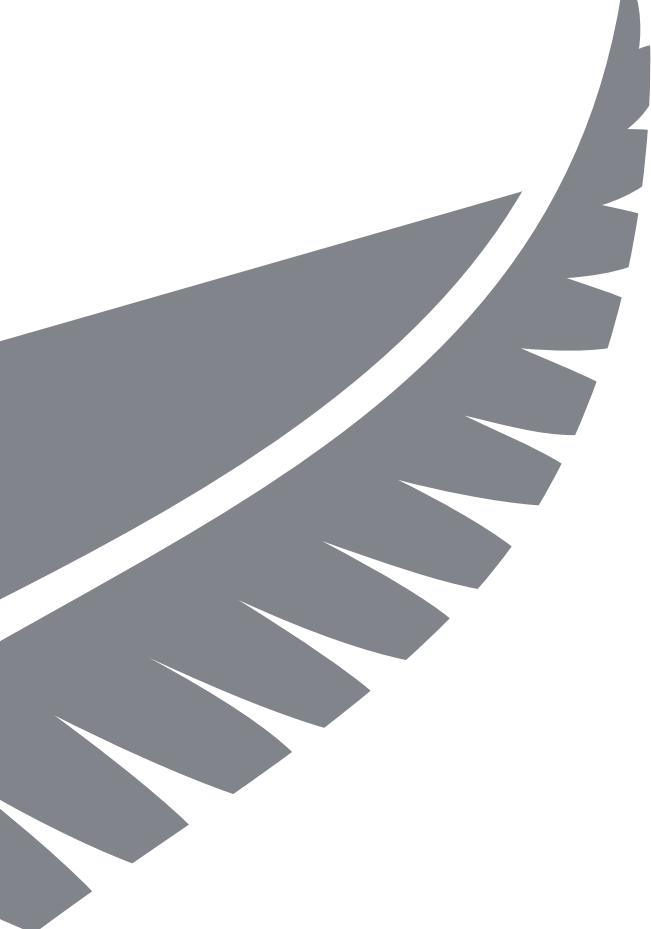


01

SAFETY MANAGEMENT SYSTEMS (SMS) AN INTRODUCTION

CIVIL AVIATION AUTHORITY OF NEW ZEALAND
BOOKLET ONE





PREFACE

The Civil Aviation Authority published Advisory Circular AC 00-4 'Safety Management Systems' in December 2012 to provide comprehensive guidance material to support Part 119, 139, 145 and 172 organisations implement a safety management system (SMS).

This booklet contains practical advice to organisations about how to improve current systems and add tools and processes to achieve the best safety outcomes. It explains the steps that can be taken to successfully, systematically and proactively manage safety while complying with regulatory requirements.

This booklet may be read in conjunction with the other Industry Resource Kit booklets:

- **BOOKLET TWO** – From Quality Management Systems to Safety Management Systems: an enhancement guide
- **BOOKLET THREE** – Implementing Safety Management Systems: guidelines for small aviation organisations
- **BOOKLET FOUR** – Aviation Risk Management: an introduction.



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BUILDING A SAFETY MANAGEMENT SYSTEM AN OVERVIEW

WHAT'S IN IT FOR US?

HOW CAN YOUR ORGANISATION REDUCE THE RISK OF AN ACCIDENT OR INCIDENT? HOW CAN YOU PREVENT THESE TYPES OF OCCURRENCES HAPPENING IN THE FUTURE BY DOING SOMETHING ABOUT IT NOW? IMPLEMENTING A SAFETY MANAGEMENT SYSTEM (SMS) IS A PROVEN MEANS TO ACHIEVING A SAFER WORKPLACE.

The CAA has defined a SMS as ‘a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures.’

Implementing a SMS will provide your organisation with a simple and organised approach to preventing accidents or undesirable incidents, and is considered smart business management. A successfully implemented SMS will drive better safety performance. In turn, this will lead to a more profitable business.

Most NZ aviation organisations already have an established Quality Management System (QMS). So how does an SMS relate to a QMS? An SMS is more safety-focused, and is, in fact, an enhanced and expanded QMS. Whereas a QMS focuses on internal quality assurance procedures, an SMS complements

this by adding a risk-based approach to the structure, responsibilities, processes and procedures of an organisation. Enhancing a QMS in order to meet SMS expectations provides the benefits of compliance and conformance, and also increases effectiveness and assurance of high safety performance standards. As there are many common elements to both systems, an organisation with an established QMS is already part of the way there. Improvement and further development of an organisational safety culture will come hand in hand with the SMS implementation, along with a reduction in hazards that could contribute to accidents and incidents. Some of your staff will become further qualified thereby enhancing the credentials of your workplace.

Although this may seem a daunting task (for smaller operators in particular), breaking the system down into discrete elements will help you to recognise what is already in place and what is needed. A simple framework will work for everyone.

HOW CAN WE DO THIS?

Your organisation may already have some of the elements of an SMS in place. Whether you are a large or small aircraft operator, maintenance organisation, air traffic service provider or aerodrome operator, your systems can be refined and enhanced to complement and support any additional elements that are required.

So first, let's explore what you may already be doing ...

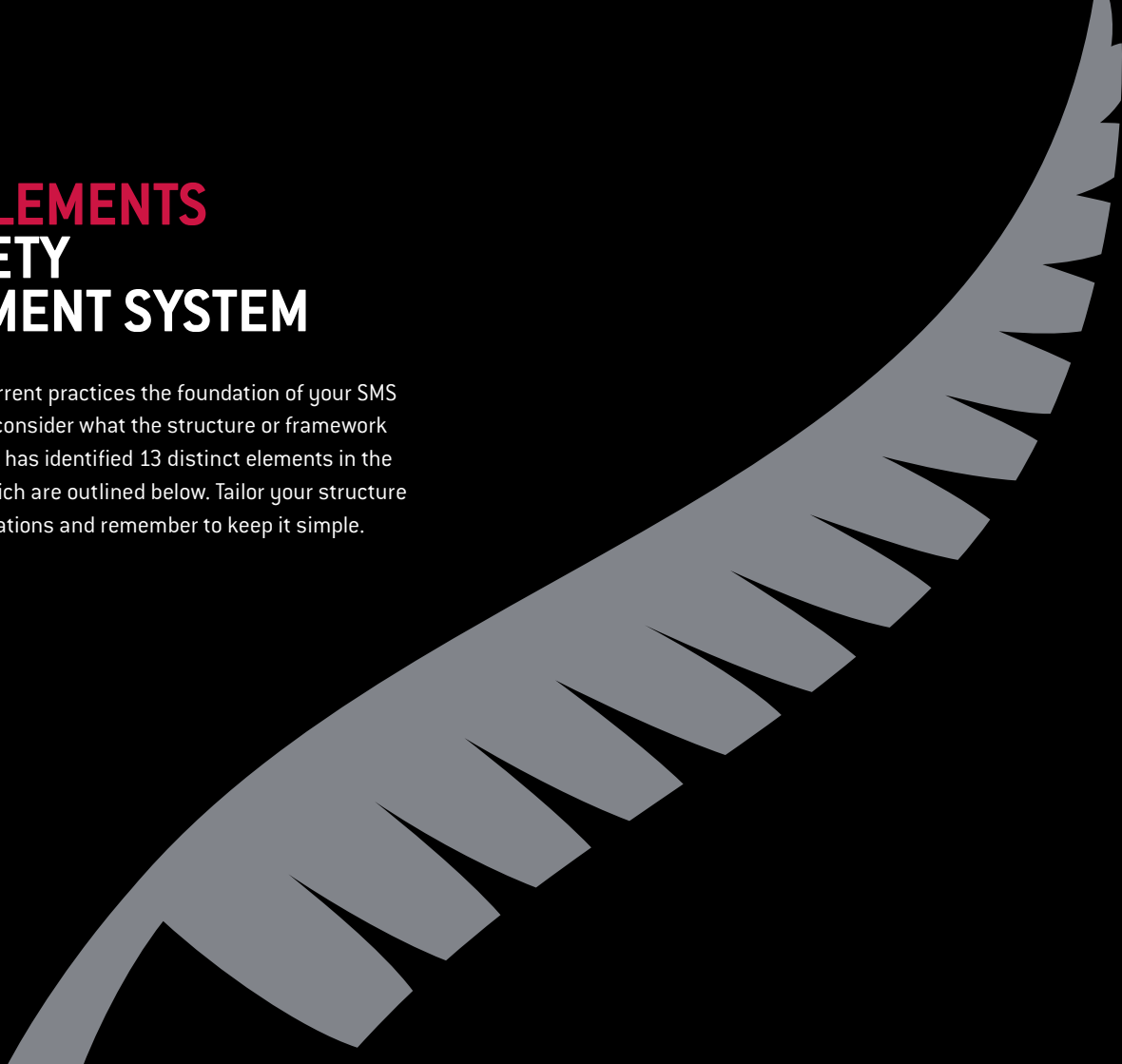
- Has your senior management taken accountability and responsibility for safety management? If so, do you have a safety policy?
- Do the staff members responsible for safety management have the qualifications, knowledge, experience, skills and competence to do their job? Have they been trained and educated?
- Before you start any new activity, do you identify safety hazards and evaluate any risks that are involved?
- Does your organisation have clear unambiguous lines of authority and responsibility to ensure safety is documented, communicated and maintained? Is there an organisational chart depicting this?
- Have safety priorities been established and have resources been allocated to address safety and operational concerns?

TOP TIP

Your answers to these questions, which are based on best-practice safety guiding principles, will reveal where your organisation stands and provide direction about what you need to focus on. If you have answered 'no' to any of the above questions, make it a priority.

THE 13 ELEMENTS OF A SAFETY MANAGEMENT SYSTEM

After reviewing your current practices the foundation of your SMS will be clear. Let's now consider what the structure or framework would look like. The CAA has identified 13 distinct elements in the structure of an SMS which are outlined below. Tailor your structure to the size of your operations and remember to keep it simple.



ELEMENT 1

SAFETY POLICY AND ACCOUNTABILITY

It is important that managers are committed to safety as they are accountable for the safety performance of the organisation.

MAKE A COMMITMENT:

Devise a safety commitment statement and a safety policy which should be signed by your Chief Executive.

COMMUNICATE WITH YOUR WORKFORCE:

Make sure your staff have access to the safety commitment statement and safety policy. Keep records showing when staff have read them and keep track of revision numbers as these are reviewed and updated.

TOP TIP

Why not display your safety commitment statement on the wall in your workplace?

APPOINT A QUALIFIED KEY SAFETY MANAGEMENT PERSON:

This role is to implement and manage the SMS, and may be full-time or part-time depending on the size of your organisation. Their safety responsibilities for managing the safety systems must be documented.

TOP TIP

Organisational charts and position descriptions work well to depict clear lines of responsibility.

SET GOALS AND OBJECTIVES:

Set clear, sensible and achievable safety goals and objectives. These must be documented to provide the context of expected results, many of which can be measured.

TOP TIP

An example of a safety objective may be 'to provide safety qualifications to all staff' and an associated goal may be 'to qualify key personnel in hazard identification within the next 6 months'.

RESOURCE YOUR SMS:

Communicate management's intention to adequately resource the SMS to all members of the organisation. This will encourage belief in what the organisation is trying to achieve and foster a safety attitude (or culture) that will form the basis of organisation-wide safe practices.

TOP TIP

Make sure everyone knows that the SMS will be adequately resourced. This can be done with regular, appropriate and targeted communications from the top down.

ELEMENT 2

COORDINATED EMERGENCY RESPONSE PLANNING

Having a SMS will minimise the risk of undesirable events, such as an accident occurring. However, it is not possible to eliminate the possibility entirely. Proactive, coordinated emergency response and risk management plans can ensure that, in an emergency, your organisation is ready, and your staff are all 'on the same page'.

DOCUMENT YOUR PLAN:

Establish an emergency response plan (ERP) that suits the size of your organisation. This may be a stand-alone document or it may be incorporated into a safety manual. Incorporate a revision number and revise this as the plan is updated. Make sure your plan covers all your bases and locations of operation. Consider the types of emergency you might face. Ensure that all are made familiar with this plan – *it can be lifesaving*. Sections should include:

- The purpose of the plan
- How the plan is activated
- Establishment of a crisis response centre
- External stakeholder liaison
- Accident investigation process
- Media interactions
- Staff welfare
- Coordination of family assistance for casualties
- Preservation of evidence
- Claims and insurance procedures.

Also incorporate the ERP training that will be provided, and your review and documentation processes. Consider including post critical-incident stress debriefing.

TOP TIP

Summarise the key steps and responsibilities in a Quick Reference Guide. This may be laminated and distributed to all staff. Consider a training session to educate staff about the contents and their responsibilities. You may need to coordinate and establish interfaces with external agencies.

DEMONSTRATE THAT YOUR PLAN WORKS:

Once documented put the plan into simulated practice. Contemplate how you have assigned responsibilities, considered employee and family welfare and your investigation techniques.

TOP TIP

Run a desktop practice scenario using a simulated real-life emergency. Have an observer take notes of all the coordination and interactions required. Use this to debrief and review the programme and adjust if necessary.
Don't forget to document this.

TOP TIP

It is vital that you coordinate with the other organisations/stakeholders you work with for example an airport operator who will also have an ERP.

ELEMENT 3

DEVELOPMENT, CONTROL AND MAINTENANCE OF SAFETY MANAGEMENT DOCUMENTATION

Your organisation's SMS must be comprehensively and accurately documented.

DOCUMENT YOUR SYSTEM:

All policies, objectives, responsibilities, processes and procedures which make up the SMS should be documented. This may be in a safety manual or included in another manual or system. Ensure that all staff know where to access it and when it has been updated.

OUTLINE YOUR POLICIES:

Include aspects such as scope, objectives, principles and definitions.

SUMMARISE YOUR PROCESSES:

Describe the activities, tasks and procedures used in your organisation and how they operate systematically.

DOCUMENT YOUR PRACTICES:

Record the tools, operating procedures and work instructions that are used in your organisation.

TOP TIP

Describe aspects such as the SMS scope; safety accountabilities and responsibilities; key safety personnel; document control procedures; the ERP; hazard and risk identification; and management schemes. Document safety assurance, performance monitoring, your audit programme, how change is managed, and safety promotional activities and don't forget to include any contracted activities.

APPOINT COORDINATION DUTIES:

Assign the responsibility for managing all updates to one person.

DISSEMINATE UP-TO-DATE INFORMATION:

All staff must have access to the documentation and it must be controlled, reviewed and updated.

TOP TIP

Make your SMS policies, procedures and practices part of your Exposition suite.



Photo courtesy of 'Above Ground Level'

ELEMENT 4

HAZARD IDENTIFICATION

Hazards are conditions that have the potential to cause harm and therefore need to be reported. This vital information, which can be extracted from occurrence and incident reporting, allows your organisation to identify hazards and the risks they pose. The reporting of hazards is vital and can be achieved by setting up or refining a system in which a report can be submitted by any staff member. Quality improvement forms, while identifying compliance-based issues do not take the risk-based approach to hazard identification advocated by SMS.

IDENTIFY HAZARDS:

Identification is paramount as, once identified, hazards can be reported, analysed and treated.

PUT A REPORTING SYSTEM IN PLACE:

If you do not have a system for the reporting of occurrences, risks or safety issues you need to establish one (hard copy, electronic or both). **You must ensure that confidentiality is observed for reports.** Actively encourage reporting as these reports are essential to identifying emerging issues and risks.

DOCUMENT ALL REPORTED HAZARDS:

Maintain records of formal or informal methods of collecting hazard reports.

ANALYSE REPORTS:

Allocate responsibility for the process and review of these reports. Determine whether any actions need to be taken and whether any safety trends (good or bad) are apparent.

TOP TIP

Once a reporting system is in place and staff are educated about recognising hazards, there may be a significant increase in hazard reporting.

PROMOTE A POSITIVE SAFETY CULTURE:

Work towards fostering an excellent safety culture. This is the backbone of a SMS and allows for the free flow of safety information throughout your organisation.

GIVE FEEDBACK:

To encourage further reporting and to close the loop, it is essential to provide feedback to the hazard reporter, formally or informally. This may take the form of an email, a phone call or even a completed investigation report.

TOP TIP

Why not provide feedback to all staff? Consider placing hazard-related information in safety emails or newsletters. This will encourage a willing and participative safety culture. People love to know what is going on and how the organisation is dealing with it.

ELEMENT 5 RISK MANAGEMENT

Risk management is defined as coordinated activities to direct or control an organisation with regard to risk. It enables an organisation to ensure that risk remains at an acceptable level through a consistent and proactive framework.

Proactively identifying, assessing and controlling risk is the purpose of an SMS. However, this cannot occur entirely at an intuitive level. While managing risk is an everyday activity for experienced professionals, there also needs to be more formal levels of risk management.

APPOINT A DEDICATED PERSON:

Assign a safety coordinator or manager to be responsible for risk-management processes.

DOCUMENT YOUR CURRENT AND EMERGING RISKS:

Maintain a register of risks and their assessment, controls or treatments. Update this register frequently as other risks are identified. Risks exist in your daily environment (at home and at work). They are real but do not always result in catastrophic accidents. Many of the risks you identify as an everyday part of your business activities will involve a low level of consequence, but addressing them can benefit the organisation immensely.

EDUCATE STAFF:

The more members of your staff that can be trained in risk management, the greater the benefit to your organisation. We all manage risk on a daily basis in an intuitive manner; however specific training will provide additional skills leading to enhanced risk management.

DOCUMENT YOUR PROCEDURES:

Record risk procedures and their development. Regularly review and revise.

TRAIN YOUR STAFF:

Identify decision makers and other appropriate staff and provide them with qualifications related to risk management via training appropriate to their roles. There are different levels of risk management, from dealing with operational risks to managing changes to the overall organisation or at a strategic level. Risk management that is regularly used across these levels, if well documented, equates to best practice.

TOP TIP

There is an invaluable international standard for risk management called ISO 31000:2009 Risk Management – *Principles and guidelines*. It is the basis for best-practice risk management processes and can easily be tailored to smaller organisations.

ELEMENT 6

SAFETY INVESTIGATION

Often when an incident or accident occurs, an investigation is needed to work out how to avoid it happening again. CAR Part 12 regulates the conduct of investigations and AC12-2 provides guidance on how to do this.

DEVELOP YOUR OWN INTERNAL CRITERIA:

Determine the reasons requiring your organisation to investigate an occurrence and record them. A reactive approach would be to investigate an accident, but there are other proactive reasons to commence an investigation – such as hazard-based trends, certain identified risks and other instances that may require complex examination.

APPOINT AN INVESTIGATOR:

Assign an internal safety investigator that is appropriately qualified and competent. They should be independent of the operational area involved.

TOP TIP

Specialised training is required for safety investigators, as investigations are activities that are particularly susceptible to failure or success on the basis of their conduct.

INVESTIGATE:

Follow the steps for an effective safety investigation:

- Data collection: Gather evidence
- Undertake analysis of all information (with causal factor theories in mind)
- Identify findings and recommendations
- Record, distribute and present the report
- Close the loop by monitoring the outcomes of the investigation findings.

DOCUMENT YOUR PROCESS:

Record your process for conducting an internal safety investigation.

TOP TIP

Use a risk-based approach in identifying which occurrences you may need to investigate internally.



ELEMENT 7

MONITORING AND MEASURING PERFORMANCE

It is possible to proactively intervene in your organisation's activities to avoid accidents. By monitoring safety-related systems and performance your organisation can continuously improve upon them.

COLLECT SAFETY DATA:

Our safety-reporting system is an excellent place to source your data including:

- Reporting rates and numbers
- Investigation reports
- Audit reports
- Risk registers
- Safety meeting minutes
- Surveys and reviews.

All of these will inform your organisation about how the SMS is faring. Make sure you consider all of them in order to make good safety decisions.

DOCUMENT HOW YOU MONITOR:

Record how you are monitoring safety performance and maintaining the sources of your safety data (your safety reporting system is a good start).

TOP TIP

How about a staff survey? This can be simple and may gather some excellent safety-performance information.

SET TARGETS:

Establish safety-performance targets consistent with your safety objectives. Use safety-performance indicators to measure whether safety targets have been met. These indicators can be reactive, proactive or interactive.

TOP TIP

An example of a safety-performance indicator could be your hazard reporting rate. A safety target associated with this could be 'to increase the rate of hazard reporting by x% in 6 months'. This is a reactive indicator. An example of a proactive indicator could be 'the number of staff who have completed risk-management training'.

ELEMENT 8

MANAGEMENT OF CHANGE

The aviation industry undergoes constant, dynamic change which exposes your organisation to risk. To prevent the associated turmoil of uncontrolled changes it is necessary to manage change in a structured fashion. It is good practice to conduct a risk assessment before initiating any key change to the business.

IDENTIFY A CHANGE:

Recognise an upcoming change to your operation and consider how critical the risk associated with that change may be to your operating systems.

TOP TIP

A risk assessment is really useful to assist in managing changes within your organisation such as adding a new aircraft, undertaking facility upgrades or acquiring a new certification.

DOCUMENT PROCEDURES:

Any procedures used by your organisation to manage change should be recorded. These may include procedures for risk reporting and recording, risk control and monitoring processes, who is responsible for risk management decisions and how risks are to be communicated. Your organisation's risk processes can be proactive change management processes in themselves.

ELEMENT 9

CONTINUAL IMPROVEMENT OF THE SMS

An SMS is a dynamic system which will filter into all facets of your organisation. As such, it needs to be continuously monitored and reviewed. You should set performance indicators for your SMS and monitor whether they have been met. Review of these and other feedback (such as surveys) will allow your organisation to identify areas for improvement. Inputs relevant to the effectiveness of your SMS may include:

- Internal audit of the SMS
- External audit
- Management review of the SMS.

DOCUMENT THE PROCESS:

Record the process that shows how you use performance monitoring, measuring and audit to inform management of the effectiveness of the SMS.

DOCUMENT IMPROVEMENT PLANS:

Detail an action plan to achieve any required improvements. Resourcing may be needed. Actions resulting from analysis and review could include various initiatives such as:

- Organisation design
- Technology and personnel changes
- Improved policies, processes and procedures
- Better training
- Adjustments to the SMS.

TOP TIP

Don't forget how useful a survey can be or the value of suggestion boxes, safety meetings, your reporting system etc. Information on how your SMS is working can be gleaned from numerous formal or informal communication processes.



ELEMENT 10

INTERNAL AUDIT PROGRAMME

Audit processes in a quality management system are already in place in your organisation. The SMS needs to be regularly audited too. The findings from internal and external audits can be tracked in the same way.

DOCUMENT YOUR PROGRAMME:

Develop a risk-based audit programme (ie, prioritise the audits on higher risk areas of the organisation):

- Conduct audits regularly
- Set audit objectives
- Determine audit frequency
- Outline audit methodology
- Document processes.

TOP TIP

Well-planned audits are the most effective. Take a risk-based approach and when examining processes and procedures. Consider how effective they are, not just their level of compliance.

APPOINT AN AUDITOR/S:

They must be qualified to conduct an audit and independent of the area being audited.

TAKE ACTIONS:

Take appropriate preventive or corrective actions towards identified problems. Measure how effective they are. Track and monitor these actions and their timeframes.

TOP TIP

Be sure to identify the right people to recommend actions to – go with your decision makers to increase the likelihood that changes are made as a result of your audit.

DOCUMENT YOUR AUDIT REPORT:

Keep a record of all audit reports. Track timeframes for action closure. Communicate the reports to the persons responsible.

ELEMENT 11

MANAGEMENT REVIEW

In addition to your existing management review processes, managers now need to know what is going on in the organisation regarding SMS. To make timely and critical safety-related decisions they will need to be sure that the SMS is effective and know whether any changes, or more resources, are required.

DEVELOP AN ESCALATION PLAN:

Have a process in place to pass critical safety information to management. Using risk-management principles works really well here. For example, if you have identified something as ‘high risk’, this may automatically need to be escalated.

REVIEW FINDINGS:

SMS audit findings should provide feedback on how the system is functioning. Consider assigning a ‘risk level’ to findings as this will help to prioritise them.

TRACK SAFETY DATA:

Record safety data and numbers of reports and communicate this information to management. Analyse the data before presenting it to management as safety information and avoid simply collating statistics.

ORGANISE MEETINGS:

Conduct regular safety meetings with management in attendance to discuss operational safety with staff. It is essential that management get a holistic picture of the organisation’s safety performance and are fully aware of all possible safety information.

TOP TIP

Invite decision makers to meetings. These people have the ability to influence change and need to be kept informed.

ELEMENT 12

SAFETY TRAINING AND EDUCATION PROGRAMME

Staff need to be trained and educated about the SMS in order to understand the organisation's safety objectives and to acquire the skills and knowledge to help achieve them. Achieving appropriate levels of competency for staff and enabling the consistent application of their skills, is critical to an elevated standard of performance.

IDENTIFY TRAINING NEEDS:

All staff require basic SMS training. Identify staff members who may also require specialised training and qualifications. These may include (depending on the size of your organisation), the chief executive, senior management, safety systems manager, managers and line supervisors, safety specific staff, operational staff, general staff, SMS administrators, contractors and third parties. A simple needs analysis is a useful tool for this. Employee induction programmes are a good place to begin safety education for new staff.

OUTLINE TRAINING CONTENT:

In line with the establishment of risk-management principles the following training topics are recommended: the use and application of SMS, risk management, change risk management and operational risk management.

TOP TIP

Hazard identification, incident reporting, risk management and personal safety responsibilities need to be the focus of training for all staff.

DOCUMENT ALL TRAINING:

Keep records of all employee safety training as well as details of the education programme.



Photo courtesy of 'Above Ground Level'

ELEMENT 13

COMMUNICATION OF SAFETY CRITICAL INFORMATION

Communication is vital when dealing with critical safety information, both internally and externally. Lessons learned outside your organisation are as important as those learned firsthand. Continuous flows of information to staff will ensure that the SMS is not an afterthought – but a proactive, visible and tangible part of daily business.

SHARE SAFETY INFORMATION:

Share safety information with all staff in a targeted way, and tailor this information to suit the audience. For example, sharing a safety report that has not been analysed to identify risks and provide some preliminary solutions will not provide any meaningful safety education.

TOP TIP

Any sort of meeting or gathering of staff within your organisation can have a safety aspect included.

TOP TIP

Safety briefings and meetings, newsletters, emails and posters are all ways to circulate safety information. If you have more than one office or base, **make sure safety communications reach all of them.**

ACTIVELY PROMOTE SAFETY:

Record all methods used to promote safety information to all staff.

Active methods of communication include:

- Regular safety-related meetings
- Senior management conveying strategic safety information, goals and objectives
- General staff informing management regarding safety issues in their department areas
- Team briefings.

Passive methods of communication include:

- Safety magazines or newsletters
- Web-based presentations
- Forums
- Emails.

The use of spoken words, written words and electronic media combine to provide flexible and cost-effective safety promotion.

This booklet is based upon CAA Advisory Circular AC 00-4,
Safety Management Systems, Version 1.0, 19 December 2012.

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