



Active and Reactive Monitoring



Key Information

- Active monitoring is about checking to ensure that standards are met and that the workplace is in fact safe and free of health risks before any untoward event takes place.
- Safety inspections, sampling, surveys and tours are four active monitoring methods that can be used to check conformance to standards.
- Workplace inspections play an important role in active monitoring. Various factors must be considered when setting up an inspection system, such as:
 - Type of inspection.
 - Frequency of inspection.
 - Responsibilities for inspection.
 - Competence of the inspector.
 - Use of checklists.
 - Action planning for problems found.
- If an inspection report is written then it must be effective. This requires an appropriate writing style, structure, content and the use of persuasive argument to justify recommendations.
- Reactive monitoring is about measuring safety performance by reference to accidents, incidents and ill-health that have already occurred. Reactive measures therefore include measures of incident types and frequency rates, sickness absence rates, number of reported near miss events and property damage incidents, etc. The number of enforcement actions taken and number of civil claims can also be considered reactive measures.

Health and safety performance should be monitored. This can be done using various methods that fall into two broad categories:

- **Active monitoring** – to ensure that health and safety standards are correct in the workplace before accidents, incidents or ill-health are caused.
- **Reactive monitoring** – using accidents, incidents and ill-health as indicators of performance to highlight areas of concern.

In most workplaces both types of monitoring have their place.

Monitoring should be a line management function, but remember that senior management has responsibility for ensuring that effective health and safety performance monitoring systems are in place.

Active Monitoring

Active monitoring is concerned with checking standards before an unwanted event occurs. The intention is to identify:

- Conformance with standards, so that good performance is recognised and maintained.
- Non-conformance with standards, so that the reason for that non-conformance can be identified and corrective action put in place to remedy any shortfall.

There are many different ways of actively monitoring health and safety performance. We will outline some of them in the following sections.

Performance Standards

In order to actively monitor performance standards you have to identify exactly which performance standard to monitor and what level of performance is acceptable.

You could actively monitor the following activities to give a measure of performance:

- Number and quality of risk assessments covering work activities.
- Provision of health and safety training to schedule.
- Completion of consultative committee meetings to schedule.
- Completion of workplace inspections to schedule.
- Completion of safety review meetings to schedule.



Element 5: Health and Safety Management Systems 4 – Measuring, Audit and Review

All these management activities are likely to be taking place in the workplace, so it is possible to assess whether they are happening or not. In most instances you can also measure the degree to which they are happening and perhaps assess their quality. For example, a standard might be that when contractors start new work on site there should be suitable and sufficient risk assessments to cover their work. The presence or absence of risk assessments can be checked. The number of risk assessments can be measured to quantify compliance. The quality of each risk assessment can be judged. In this way a full picture of compliance can be built up.

Systematic Inspections

One popular way to actively monitor health and safety performance is to carry out systematic inspections. These inspections can focus on the four Ps:

- **Plant** – machinery and vehicles as well as any statutory inspections and examinations.
- **Premises** – the workplace and the working environment.
- **People** – working methods and behaviour.
- **Procedures** – safe systems of work, method statements, permits-to-work, etc.

An inspection might concentrate on one, several or all four of these areas. Systematic inspection regimes usually exist in many different forms within different workplaces.

For example, in a distribution warehouse there might be:

- A **daily** inspection regime where forklift truck drivers inspect their own vehicles at the start of each shift – **Plant**.
- A **weekly** inspection regime where supervisors check that forklift trucks are being driven safely – **People**.
- A **monthly** inspection regime where the manager checks the entire warehouse for housekeeping – **Premises**.
- A **six-monthly** thorough examination of each forklift truck by a competent engineer to ensure safety of the load-bearing parts – **Plant**.
- An **annual** inspection regime for the storage racking to ensure structural integrity – **Premises**.

If this series of inspections is in place then it is possible to monitor the degree to which each is being carried out successfully. In this way two different types of active monitoring are being carried out: one on the workplace directly (the 4Ps), and one on the performance of those checks.



Weekly inspection by a site supervisor

Safety Inspections, Sampling, Tours and Surveys

These are four slightly different methods of active monitoring, each of which has a place in an active monitoring regime. (Remember that the actual names given to these methods may vary between workplaces.)

Safety Inspections

The term “safety inspection” means a regular, scheduled activity with comparison to accepted performance standards. It can be applied to:

- The **routine** inspection of a workplace to determine if general standards of health and safety are acceptable or if corrective action is necessary (e.g. a quarterly housekeeping inspection in an office).
- The **statutory** inspection of an item by a competent person to fulfil a legal requirement (e.g. the annual thorough examination of an item of lifting equipment).
- The **periodic** inspection of plant and machinery as part of a planned maintenance programme (e.g. a mechanic inspects the brakes on a lorry on a regular basis to ensure they are not excessively worn).
- The **pre-use checks** carried out by workers before they use certain items of plant and machinery (e.g. the start up checks carried out by a forklift truck driver).

All these inspections can be repeated routinely to form an inspection regime, and can all be recorded to provide evidence of inspection.

Safety Sampling

This is the technique of monitoring compliance with a particular workplace standard by looking at a representative sample only. If a big enough sample is collected then there is a strong likelihood that the results of the sample will reflect the results for the workplace as a whole.

For example, if the standard in a large office complex is that all 1,200 fire extinguishers must be inspected



annually by a competent engineer, then there are several ways to monitor this standard:

- Check the maintenance records to ensure each and every fire extinguisher has been signed off.
- Check all 1,200 fire extinguishers directly by inspecting every one.
- Check a representative sample of, say, 50 extinguishers selected at random from various locations around the complex.

The last method is safety sampling. It provides better evidence of compliance to the standard than simply checking the engineer's maintenance records since they may have signed extinguishers off without ever inspecting them. It is also far less time-consuming and onerous than checking all 1,200 extinguishers directly.



Workplace safety inspection

Safety Surveys

A safety survey is a detailed examination of one particular issue or topic, e.g. a detailed examination of the provision of emergency lighting within a building. The word "survey" can be used to refer to various types of detailed examination:

- Environmental monitoring is a form of safety survey, e.g. a noise assessment usually requires that a noise survey is carried out by a competent person using a sound level meter.
- A structural survey is a detailed examination of the structural integrity of a building or item.

- A staff survey is an examination of workers' opinions, usually collected by asking staff to fill in a questionnaire.

All of these types of survey might be used to actively monitor safety.

Safety Tours

A safety tour is a high profile inspection of a workplace carried out by a group or team including managers. The tour may be formal, but can also be informal - a walk round looking at points of interest (usually unscheduled). The group carrying out the tour should include managers from the area being inspected and possibly worker representatives, safety specialists, occupational health specialists, engineers and workers from the area. One of the objectives of the tour is to raise the profile of health and safety and to demonstrate management interest and commitment. Safety observation tours can also be used to monitor the way that workers are behaving – these are known as behavioural observations. Once behaviours are observed, feedback (positive and negative) is given to the worker so that the organisation and operator can learn from the process.

Arrangements for Workplace Inspections

Certain factors must be considered before the introduction of a workplace inspection system, including:

- The **type of inspection** - inspections are carried out for a number of different reasons and they examine different aspects of safety in the workplace. Is this a statutory inspection to ensure legal compliance? A general workplace inspection that looks at plant and premises? A pre-start inspection for an item of machinery?
- The **frequency of inspection** – likely to be determined both by the type of inspection and the level of risk. For example, a general workplace inspection might be conducted in an office once a month, but once a week in a workshop environment to reflect the higher risk. The frequency of statutory inspections is normally determined by the relevant law. Pre-start checks should usually be carried out at the start of every shift.
- **Allocation of responsibilities** – those responsible for ensuring that inspections take place should be identified, as should the employees who will be carrying out the inspections.
- The **competence and objectivity of the inspector** – an essential characteristic of whoever is conducting the inspection; the person should have the necessary training, knowledge and experience. In some instances certification to a specific standard will be required; in other situations all that is necessary is an understanding of the workplace, health and safety



principles, and a willingness to ask questions. An inspector also needs to be impartial and objective in their approach, even when looking at an area that they are very familiar with. Training may be required for those who will be conducting inspections.

- The **use of checklists** – these are valuable tools for use during the inspection process. Checklists ensure that:
 - All points are covered by the inspector.
 - There is a consistency of approach to the process.
 - There is a form of written record of the inspection and its findings.

However checklists do have their weaknesses, the most important being that an inspector may only deal with the points on the checklist and ignore other issues that exist in the workplace but are not included on the checklist.

- Action planning for problems found – so that appropriate action is taken following the inspection to resolve issues in a timely manner. An inspection system that identifies a problem or issue but then does not result in action being taken is a flawed system. There must be clear identification of the:
 - Corrective action required.
 - Persons responsible for taking that action.
 - Priorities/timescales.

The inspection system can be documented and formalised once procedures based on all these factors have been agreed.



Topic Focus

Factors to take into account when determining the frequency of inspections:

- Statutory requirements may dictate an inspection frequency.
- The activities carried out and the level of risk.
- How well established the process is, e.g. new equipment may require more frequent monitoring.
- Risk assessments may suggest inspections as a control measure.
- Manufacturers may make recommendations as to inspection frequency and content.
- The presence of vulnerable workers, e.g. young and inexperienced people.
- Findings from previous inspections, which may suggest compliance concerns.
- Accident history and results of investigations.
- Enforcement authorities may recommend inspections.
- Whether workers have voiced concerns.

Example Inspection System

A bank head office introduces an inspection system to actively monitor general health and safety standards. A set of formal arrangements are documented and included in the safety policy of the company. These arrangements describe:

- The **purpose** of the inspection system – to monitor general health and safety standards.
- The **frequency** of the inspections – once a month for all areas.
- The **persons responsible** – managers of a particular grade for ensuring that inspections are carried out, managers of the next grade down for actually doing the inspections.
- **Competence of inspectors** – the need for inspecting managers to attend a one day course on the inspection system.
- **Inspection checklist** – a generic checklist created appropriate to all office areas, which may be tailored by the inspector if necessary.
- **Follow up arrangements** – an action plan table created and included on the inspection checklist.



Topic Focus

Typical topic headings that might be included in a generic inspection checklist:

- Fire safety – including emergency escape routes, signs, extinguishers.
- Housekeeping – general tidiness and cleanliness.
- Environment issues – such as lighting, temperature, ventilation, noise.
- Traffic routes – safety of both vehicle and pedestrian routes.
- Chemical safety – appropriate use and storage of hazardous substances.
- Machinery safety – such as correct use of machine guards and interlocks.
- Electrical safety – such as portable electrical appliance safety.
- Welfare facilities – the suitability and state of.

Effective Report Writing

Many inspection systems require the inspector to write a report summarising their main findings and recommendations. In some cases this report is presented in a standard proforma style where the inspector simply fills in blank spaces on a report form. In other instances a more narrative-style report is required where the inspector has much wider scope to explain and describe what they found and what they recommend should be done about it. If this sort of inspection report is written then it must be effective; this requires an appropriate writing style.



Worker completing an inspection report

• Writing Style

The language used in the report must be formal and free of slang and jargon. The tone of language must be factual and persuasive. The report must be concise. Busy managers do not have time to read long, rambling sections of text.

• Structure

A typical report structure is:

- **Executive summary** – a concise overview of the main findings and recommendations.
- **Introduction** – a few sentences to outline where and when the inspection took place, who was present and the reasons for the inspection.
- **Main findings** – this can perhaps be divided up into specific topic areas. For each topic the problem highlighted can be described in a factual manner and any relevant legal standard identified.
- **Recommendations** – the immediate, medium and long-term actions needed to remedy each of the issues found should be identified, along with timescales and responsible persons. Actions should be prioritised on the basis of risk. Justification of the recommendations should be included.
- **Conclusions** – a short section to end the report.

• Content

The significant findings of the inspection should be presented. Trivia and minor issues should be omitted. The report must be factual and concise. Evidence of what was observed might be presented.

• Justified Recommendations

Any recommendations made should be justified. A persuasive argument might be made based on the moral, legal and economic arguments. Recommendations might be presented in an action plan:

Recommended action	Priority	Time-scale	Responsible person
Tidy the office	Medium	1 Week	Office Supervisor

Other Active Monitoring Techniques

Health Surveillance

Monitoring worker health can be considered an active monitoring measure, as carrying out measurements of parameters such as hearing (through audiometry) can provide a measure of effectiveness of controls.



Benchmarking

You will remember that the comparison of an organisation's performance with others in the industry or sector is known as "benchmarking". This provides an indication of how well the organisation is performing compared with similar companies.

Reactive Monitoring

Reactive monitoring uses incidents, ill-health and other unwanted events and situations as indicators of health and safety performance to highlight areas of concern. By definition this means "reacting" after things have gone wrong. This indicates two weaknesses with reactive monitoring:

- **Things have already gone wrong:** things are being put right after the event rather than before.
- **It measures failure,** which is a negative aspect to focus on.

Despite these weaknesses, reactive monitoring is a valid tool for an organisation to use as long as some forms of active monitoring are being carried out as well. Reactive monitoring can be carried out by learning lessons:

- From one individual event such as an accident, a dangerous occurrence, a near miss or a case of ill-health.
- From data gathered from large numbers of the same types of event.

The first method involves event reporting, recording and investigation (see later in this element). The second method is concerned with the collection and use of statistics.

Statistics

Data can be collected and reported about a number of different unwanted events such as:

- Accidents.
- Dangerous occurrences.
- Near misses.
- Cases of ill-health.
- Complaints from the workforce.
- Enforcement action.

This data can then be analysed to see if there are any:

- **Trends** – consistent increases or decreases in the number of certain types of event over a period of time.
- **Patterns** – collections or hot-spots of certain types of event.

This analysis usually involves converting the raw data (i.e. the actual numbers) into an **accident rate** so that more meaningful comparisons can be made.

One popular accident rate used to measure an organisation's safety performance is the **Accident Incidence Rate (AIR)**:

$$IR = \frac{\text{Number of accidents during a specific time period}}{\text{Average number of workers over the same time period}} \times 1000$$

(The answer is in units of 'accidents per 1000 workers'.)

This allows meaningful comparison of accident statistics from one year to the next even though more or less workers may be present in the workplace.

Example

A large factory has 20 lost-time accidents in one year but 35 lost-time accidents the next. This appears to represent an increase of 75%, indicating that the factory's safety standards have slipped and it has become a more dangerous place to work.

However, when the number of workers employed in the factory is taken into account and the AIR for each year is calculated:

Year 1: 800 workers:

$$AIR = \frac{20}{800} \times 1000 = 25 \text{ lost time accidents per 1000 workers}$$

Year 2: 1500 workers:

$$AIR = \frac{35}{1500} \times 1000 = 23 \text{ lost time accidents per 1000 workers}$$

The accident rate for both years is actually very similar so the original conclusion was incorrect. The workplace has not become more dangerous; the increase in the number of accidents occurred because more people now work in the factory.

Of course, statistics do sometimes show a false picture of what is happening in the workplace and there are times when they can be deliberately manipulated to present a desired result. Statistics should always be used and interpreted carefully to ensure that what the data seems to be showing is what is actually happening. For example, often after a training course on accident reporting has been delivered to staff, the accident rate increases dramatically. This seems to indicate that more accidents are occurring. In fact the same number of accidents are happening as have always happened, but now all the accidents are being reported, recorded and seen by management. The increase is caused by improved reporting, which in turn has been caused by better awareness of the reporting procedures created by the training course.

Enforcement Actions

The number of enforcement actions taken against an organisation is an indication of health and safety performance, and this data is often required in pre-tender qualification questionnaires.



Civil Claims

Many organisations track the number and value of civil claims as a reactive measure – as with all measures this is, of course, only part of the picture as many conditions could result in the employer seeing an increase in claims (e.g. advertising from legal organisations highlighting the possibility of making a claim, dissatisfaction with the company as a whole), whilst active defence of claims may discourage others from bringing such action.



Revision Questions

1. Define reactive and active monitoring.
2. What do we mean by systematic monitoring?
3. State the sources of information used in reactive monitoring.
4. State the purpose of workplace inspections.
5. What is the difference between a safety inspection and safety tour?
6. What role does senior management have in workplace inspections?
7. Why are checklists used in inspections?
8. What should the introductory part of an inspection report contain?

(Suggested Answers are at the end of Unit IGC1.)



Health and Safety Auditing



Key Information

- Auditing is the systematic, objective, critical evaluation of an organisation's health and safety management system.
- Preparations have to be made prior to an audit commencing.
- During an audit three different types of evidence will be sought: documents and records, interviews, and direct observation in the workplace.
- Audit reports feed information back into the review process so that action can be taken for continuous improvement.
- Audits can be conducted by external personnel and by internal staff. There are strengths and weaknesses to both types.

Definition of Health and Safety Auditing

Auditing can be defined as:

"The structured process of collecting independent information on the efficiency, effectiveness and reliability of the total health and safety management system and drawing up plans for corrective action".

A shorter definition might be that auditing is the "systematic, objective, critical evaluation of how well an organisation's management system performed by examining evidence". Health and safety audits share many common features with financial, quality and environmental management audits; the basic principles are the same.

Scope and Purpose of Auditing

Auditing is a mechanism for verifying that an organisation's safety management system is in place and operating effectively. It will check that:

- Appropriate management arrangements are in place.
- Adequate risk control systems exist - that they are implemented, and are consistent with the hazard profile of the organisation.
- Appropriate workplace precautions are in place.

The intention of an audit is to provide critical feedback on the management system so that appropriate follow up action can be taken. An audit can, therefore, be viewed as negative since it will tend to focus on areas of weakness and non-conformance. In fact some audits do not make any mention of any positive aspects of the safety management system at all; they focus entirely on the weaknesses. This is, however, inherent in the purpose of the audit – to identify weaknesses so that they can be dealt with. Auditing is often thought of as another form of active monitoring.

The Distinction Between Audits and Inspections

An **audit** focuses on management systems:

- It examines documents such as the safety policy, arrangements, procedures, risk assessments, safe systems of work, method statements, etc.
- It looks closely at records such as those created to verify training, maintenance, inspections, statutory examinations, etc.
- It verifies the standards that exist within the workplace by interview and direct observation.

An **inspection** is a simpler process of checking the workplace for uncontrolled hazards and addressing any that are found.

The Audit Process

Different audits are run in slightly different ways. What follows is a fairly typical audit process.



Auditor examining policy documents

Pre-Audit Preparations

Before the audit starts the following should be defined:

- The scope of the audit – will it cover health and safety, or health, safety and environmental management as well?



- The area of the audit – one department, one whole site, all sites?
- The extent of the audit – fully comprehensive (which may take weeks) or more selective?
- Who will be required – auditors will need to be accompanied during their visit and will need access to managers and workers for information-gathering, therefore those required for interviews should be notified in advance.
- Information-gathering - it is common practice for auditors to ask for copies of relevant documentation before starting the audit so that they can prepare.

The organisation will have to ensure that the auditor is competent, i.e. that they have the relevant qualifications, experience and knowledge to do the job well. This can apply to both internal and external auditors. If internal staff are used as auditors sufficient time and resources will have to be allocated so that they can be trained and developed in that role.

All of these elements of the audit process require the allocation of sufficient management time and resources.

During the Audit

Auditors use three methods to gather factual information:

- Reference to paperwork – the documents and records which indicate what should be happening and what has happened relevant to a particular issue.
- Interviews – word-of-mouth evidence given by managers and workers.
- Direct observation – of the workplace, equipment, activities and behaviour.

Auditors will sometimes seek to collect evidence so that their findings cannot be refuted; this can be done by copying paperwork, taking photographs and having a witness to corroborate word-of-mouth evidence.

An auditor's favourite phrases are: "Show me" and "Can you prove it?".



Topic Focus

Typical information examined during an audit:

- Health and safety policy.
- Risk assessments and safe systems of work.
- Training records.
- Minutes of safety committee meetings.
- Maintenance records and details of failures.
- Records of health and safety monitoring activities, e.g. tours, inspections, surveys, etc.
- Accident investigation reports and data including near miss information.
- Emergency arrangements.
- Inspection reports from insurance companies, etc.
- Output from regulator visits, e.g. visit reports, enforcement actions, etc.
- Records of worker complaints.

At the End of the Audit

Verbal feedback is usually provided at the end of an audit; for some audits this will involve a presentation to the management team. This verbal feedback will be followed by a written report. The report will make recommendations for improvement with an indication of priorities and timescales.

Responsibility for Audits

It is the responsibility of the organisation to establish and implement health and safety auditing. There are circumstances when external authorities such as enforcement authorities or insurance companies will carry out audits; or an organisation may have to be audited in order to achieve or maintain certain certifications (e.g. OHSAS 18001 certification).

Once an audit has been carried out and feedback has been received in the form of recommendations for improvement it is the responsibility of management to ensure that the feedback is acted upon. This is normally done through the review process (see later) with the creation of action plans.

External and Internal Audits

Audits are often carried out by safety specialists from outside the organisation; they can also be done by in-house staff. In many instances both types of audit are carried out at different frequencies by the organisation. There are advantages and disadvantages to both types.



	Advantages	Disadvantages
External Audits	<ul style="list-style-type: none"> • Independent of any internal influence. • Fresh pair of eyes. • Already has audit experience. • May have wider experience of different types of workplace. • Recommendations often carry more weight. • May be more up-to-date with law and best practice. • May be more able to be critical, e.g. of management. 	<ul style="list-style-type: none"> • Expensive. • Time-consuming. • May not understand the business so make impractical suggestions. • May intimidate workers so get incomplete evidence.
Internal Audits	<ul style="list-style-type: none"> • Less expensive. • Auditors already familiar with the workplace and what is practicable for the industry. • Can see changes since last audit. • Improves ownership of issues found. • Builds competence internally. • Workforce may be more at ease. • Familiarity with workforce and individuals. 	<ul style="list-style-type: none"> • Auditors may not notice certain issues. • Auditors may not have good knowledge of industry or legal standards. • Auditors may not possess auditing skills so may need training. • Auditors are not independent so may be subject to internal influence.

Actions Taken Following Audits – Correcting Non-Conformities

After the audit there may be a number of findings which require action, presented in the audit feedback and report. These may be classified according to their significance. Here we indicate parallels with ISO systems as many organisations have experience of them:

- **Major non-conformance** – a significant issue or breach which requires urgent action. This could result in the failure of the safety management system and/or result in injury. In ISO terms, a major non-conformance would be grounds for the refusal of certification.
- **Minor non-conformance** – an issue which is less serious in nature and unlikely to result in injury or a breakdown of the system. In ISO terms, a minor non-conformance would require corrective action, but certification would be granted.
- **Observations** – an opinion given by the auditor which the organisation could decide to act upon.

The audit feedback session and report is usually presented to senior management for action and/or praise as required. This is a demonstration of leadership and in some cases a requirement in the standards which are being audited. The management team have the authority and resources to take action where required, and may also need to adjust the organisational goals and objectives.



More...

<http://www.ilo.org/safework/lang--en/index.htm>



Hints And Tips

In the exam, you might find it helpful to answer the questions that you feel most confident about first. Leave the really hard question until last.



Revision Questions

9. Define health and safety auditing.
 10. Outline the differences between health and safety audits and workplace inspections.
- (Suggested Answers are at the end of Unit IGC1.)