activities have the opportunity to contribute to the following steps:

1 Identify the key processes

In the case of health and safety, these will be the management arrangements, risk control systems and workplace precautions.

2 Analyse the key management arrangements and risk control systems to produce a process map or flow chart

If the management arrangements and risk control systems have been designed correctly, it should be relatively easy to produce a flowchart. It is vitally important to understand how the process actually operates on the ground, so it is important to involve those responsible for implementing the process in this activity.

3 Identify the critical measures for each management arrangement and risk control system

This can be done by considering:

- What outcome do we want?
- When do we want it?
- How would we know if we achieved the desired outcome?
- What are people expected to do?
- What do they need to be able to do it?
- When should they do it?
- What result should it produce?
- How would we know that people are doing what they should be doing?

Again, it is important to include the people involved in implementing the arrangements and systems in deciding what the critical measures might be.

The measures which are derived should be:

- accepted by and meaningful to those involved in the activities being measured and those who need to use the measures;
- simple/understandable/repeatable/objective;
- capable of showing trends;
- unambiguously defined;

- cost-effective in terms of data collection;
- timely;
- sensitive; and should
- drive appropriate behaviour.
-

This last point is particularly important because the choice of measures can sometimes promote behaviours which are in conflict with the desired outcomes. For example, rewarding low accident rates (in the absence of other measures of performance) can lead to under-reporting. Or merely counting the number of safety meetings held by a supervisor can lead to the target for the number of safety meetings being achieved but the quality being very poor.

4 Establish baselines for each measure

Once the individual measures have been established then baseline data needs to be established.

5 Establish goals or targets for each measure.

Again, this should be done by involving the people who are expected to operate the particular activity rather than imposing goals or targets on them arbitrarily.

6 Assign responsibility for collecting and analysing the data

It is important to assign responsibility for collecting and analysing the data, and to hold people accountable for this activity.

7 Compare actual performance against target

The emphasis should be on achievements rather than failures, but it is important to analyse the reasons for substandard performance if improvements are to be made.

8 Decide on corrective action

The measurement data should provide information to enable decisions to be made about what corrective action is required and where and when it is necessary.

9 Review the measures

The measures derived need to be reviewed regularly to ensure that they remain appropriate, useful and cost-effective. There should not be frequent changes of measures because this can lead to confusion.

Improving your performance measurement arrangements

In seeking to improve your organisation’s approach to measuring health and safety performance, a useful starting point is to review what measuring activity is currently taking place against this guidance. You should include consideration of:

- range, nature and deployment;
- gaps in the coverage;
- balance and emphasis;
- design basis;

- frequency - too little/too much;
- responsibility for collecting, analysing and reporting measurement information;
- corrective action arrangements; and
- effectiveness in driving improvement.
-

This might best be done using a team approach involving managers, supervisors, employees and safety representatives. The *References* also provide useful information.

The first aim should be to develop a measurement system which provides information to enable you to comply with relevant legal requirements as a minimum.

REFERENCES

1 *Successful health and safety management* HSG 65 2nd Edition HSE Books 2000 ISBN 0 7176 1276 7
The chapter on *Planning and implementing* is included here.

2 *Revitalising Health and Safety*: www.hse.gov.uk/links/revital.htm
Health and safety in annual reports: guidance from the Health and Safety Commission: www.hse.gov.uk/revital/annual.htm

3 *Internal control: Guidance for directors on the combined code* (Turnbull Report) Institute of Chartered Accountants in England and Wales 1999 ISBN 1 84152 010 1
Available online at: www.icaew.co.uk/internalcontrol

4 *Society and business: Developing corporate social responsibility in the UK* Department of Trade and Industry web site: www.societyandbusiness.gov.uk

5 *Health and safety climate survey tool* Information pack HSE Books 1997 ISBN 0 7176 1462 X
Available online at www.hse.gov.uk/pubns/misc097.pdf
Summary guide to safety climate tools
www.hse.gov.uk/research/otopdf/1999/oto99063.pdf

6 Contract Research Report on behavioural safety - currently in production. Contract Research Reports are available on the HSE website on www.hse.gov.uk/research/frameset/crr/index.htm

7 *Reducing error and influencing behaviour* HSG 48 (Second revised edition) HSE Books 2000 ISBN 0 7176 2452 8

8 *Health and safety benchmarking. Improving together. Guidance for those interested in applying benchmarking to health and safety* INDG301 HSE Books 1999
This free leaflet is also available online at www.hse.gov.uk/pubns/indg301.pdf

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.

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FURTHER INFORMATION

Further information on performance measurement can be found in the following guidance:

The performance-based management handbook Oak Ridge Institute for Science and Education Performance-Based Management Special Interest Group
www.orau.gov/pbm/pbmhandbook/pbmhandbook.html
The *Handbook* is a six-volume compilation of tools and techniques for implementing the US Government Performance and Results Act of 1993. A six step 'Performance measurement process model' was developed, each step corresponding to one of the six volumes of the *Handbook*. The contents and key points of individual volumes are detailed below.
Vol 1: Establishing and maintaining a performance-based management program
Contains an overview of the whole *Handbook*. Includes the initial step of the performance management process. This concentrates on how to define organisational mission and strategic objectives for a performance measurement system to deliver.
Vol 2: Establishing and updating performance objectives and measures
Details the basics of performance measurement. Gives examples of measurement frameworks (balanced scorecard, 'critical few', and performance dashboards) and approaches to development of indicator sets.
Vol 3: Establishing accountability for performance
Considers the concepts of accountability and how these relate to the development and operation of a performance measurement system.
Vol 4: Collecting data to assess performance
Considers the issues arising from data collection. These include the establishment of measurement requirements; what data is then needed; methods that can be used to collect the data; and optimisation of data collection against frequency, cost and privacy concerns.
Vol 5: Analysing and reviewing performance data
Considers how to develop analysis and meaningful interpretation of data once collected. Examines how to identify whether variation is statistically significant or not and how to check for bias and inconsistencies in data.
Vol 6: Using performance information to drive improvement
Considers how to use the results of the performance indicator analysis to drive improvements. Includes consideration of benchmarking and process continuous improvement or reengineering.

How to measure performance: A handbook of techniques and tools
Training Resources and Data Exchange (TRADE) Performance-Based Management Special Interest Group
www.orau.gov/pbm/handbook/handbook2.html

Prepared by US Department of Energy and Oak Ridge Associated Universities. A guide for organisations to determine what type of indicators they need. Provides guidance on what should be measured, and some examples of how such a system can be set up. Three systems for constructing indexes are described, as well as a substantial case study.

Serving the American public: Best practices in performance measurement. Benchmarking Study Report June 1997
http://govinfo.library.unt.edu/npr/library/papers/benchmrk/nprbook.html
Or http://govinfo.library.unt.edu/npr/library/papers/benchmrk/nprbook.pdf
Best practice study undertaken to detail processes and approaches of organisations considered to be best in class for performance measurement and management

Audit Commission guidance:
Aiming to improve: The principles of performance measurement Audit Commission 2000 ISBN 1 86240 227 2
Available online at www.audit-commission.gov.uk/publications/brpperfm.shtml
An introduction to why performance is measured, and the basic principles behind performance measurement.
On target: The practice of performance indicators Audit Commission 2000 ISBN 1 86240286 8
Available online at
http://www.auditcommission.gov.uk/publications/brtargets.html
Considers how performance indicators can be developed and used in practice. Examines different types of indicators, achieving a balanced set of indicators, and the criteria for robust meaningful indicators. Includes case studies and considers pitfalls to avoid.
Both papers related mainly to auditing and meeting national performance standards.

Stephen A Newell *A new paradigm for safety and health metrics: Framework, tools, applications and opportunities* Organisation Resources Counselors Inc www.orc-dc.com
Presentation of ongoing work to develop health and safety metrics.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice.

FEEDBACK

We would be interested to receive your views on any aspects of this document and ways we might develop and improve it.

We recognise that it might be helpful to include examples of particular measures which organisations have used and find useful. So we would be particularly interested in hearing from you if you have such examples to offer.

Please use the feedback form below to send us your comments.

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