

Discussion Draft

Review of Z10 – Occupational Health and Safety Management Systems

Appendix to Professional Affairs column, "Out of the Shadows." Published in Professional Safety, April 2009, pp. 25-27.

Executive Summary

This chart was prepared as part of the Council on Professional Affairs (COPA) review of occupational health and safety management systems (OHSMS) in connection with the ASSE Value of the Safety Professional project. The review was undertaken to identify and clarify the role of safety professionals in OHSMS. COPA compared ANSI Z10, OHSAS 18001 and 18002, ILO-OSH 2001, and certain UK regulatory requirements/ IOSH guidance. The chart is set up so that the relevant language of the standards/regulations and related guidance could be readily compared. Unfortunately, this makes the chart a little unwieldy at times but this was unavoidable if we were to look at the various approaches in depth.

The perspective COPA took in analyzing the chart was that of the executive who would be asked to implement the OHSMS. The thought being that if we are asking them to manage and quality control the process we need to ensure that they are adequately prepared to complete this task. We concluded that business leaders are not given sufficient guidance on how to fulfill their responsibilities regarding OHSMS, particularly as it relates to working with safety professionals. COPA's comments relate to Z10 but many of the same concepts would be applicable to the other OHSMS standards. COPA did not recommend specific language but rather focused on identifying issues or concerns, or ways to improve the OHSMS implementation and maintenance process. The chart is organized by topic with the language of the standard/regulation followed by the guidance.

Following is a summary of some of the key recommendations made by COPA regarding revisions to Z10:

Mandate the involvement of competent safety and health personnel rather than recommend it. The Z10 guidance states that you *should* "ensure that competent health and safety personnel are available to participate in the implementation of the OHSMS and to provide adequate expert technical consultation." (Section E5.2E)(Emphasis added) (compare to the requirement in the United Kingdom, where the Management of Health and Safety at Work Regulations 1999, Regulation 7 (MHSWR) requires every employer to appoint one or more competent persons to assist with putting measures in place to ensure legal compliance).

Develop a step-by-step guide on how to implement OHSMS directed at leaders responsible for implementation. This would include information on who should be involved in each step, what role they play, and the expertise required; a breakdown and explanation of each process; the lessons learned, pitfalls, concerns and examples regarding required activities; and information

for small and medium size organizations and relevant industries. One example we have seen is “the First Step” and “The Next Step” guidance documents prepared by Worksafe in Western Australia.

Provide a detailed explanation of what a “competent health and safety personnel” and “adequate expert technical consultation”. We recommend introducing the term occupational safety and professional, explaining what safety professional do using ANSI Z590.2 (the scope and function of the safety professional position) or the “Nature of Work” section from the US Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook (2008-09 Edition), and providing examples demonstrating the advantages of using safety professionals. A statement similar to the one found in OHSAS 18002 4.4.2.2 should also be added: “The organization may need to seek external advice in defining required competencies.”

Provide a detailed explanation of what competent employees and contractors means and how you determine it. This would include a discussion on OSHA requirements and adding an appendix summarizing OSHA regulations on competent persons. Provide more detailed information on the hazard identification/initial review/ongoing review processes, including methodologies, techniques, human factors, expertise needed to conduct them, and examples of the completed process.

Expand the language on PtD to clarify how the process works and that there is a role for the safety professional. This would include a list of all those who should be involved in the design process, delineation of responsibility, a discussion of the expertise required and the specific steps to take to carry out the design process.

Discuss the legal ramifications of not implementing Z10.

Add more details to the tools provided in the appendices to further educate managers on how the processes work.

The additional guidance COPA proposes would be in the best interest of all parties involved in or impacted by the OHSMS. Plainly stating the role of the safety professional and the value they bring to the table is a necessary step towards educating those who are in a position to make critical decisions for the organization. We want Z10 to be as successful as possible and clarifying the role of the safety professional and providing additional guidance to management is one way to make that happen.

Additional comments, relating to specific sections, are included below.

Prevention-Through-Design- Define the role of the safety professional in the PtD process. In reading the guidance regarding the prevention-through-design (PtD) process required by Z10 5.1.2 (Design Review and Management of Change), the only on point

recommendations about who should be involved are that training programs should include “engineers in safety design” (Section E5.2B) and that one of the roles and responsibilities of directors, managers, and department heads is “(Engineering) assess the health and safety impact of new processes and equipment, and incorporate appropriate controls.” [Appendix B (Informative)] This suggests that PtD is an engineering only function. There is no direct reference to the role of the safety professional in the PtD process, only the catchall statement of responsibility that the health and safety department provide guidance and technical assistance in identifying safety hazards. [Appendix B (Informative)]

Training-This section should include a requirement that training includes information on the benefits and consequences of the doing the job safely. See OHSAS 18001, which states: “The organization shall establish, implement and maintain a procedure(s) to make persons working under its control aware of:

- A) The OH&S consequences, actual or potential, of their work activities, their behavior, and the OH&S benefits of improved personal performance;
- B) Their roles and responsibilities and importance in achieving conformity to the OH&S policy and procedures and to the requirements of the OH&S management system, including emergency preparedness and response requirements
- C) The potential consequences of departure from specified procedures.”

The language stating that training programs should include “engineers in safety design” (Section E5.2B) should be rewritten to include training for safety professionals to eliminate the implication that only engineers need to be trained for prevention-through-design.

Hazard Identification- Regarding the initial and ongoing reviews to identify OHSMS issues, the Z10 guidance states that training should be provided for the people performing these tasks and cites as examples of hazard-related training, “training in hazard identification, good safety practices, and use of personal protective equipment.” (Section E5.2B d.) The guidance does not sufficiently inform managers about the complexity of the hazard identification process and the skills necessary to competently handle these tasks. Compare the language in OHSAS 18001, the international occupational health and safety management system specification widely used in Europe, “Hazard identification should be conducted by person(s) with competence in relevant hazard identification methodologies and techniques and appropriate knowledge of the work activity.”(OHSAS 18002 Section 4.3.1.3) Perhaps even this language does not go far enough to make it clear that the responsible manager needs to pay close attention to the skill level and competencies of people involved in identifying

OHSMS issues. In addition, further details, definitions, or examples of various aspects of the process of identifying OHSMS issues would be helpful to managers trying to understand what is required. Compare the Z10 guidance of “The review should also include consideration of work organization, programs, policies, procedures, and workflow”, with the OHSAS 18002 recommendation that provides details regarding these items: “...workplace design, traffic plans, site plans; process flowcharts, operations manuals and product plans; inventories of hazardous materials (raw materials, chemicals, wastes, products, sub-products); equipment specifications; product specifications, material safety data sheets, toxicology and other OH&S data; monitoring data; and occupational exposure and health assessments.” (18002 4.3.1.3). This additional information will allow the implementing manager to better understand and quality control the process.

Further recommendations on hazard identification include:

Add a statement similar to the one in OHSAS 18002: “It is emphasized that an initial review is not a substitute for the implementation of the structured systemic approach to hazard identification, risk assessment and determining controls given in 4.3.1. (4.1.2)

Provide information on human factors in (OHSAS 18002 4.3.1.3): “Human factors is the application of technology to make the workplace compatible with human capabilities. In considering human factors, the organization’s hazard identification process should consider the following: the nature of the job (workplace layout, operator information); the environment (heat, lighting and noise); human behavior (absenteeism, fatigue, injury); psychological capabilities (cognition, attention); and physiological (biomechanical, anthropometrics/physical variation of people).

Provide examples of non-routine tasks similar to 18002 4.3.1.3: “Examples of types of non-routine activities and situations that should be considered during the hazard identification process include: plant cleaning, maintenance, plant start-ups/shut-downs, field trips, refurbishment, extreme weather conditions, temporary arrangements, and emergency situations.”

Expand the guidance on assessments in E4.1.1E. Compare with 18002 4.3.1.3, which includes such things as: “information on best practice and/or typical hazards in similar organizations, inputs from employees, and reports of incidents and accidents that have occurred in similar organizations.

Add more detailed background information on hazard identification and risk assessment methodologies. For example, OHSAS 18002, 4.3.1.2 states: “There is no single methodology for hazard identification and risk assessment that will suit all organizations.

Hazard identification and risk assessment methodologies vary greatly across industries, ranging from simple assessments to complex quantitative analyses with extensive documentation. Individual hazards may require that different methods be used, e.g. assessment of long term exposure to chemicals may need a different method than that taken for equipment safety or for assessing an office work station.”

In Appendix D- clarify who does what in the initial/ongoing review (who collects the information, who identifies the hazards, what exactly should they be looking for, what kinds of information...) Provide examples.

Expand the guidance to include information on physical, chemical, biological, and psychological hazards such as in OHSAS 18002 4.3.1.3.

Add information on what hazards to look for not just where to look (Z10 Appendix D vs. OHSAS 18002 Annex C).

Add more detailed information on hazard identification techniques such as in 18002 4.3.1.3.

Provide a step-by-step guide on how to successfully implement the hazard identification process, similar to the Hazard Analysis and Risk Guide in Appendix E.

Risk Assessments-Similar issues can be raised regarding the complexity of the risk assessment process and the capabilities and skill level of those performing them. The background information, general guidance on how to perform a hazard analysis and risk assessment, and references to publications on risk assessment systems and methods provided in Appendix E are useful in providing a framework for the process. But it suggests that someone who has no relevant training, education, or experience can complete a quality risk assessment? Can you just go and read about the process and perform a risk assessment for a chemical processing plant? The pitfalls and lessons learned regarding the process and whether some risk assessment methodologies are more effective than others for certain types of organizations would be useful guidance.

Definitions- We recommend introducing the term occupational safety and professional, explaining what safety professional do using ANSI Z590.2 (the scope and function of the safety professional position) or the “Nature of Work” section from the US Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook (2008-09 Edition), and providing examples demonstrating the advantages of using safety professionals. It is disappointing that Z10 makes the involvement of the safety professional optional. Indeed, the term safety professional is not used and other than a reference in Appendix B to “Health and Safety Department”, there is no mention of the safety function. COPA understands that we want top management to take the lead in implementing the OHSMS to demonstrate their

commitment to it, but to draft the standard and the guidance as though safety professionals do not exist or are of limited importance to the process does not make sense. This not only minimizes the role of the safety professional but also does a disservice to the organization.

Definitions should also be included for other professionals that may play significant roles in the Z10 process, such as industrial hygienists, ergonomists, and human factors practitioners. Finally, consideration should be given to adding definitions of key terms that are defined in other OHSMS standards such as acceptable risk, risk assessment, OHS objective, and workplace.

Miscellaneous

Section E1.3 recommends that the OHSMS be designed so that it can be integrated with quality, environmental, and other management systems within an organization. Guidance is needed on how to achieve this.

We need to better articulate the business value as to why organizations should implement Z10. The statement in the Foreword that, "There is widespread agreement that the use of management systems can improve organizational performance," is not compelling enough. We should provide data that supports the implementation of Z10 and better articulate the drivers for businesses to adopt Z10, including the legal ramifications of not implementing Z10.

I. Competent Person - Requirements

Z10
Define and assess the OHSMS competence needed for employees and contractors; Ensure through appropriate education, training, or other methods that employees and contractors are aware of applicable OHSMS requirements and are competent to carry out their responsibilities as defined in the OHSMS [5.2]
ILO
The necessary OSH competence requirements should be defined by the employer, and arrangements established and maintained to ensure that all persons are competent to carry out the safety and health aspects of their duties and responsibilities. The employer should have, or should have access to, sufficient OSH competence to identify and eliminate or control work-related hazards and risks, and to implement the OSH management system. [3.4]
OHSAS 18001
The organization shall ensure that any person(s) under its control performing tasks that can impact on the OH&S is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records. Competency is needed to ensure that people are able to perform their assigned tasks safely and without negatively impacting OH&S. Management should determine the level of experience, competence, and training necessary to ensure the capability of personnel, especially those carrying out specialized OH&S activities. [4.4.2]
IOSH/UK Law
<u>The United Kingdom Management of Health and Safety at Work Regulations 1999, Regulation 7 (MHSWR)</u> <i>Health and safety assistance</i> 1) Every employer shall, subject to paragraphs (6) and (7), appoint one or more competent persons to assist him in undertaking the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions and by Part II of the Fire Precautions (Workplace) Regulations 1997. 2) Where an employer appoints persons in accordance with paragraph (1), he shall make arrangements for ensuring adequate co-operation between them. 3) The employer shall ensure that the number of persons appointed under paragraph (1), the time available for them to fulfil their functions and the means at their disposal are adequate having regard to the size of his undertaking, the risks to which his employees are exposed and the distribution of those risks throughout the undertaking. 4) The employer shall ensure that - (a) any person appointed by him in accordance with paragraph (1) who is not in his employment - (i) is informed of the factors known by him to affect, or suspected by him of affecting, the health and safety of any other person who may be

- affected by the conduct of his undertaking, and
- (ii) has access to the information referred to in regulation 10; and
- (b) any person appointed by him in accordance with paragraph (1) is given such information about any person working in his undertaking who is -
- (i) employed by him under a fixed-term contract of employment, or
 - (ii) employed in an employment business, as is necessary to enable that person properly to carry out the function specified in that paragraph.
- 5) A person shall be regarded as competent for the purposes of paragraphs (1) and (8) where he has sufficient training and experience or knowledge and other qualities to enable him properly to assist in undertaking the measures referred to in paragraph (1).
- 6) Paragraph (1) shall not apply to a self-employed employer who is not in partnership with any other person where he has sufficient training and experience or knowledge and other qualities properly to undertake the measures referred to in that paragraph himself.
- 7) Paragraph (1) shall not apply to individuals who are employers and who are together carrying on business in partnership where at least one of the individuals concerned has sufficient training and experience or knowledge and other qualities -
- (a) properly to undertake the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions; and
 - (b) properly to assist his fellow partners in undertaking the measures they need to take to comply with the requirements and prohibitions imposed upon them by or under the relevant statutory provisions.
- 8) Where there is a competent person in the employer's employment, that person shall be appointed for the purposes of paragraph (1) in preference to a competent person not in his employment.

[Management of Health and Safety and Work Regulations 1999, Regulation 7, United Kingdom]

II. Competent Person- Guidance

Z10

Education and training on OHSMS issues can be included on the basic training of an employee on the performance of their job. This includes other individual(s), as defined by the organization (e.g. volunteers, unpaid interns, students, inmate labor), not employed by but who perform work for the organization.

Training in OHSMS responsibilities should include, for example, training for:

- A) Engineers in safety design;
- B) Those conducting incident investigations and audits for identifying underlying OHSMS deficiencies;
- C) Procurement personnel on impact of purchasing decisions; and
- D) Others involved with the identification of OHSMS issues, methods of prioritization, and controls. Examples of hazard-related training include training in hazard identification, good safety practices, and use of personal protective equipment.

The organization should ensure that competent health and safety personnel are available to participate in the implementation of the OHSMS, and to provide adequate expert technical consultation. This role may be filled by full or part-time in-house personnel or by outside resources.

Competence is normally achieved or demonstrated through one or more of the following: education, training, mentoring, experience, certification, licensing, and performance assessment.

ILO – OSH 2001

The necessary OSH competence requirements should be defined by the employer, and arrangements established and maintained to ensure that all persons are competent to carry out the safety and health aspects of their duties and responsibilities.

The employer should have, or should have access to, sufficient OSH competence to identify and eliminate or control work-related hazards and risks, and to implement the OSH management system.

OHSAS 18001

The competence of a person performing a task is based on appropriate education, training and/or experience. Competency requirements should be considered in recruiting and developing the abilities of those working under the control of the organization. The organization may need to seek external advice in defining required competencies.

- Roles and responsibilities in the workplace;
- Nature of the tasks to be performed and their associated OH&S risks
- The complexity and requirements of operating procedures and instructions
- The results from incident investigations
- Legal and other requirements
- Individual capability (e.g. literacy, language skills, etc)

When determining the level of competence required for a task, the following factors should be considered:

- The complexity and requirements of operating procedures and instructions
- The results from incident investigation legal and other requirements
- Individual capability (e.g. literacy, language skills etc.)

The organization should give specific consideration of competency requirements for those who will be:

- The top management appointee
- Performing risk assessments
- Performing exposure assessments
- Performing audits
- Performing incident investigations

The organization should ensure that personnel are competent prior to permitting them to perform tasks that can impact on OH&S.

IOSH/UK Law

So, just what is expert advice? The official guidance to the law says you need a "competent assistant" at an "appropriate level", but leaves employers and recruiters in the dark on the critical details. There's no clear steer on what competence is or looks like.

IOSH, the Chartered body for safety professionals, believes this lack of clarity about competent advice is causing real damage to:

- People, whose lives and long term health are put at risk
- Businesses, who waste time and money and potentially risk their futures with no or poor advice – either irresponsibly reckless or ridiculously over-cautious
- The public, whose understanding of the real importance of health and safety is constantly tainted by negative media stories about crazy decisions made in the name of safety and health
- National prosperity, through lost productivity and increased demands on health and social services.

You wouldn't put your finances in the hands of an unqualified accountant, so why put your most valuable resource at risk?

Bosses and recruiters don't know what qualifications and experience to look for when recruiting a health and safety advisor, or hiring a consultant. It's not unusual to see recruitment advertising for the equivalent of A-levels for senior strategic roles.

Health and safety knowledge have come a long way since the days of the Factories Act. That's one of the reasons why we've seen the death toll fall by 75 per cent over the last 30 years. But in that time there's been no recognition from government of this development in qualifications, experience and specialist health and safety skill. Now many professionals are qualified at first or Master's degree level. Health and safety is no longer for the well-meaning amateur.

The real value isn't fully understood by business leaders and professionals in other disciplines. Too often, graduates start their professional lives with little by way of risk education, even when they'll be managing high risk projects later in their careers. We believe health and safety is a core discipline and is just as important a part of basic business skills training as marketing, finance, and HR.

This isn't about making more red tape for business. It's about recognizing that common sense has its place, but so do knowledge and expertise.

III. Risk Assessment - Requirements

Z10

Assessment and Prioritization

The organization shall establish and implement a process to assess and prioritize the OHSMS issues identified in 4.1.

The process shall:

- A) Assess the impact on health and safety of OPHSMS issues and assess the level of risk for identified hazards;
- B) Establish priorities based on factors such as the level of risk, potential for system improvements, standards, regulations, feasibility, and potential business consequences; and
- C) Identify underlying causes and other contributing factors related to system deficiencies that lead to hazards and risks.

Objectives

The organization shall establish and implement a process to set documented objectives, quantified where practicable, based on issues that offer the greatest opportunity for OHSMS improvement and risk reduction. The number and content of objectives shall be:

- A) Based upon the priorities developed in 4.2 [section above];
- B) Focused on system improvements to eliminate or control in a sustained manner the underlying causes and contributing factors associated with risk;
- C) Consistent with the organizations occupational health and safety policy;
- D) Set, reviewed, and modified at appropriate intervals to reflect efforts to achieve continual improvement; and,
- E) Modified according to changing information and conditions that impact schedule or attainment.

IOSH/UK

(1) Every employer shall make a suitable and sufficient assessment of -

- (a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and
- (b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking,

for the purpose of identifying the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions and by Part II of the Fire Precautions (Workplace) Regulations 1997.

(2) Every self-employed person shall make a suitable and sufficient assessment of -

- (a) the risks to his own health and safety to which he is exposed whilst he is at work; and
- (b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking,

for the purpose of identifying the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions.

(3) Any assessment such as is referred to in paragraph (1) or (2) shall be reviewed by the employer or self-employed person who made it if -

- (a) there is reason to suspect that it is no longer valid; or
- (b) there has been a significant change in the matters to which it relates; and where as a result of any such review changes to an assessment are required, the employer or self-employed person concerned shall make them.

(4) An employer shall not employ a young person unless he has, in relation to risks to the health and safety of young persons, made or reviewed an assessment in accordance with paragraphs (1) and (5).

(5) In making or reviewing the assessment, an employer who employs or is to employ a young person shall take particular account of -

- (a) the inexperience, lack of awareness of risks and immaturity of young persons;
- (b) the fitting-out and layout of the workplace and the workstation;
- (c) the nature, degree and duration of exposure to physical, biological and chemical agents;
- (d) the form, range, and use of work equipment and the way in which it is handled;
- (e) the organisation of processes and activities;
- (f) the extent of the health and safety training provided or to be provided to young persons; and
- (g) risks from agents, processes and work listed in the Annex to Council Directive 94/33/EC^[8] on the protection of young people at work.

(6) Where the employer employs five or more employees, he shall record -

- (a) the significant findings of the assessment; and
- (b) any group of his employees identified by it as being especially at risk.

OHSAS 18001

The organization shall establish, implement, and maintain a procedure(s) for the ongoing hazard identification, risk assessment, and determination of necessary controls.

The procedure(s) for hazard identification and risk assessment shall take into account:

- A) Routine and non-routine activities;
- B) Activities of all persons having access to the workplace (including contractors and visitors);
- C) Human behavior, capabilities and other human factors;
- D) Identified hazards originating outside the workplace capable of adversely affecting the health and safety of persons under the control of the organization within the workplace
- E) Hazards created in the vicinity of the workplace by work-related activities under the control of the organization;
NOTE 1: It may be more appropriate for such hazards to be assessed as an environmental aspect.
- F) Infrastructure, equipment and materials at the workplace, whether provided by the organization or others;

- G) Changes or proposed changes in the organization, its activities, or materials;
- H) Modifications to the OH&S management system, including temporary changes, and their impacts on operations, processes and activities.
- I) Any applicable legal obligations relating to risk assessment and implementation of necessary controls
- J) The design of work areas, processes, installations, machinery/equipment, operating procedures and work organization, including their adaption to human capabilities

The organization's methodology for hazard identification and risk assessment shall:

- A) Be defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive; and
- B) Provide for the identification, prioritization and documentation of risks, and the application of controls, as appropriate.

For the management of change, the organization shall identify the OH&S hazards and OH&S risks associated with changes in the organization, the OH&S management system, or its activities, prior to the introduction of such changes.

The organization shall ensure that the results of these assessments are considered when determining controls.

When determining controls, or considering changes to existing controls, consideration shall be given to reducing the risks according to the following hierarchy:

- A) Elimination;
- B) Substitution;
- C) Engineering controls;
- D) Signage/warnings and/or administrative controls;
- E) Personal protective equipment

The organization shall document and keep the results of identification of hazards, risk assessments and determined controls up-to-date.

The organization shall ensure that the OH&S risks and determined controls are taken into account when establishing, implementing and maintaining its OH&S management system.

IV. Risk Assessment - Guidance

Z10

The prioritized list of OHSMS issues should be documented.

The assessment of risks should include factors such as identification of potential hazards, exposure, measurement data, sources and frequency of exposure, types of measures used to control hazards, and potential severity of hazards. Assessing risks can be done using quantitative (numeric) or qualitative (descriptive) methods. There are many methods of risk assessment. Examples are included in the Appendices and references.

Business consequences may include either increased or decreased productivity, sales or profit.

While organizations are not expected to set objectives for every OHSMS issue identified, they should set sufficient objectives to reduce risk and improve the workplace in a measurable manner. In doing so, it is often useful to focus on the critical few objectives that will provide the greatest improvement in employee health and safety and the organization's bottom line. Organizations are not expected to create objectives or implementation plans for quickly resolved "find and fix" issues.

Assessment and Prioritization

OHSMS issues identified during the initial or on-going reviews have to be assessed and prioritized. Remember that OHSMS issues include hazards, risks, management system deficiencies, and opportunities for improvement. OHSMS system issues are assessed to determine their impact on health and safety. Hazards are assessed by determining the level of risk associated with each hazard. OHSMS issues are then prioritized by considering the level of risk, potential for system improvements, compliance with standards and regulations, feasibility, and business consequences. Finally, it is necessary to identify the underlying causes and other contributing factors related to OHSMS issues.

Objectives are then developed from the listing of prioritized issues.

Assessing the Level of Risk

Many systems and methods are available to assess the level of risk associated with hazards. This appendix provides a brief overview of the concepts and process of risk assessment. A few publications that may be helpful are listed in the reference Appendix K. An effective OHSMS incorporates the concepts of hazard recognition with risk assessment. While the concepts of risk apply to many disciplines, this standard pertains to hazards that lead to risks for people. The following definitions apply.

- Hazard — A condition, set of circumstances, or inherent property that can cause injury, illness, or death.
- Exposure — Contact with or proximity to a hazard, taking into account duration and intensity.
- Risk — An estimate of the combination of the likelihood of an occurrence of a hazardous event or exposure(s), and the severity of injury or illness that may be caused by the event or exposures.
- Risk assessment — The identification and analysis, either qualitative or quantitative, of the likelihood of the occurrence of a hazardous event or exposure, and the severity of injury or illness that may be caused by it.

Hazard Analysis and Risk Assessment Guide

A general guide follows on how to perform a hazard analysis and a risk assessment. Whatever the simplicity or complexity of the hazard/risk situation, and whatever the analysis method used, the following thought and action process is applicable to a hazard-risk evaluation:

1. Select a manageable task, system, or process to be analyzed.
2. Identify the hazards. Ask the question "What characteristics of things or actions [or inactions] of people present a potential for harm?"
3. Define possible failure modes that result in exposure to hazards and the realization of the potential harm. Ask, "How could an undesirable event happen for a task and each associated hazard?"
ANSI/AIHA Z10–2005
4. Estimate the frequency and duration of exposure to the hazard.
5. Assess the severity of injury/illness. Based on experience and knowledge, make an estimate of the worst credible injury or illness consequence(s), should an incident occur.
6. Determine the likelihood of the occurrence of a hazardous event. This is usually subjective. For complex hazard exposure scenarios, brainstorming with knowledgeable people is advantageous. The likelihood of occurrence is normally related to an interval of time (several times a day, weekly, monthly, yearly, etc.).
7. Define the level of risk using a risk assessment matrix, risk ranking, or scoring system. An example of a risk assessment matrix can be found below. The level of risk is determined by plotting the likelihood of an occurrence or exposure and the potential severity of the injury or illness. The organization must then determine if the level of risk is acceptable or unacceptable.
8. Hazard risks can then be listed and ranked. Risks, system deficiencies, and opportunities for system improvement make up the OHSMS issues for a particular organization. All OHSMS issues are then prioritized by considering the level of risk, potential for system improvements, compliance with standards and regulations, feasibility, and business consequences.
9. The organization selects prioritized OHSMS issues and develops documented objectives and implementation plans.

Residual Risk

Risk can never be eliminated entirely, though it can be substantively reduced through application of the hierarchy of controls. Residual risk is defined as the remaining risk after controls have been implemented. It is the organization's responsibility to determine whether the residual risk is acceptable for each task and associated hazard. Where the residual risk is not acceptable, further actions must be taken to reduce risk.

Risk Assessment Matrices

Often, a risk matrix is used to help prioritize risk reduction measures, giving consideration to incident probability and the severity of injury or illness that could result. A risk matrix presents a reasonably quick method to represent risk in a manner that can be visualized. The elements to be considered in applying a risk assessment matrix are:

- Likelihood of the occurrence of a hazardous event or exposure; and
- Severity of injury or illness that can result. Countless probability, severity, and frequency of exposure exhibits and risk assessment matrices appear in literature. The meanings of the terms they use have wide variations. For illustrative purposes only, the following matrix shows one application of basic terms.

As a tool, the example matrix can be used as an aid to determine priorities and remedial actions as illustrated in the matrix. Others may choose different priorities or actions.

OHSAS 18002

General

Risk is the combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health (3.8) that can be caused by the event or exposure(s).

Risk assessment is a process of evaluating the risk(s) arising from a hazard(s), taking into account the adequacy of any existing controls, and deciding whether the level of risk(s) is acceptable.

An acceptable risk is a risk that has been reduced to a level that the organization is willing to assume with respect to its legal obligation, its OH&S policy and its OH&S objectives.

Inputs to the risk assessment process may include, but are not to be limited to, information or data on the following:

- Details of location(s) where work is carried out;
- The proximity and scope for hazardous interaction between activities in the workplace;
- Security arrangements
- The human capabilities, behaviour, competence, training and experience of those who normally and/or occasionally carry out hazardous tasks;
- Toxicological data, epidemiological data and other health related information
- The proximity of other personnel (e.g. cleaners, visitors, contractors, the public) who might be affected by hazardous work;
- Details of any existing written systems of work and/or permit-to-work procedures prepared for hazardous tasks;
- Manufacturers' or suppliers' instructions for operation and maintenance of equipment and facilities,
- The availability and use of control measures (e.g. for ventilation, guarding, personal protective equipment, etc);
- Abnormal conditions e.g. the potential interruption of utility services such as electricity and water, or other process failures;
- Environmental conditions, both external and within the workplace;
- The potential for failure of plant and machinery components and safety devices or for their degradation from exposure to the elements or process materials;
- Details of access to, and adequacy/condition of emergency procedures, emergency equipment, emergency escape routes, emergency communication facilities, and external emergency support etc.;
- Monitoring data related to incidents, accident and ill-health experience associated with specific work activities;
- The findings of any existing assessments relating to hazardous work activity;
- Details of previous unsafe acts either by the individuals performing the activity or by others (e.g. adjacent personnel, visitors, contractors, etc.);
- The potential for a failure to induce associated failures or disabling of control measures
- The duration and frequency at which tasks are carried out;

- The accuracy and reliability of the data available for the risk assessment
- Any legal or other requirements which prescribe how the risk assessment has to be performed or what constitutes an acceptable risk, e.g. sampling methods to determine exposure, use of specific risk assessment, methods or permissible exposure limits.

Risk assessment should be conducted by a person(s) with competence in relevant risk assessment methodologies and techniques and appropriate knowledge of the work activity.

Risk Assessment Methodologies

An organization can use different risk assessment methods as part of an overall strategy for addressing different areas or activities. When seeking to establish the likelihood of harm, the adequacy of existing control measures should be taken into account. A risk assessment should be detailed enough to identify appropriate control measures.

Some risk assessment methods are complex and appropriate to special or particularly hazardous activities. For example, risk assessment of a chemical process plant might require complex mathematical calculations of the probabilities of events that could lead to a major release of agents that might affect individuals in the workplace or the public. In many countries, sector-specific legislation specifies where this degree of complexity is required.

In many circumstances, OHS risk can be addressed using simpler methods and may be qualitative. These approaches typically involve a greater degree of judgment, since they place less reliance on quantifiable data. In some cases, these methods will serve as initial screening tools, to identify where a more detailed assessment is needed.

The risk assessment should involve consultation with workers and take into account legal and other requirements. Regulatory agency guidance should be taken into account where applicable.

The organization should consider limitations in the quality and accuracy of the data used in the risk assessments and the possible effect this could have on the resulting calculation of risk. The higher the level of uncertainty in the data the greater is the need for caution in determining whether the risk is acceptable.

Other Considerations for Risk Assessment

Some organizations develop generic risk assessments for typical activities that may occur in several different sites or locations. Such generic assessments can be useful as a starting point for more specific assessments, but need to be customized to be appropriate to the particular situation. This approach can improve the speed and efficiency of the risk assessment process and improve the consistency of risk assessments for similar tasks.

When the organization's risk assessment method uses descriptive categories for assessing severity or likelihood of harm, they should be clearly defined, e.g. clear definitions of terms such as "likely" and "unlikely" are needed to ensure that different individuals interpret them consistently.

The organization should consider risks to sensitive populations (e.g. pregnant workers) and vulnerable groups (e.g. inexperienced workers) as well as any particular susceptibilities of the individuals involved in performing particular tasks (e.g. the ability of an individual who is color-blind to read instructions). The organization should evaluate how the risk assessment will take into account the number of workers that may be exposed to a particular hazard. Hazards that could cause harm to large numbers of persons should be given careful consideration even when they are less likely to occur.

Risk assessments to evaluate the harm from exposure to chemical, biological and physical agents might require measurement of exposure concentrations with appropriate instruments and sampling methods. Comparison of these concentrations should be made to applicable occupational exposure limits or standards. The organization should ensure that the risk assessment considers both the short-term and long-term consequences of exposure and the additive effects of multiple agents and exposures.

In some cases risk assessments are performed using sampling to cover a variety of situations and locations. Care should be taken to ensure that the samples used are sufficient and adequately represent all the situations and locations being assessed.

Annex D – Comparison of Risk Assessment Tools and Methodologies

Tool

Checklists/questionnaires

Strengths

- Easy to use
- Use can prevent “missing something” in initial evaluations

Weaknesses

- Often limited to yes/no answers
- Only as good as the checklist used – it may not take into account unique situations

Tool

Risk matrices

Strengths

- Relatively easy to use
- Provides visual representation
- Doesn't require use of numbers

Weaknesses

- Only 2-dimensional – can't take into account multiple factors impacting risk
- Pre-determined answer may not be appropriate to the situation

Tool

Ranking/Voting tables

Strengths

- Relatively easy to use

- Good for capturing expert opinion
- Allows for consideration of multiple risk factors (e.g. severity, probability, detectability, data uncertainty)

Weaknesses

- Requires use of numbers
- If the quality of the data is not good, the results will be poor
- Can result in comparison of incomparable risks

Tool

Failure modes and effects analysis (FMEA); Hazard and operability studies (HAZOP)

Strengths

- Good for detailed analysis of processes
- Allows input of technical data

Weaknesses

- Needs expertise to use
- Needs numerical data to input into analysis
- Takes resources (time and money)
- Better for risks associated with equipment than those associated with human factors
- Needs expertise to use
- Needs numerical data to input

Tool

Exposure assessment strategy

Strengths

- Good for analysis of data associated with hazardous materials and environments

Weaknesses

- Needs expertise to use
- Needs numerical data to input

Tool

Computer Modeling

Strengths

- If you have the data, computer modeling can give good answers
- Generally uses numerical inputs and is less subjective

Weaknesses

- Significant time and money needed to develop and validate
- Potential for over-reliance on the results, without questioning their validity

V. Hazard Identification - Requirements

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Initial Review

The organization's existing OSH management system and relevant arrangements should be evaluated by an initial review, as appropriate. In the case where no OSH management system exists, or if the organization is newly established, the initial review should serve as a basis for establishing an OSH management system.

The initial review should be carried out by competent persons, in consultation with workers and/or their representatives, as appropriate. It should:

- A) Identify the current applicable national laws and regulations, national guidelines, tailored guidelines, voluntary programmes, and other requirements to which the organization subscribes;
- B) Identify, anticipate and assess hazards and risk to safety and health arising from the existing or proposed work environment and work organization; and
- C) Determine whether planned or existing controls are adequate to eliminate hazards or control risks; and
- D) Analyze the data provided from workers' health surveillance.

The result of the initial review should be documented become the basis for making decisions regarding the implementation of the OSH management system; and provide a baseline from which continual improvement of the *organization's* OSH management system can be measured.

[3.7]

Z10

The organization's OHSMS, if one is in place, shall be reviewed to assess conformance with the requirements in this standard. If no OHSMS exists, the initial review shall be conducted and its results shall serve as the basis for establishing an OHSMS.

The review shall include information regarding:

- A) Relevant business management systems;

- B) Hazards, risks, and controls;
- C) Resources
- D) Applicable regulations, standards, and other health and safety requirements;
- E) Assessments; and
- F) Other relevant activities

Ongoing Review. The organization shall establish and implement an ongoing review process that incorporates information arising from relevant system activities, including Planning, Implementation of the OHSMS, Evaluation and Corrective Action, and Management Review.

OHSAS 18001

Initial Review

The aim of an initial review should be to consider all OH&S risks faced by the organization, as a basis for establishing the OH&S management system. An organization may wish to consider including, but not limiting itself to, the following items within its initial review:

- Legislative and regulatory requirements;
- Identification of the OH&S management practices, processes, and procedures;
- An examination of existing OH&S management practices, processes, and procedures;
- An evaluation of feedback from the investigation of previous incidents, work related ill health, accidents and emergencies;
- Relevant business management systems and available resources

A suitable approach to the initial review can include the use of checklists, interviews, direct inspection and measurement, results of previous management system audits or other reviews depending on the nature of the organization's activities. Where hazard identification and risk assessment processes already exist, they should be reviewed for adequacy against the requirements of OHSAS 18001.

It is emphasized that an initial review is not a substitute for the implementation of the structured systematic approach to hazard identification, risk assessment and determining controls.

Hazard identification, risk assessment, and determining controls

The organization shall establish, implement, and maintain a procedure(s) for the ongoing hazard identification, risk assessment, and determination of necessary controls.

The procedure(s) for hazard identification and risk assessment shall take into account:

- K) Routine and non-routine activities;
- L) Activities of all persons having access to the workplace (including contractors and visitors);

- M) Human behavior, capabilities and other human factors;
- N) Identified hazards originating outside the workplace capable of adversely affecting the health and safety of persons under the control of the organization within the workplace
- O) Hazards created in the vicinity of the workplace by work-related activities under the control of the organization;
NOTE 1: It may be more appropriate for such hazards to be assessed as an environmental aspect.
- P) Infrastructure, equipment and materials at the workplace, whether provided by the organization or others;
- Q) Changes or proposed changes in the organization, its activities, or materials;
- R) Modifications to the OH&S management system, including temporary changes, and their impacts on operations, processes and activities.
- S) Any applicable legal obligations relating to risk assessment and implementation of necessary controls
- T) The design of work areas, processes, installations, machinery/equipment, operating procedures and work organization, including their adaption to human capabilities

The organization's methodology for hazard identification and risk assessment shall:

- C) Be defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive; and
- D) Provide for the identification, prioritization and documentation of risks, and the application of controls, as appropriate.

For the management of change, the organization shall identify the OH&S hazards and OH&S risks associated with changes in the organization, the OH&S management system, or its activities, prior to the introduction of such changes.

The organization shall ensure that the results of these assessments are considered when determining controls.

When determining controls, or considering changes to existing controls, consideration shall be given to reducing the risks according to the following hierarchy:

- F) Elimination;
- G) Substitution;
- H) Engineering controls;
- I) Signage/warnings and/or administrative controls;
- J) Personal protective equipment

The organization shall document and keep the results of identification of hazards, risk assessments and determined controls up-to-date.

The organization shall ensure that the OH&S risks and determined controls are taken into account when establishing, implementing and maintaining its OH&S management system.

VI. Guidance – Hazard Identification

Z10

In many organizations, this is called a baseline or a gap analysis. An organization with a well-established, comprehensive OHSMS does not need to start the planning process as if a system does not exist, but should review its ongoing planning process to assure that the elements listed in this section are being fully considered and integrated into that process.

The intent of this requirement is to review management systems in areas that may be outside the traditional context of health and safety programs and activities, but nonetheless affect occupational health and safety. Examples of such systems include procurement, engineering, performance, and qualifications of employees carrying out OHSMS responsibilities, quality, environmental, and recognition systems. The organization should pay particular attention to compensation systems. The positive and negative impacts of all of these systems on the effectiveness of the OHSMS are often profound. The review should also include consideration of work organization, programs, policies, procedures, and workflow.

Hazards and risks may include health, medical and weather-related emergencies, as well as emergency events that may arise from the characteristics of the materials, processes, and activities of the workplace.

Resources should include funding, personnel, equipment, mechanisms, and results of employee input into the OHSMS and data systems. Resources may be internal or external.

Assessments should include data such as loss control and Workers Compensation case information, compliance status, injury/illness metrics, findings of accident investigations (including near misses and close calls), audits, and monitoring and measurement. If an organization has not yet done a workplace inspection, it should do one as part of the initial assessment.

This may include contractor activities, maintenance, and non-routine operations.

Initial/Ongoing Review

The first step in a review of the workplace is to gather necessary information to perform a baseline or gap analysis. Organizations with well-established OHSMS may find that they already have most if not all of the kinds of information displayed in the boxes below.

The purpose of the review is to assure, as far as practicable, that all OHSMS issues are identified so that they can be assessed and prioritized (See Appendix E). OHSMS issues are hazards, risks, system deficiencies and opportunities for system improvement.

[E.4.1]

OHSAS18002

An organization will need to apply the process of hazard recognition and risk assessment to determine the controls that are necessary to reduce the risks of injury and ill health. The overall purpose of the risk assessment process is to understand the hazards to people arising from these hazards are assessed, prioritized and controlled to a level that is acceptable.

This is achieved by:

- Developing a methodology for hazard identification and risk assessment
- Identifying hazards
- Estimating the associated risk levels, taking into account the adequacy of any existing controls (it may be necessary to obtain additional data and perform further analysis in order to achieve a reasonable estimation of the risk)
- Determining whether these risks are acceptable, and
- Determining the appropriate risk controls, where these are found to be necessary.
- The results of risk assessments enable the organization to compare risk reduction options and prioritize resources for effective risk management.

The outputs from the hazard identification, risk assessment and determining control processes should also be used in the implementation and development of other parts of the OH&S management system such as training, operational control and measuring and monitoring.

Developing a methodology and procedures for hazard identification and risk assessment

There is no single methodology for hazard identification and risk assessment that will suit all organizations. Hazard identification and risk assessment methodologies vary greatly across industries, ranging from simple assessments to complex quantitative analyses with extensive documentation. Individual hazards may require that different methods be used, e.g. an assessment of long term exposure to chemicals may need a different method than that taken for equipment safety or for assessing an office workstation. Each organization should choose approaches that are appropriate to its scope, nature and size, and which meet its needs in terms of detail, complexity, time, cost and availability of reliable data. Taken together, the chosen approaches should result in a comprehensive methodology for the ongoing evaluation of the organization's risks.

To be effective, the organization's procedures for hazard identification and risk assessment should take account of the following:

- Hazards
- Risks
- Controls
- Management of change
- Documentation
- On-going review

To ensure consistency of application, it is recommended that these procedure(s) be documented.

Hazard Identification

Hazard identification involves identifying sources, situations, or acts with a potential for harm in terms of human injury or ill health, or a combination of these. Hazard identification should consider different types of hazards including physical, chemical, biological, and psychosocial (see annex C for examples of hazards).

The organization should establish specific hazard identification tools and techniques that are relevant to the scope of its OH&S management system.

The following sources of information or inputs should be considered during the hazard identification process:

- OH&S legal and other requirements, e.g. those that prescribe how hazards should be identified;
- OH&S policy;
- Records of incidents (including ill health and accidents);
- Reports from previous audits, assessments or reviews;
- Input from employees and other interested parties;
- Information from other management systems (e.g. for quality management or environmental management);
- Information from employee OH&S consultations;
- Process review and improvement activities in the workplace;
- Information on best practice and/or typical hazards in similar organizations;
- Reports of incidents and accidents that have occurred in similar organizations;
- Information on the facilities, processes and activities of the organization, including the following:
 - workplace design, traffic plans, site plan(s);
 - process flowcharts, operations manuals and product plans;
 - inventories of hazardous materials (raw materials, chemicals, wastes, products, sub-products);
 - equipment specifications
 - product specifications, material safety data sheets, toxicology and other OH&S data;
 - monitoring data;
 - occupational exposure and health assessments.

Hazard identification processes should be applied to both routine and to non-routine (e.g. periodic, occasional, or emergency) activities and situations.

Examples of types of non-routine activities and situations that should be considered during the hazard identification process include:

- Plant cleaning
- Maintenance
- Plant start ups/shut downs
- Field trips
- Refurbishment
- Extreme weather conditions
- Temporary arrangements
- Emergency situations

Hazard identification should consider:

- All persons having access to the workplace (e.g. customers, visitors, service contractors, delivery personnel, as well as employees).
- The hazards and risks arising from their activities
- The hazards arising from the use of products or services supplied to the organization by them.
- Their lack of familiarity with the workplace and
- Their varying behavior.

Human Factors is the application of technology to make the workplace compatible with human capabilities.

In considering human factors, the organization's hazard identification process should consider the following:

- The nature of the job
- The environment (heat, lighting and noise)
- Human behavior (absenteeism, fatigue, injury)
- Psychological capabilities (cognition, attention)
- Physiological capabilities (biomechanical, anthropometrics/physical variation of people).

For hazards originating outside the workplace, there is a practical limitation on the ability of the organization to take account of such issues in its hazard identification; however where it is clear that there is a potential hazard due to an activity taking place in the vicinity of the organization's workplace then this should be addressed.

The organization may need or wish to give consideration to hazards created beyond the boundary of the workplace - particularly where there is a legal obligation or duty of care concerning such hazards. These hazards may also be addressed through the organization's environmental management system.

For the hazard identification to be effective the organization should use a comprehensive approach that includes information from a variety of sources, especially inputs from people who have knowledge of its processes, tasks or systems.

Hazard identification techniques can include the following:

- Benchmarking
- Walkabouts
- Interviews
- Detailed inspections
- Incident reviews
- Monitoring and assessment of hazardous exposures (chemical and physical agents)
- Workflow and process analysis

Hazard identification should be conducted by a person(s) with competence in relevant hazard identification methodologies and techniques and appropriate knowledge of the work activity.

Annex C: Examples of items for inclusion in a hazard identification checklist

Physical Hazards

- Slippery or uneven ground leading to slips/falls on a level;
- Work at heights, leading to falls (linked to factors such as the distance of the fall);
- Falls from height of objects such as tools or materials, leading to impacts on passers by;
- Inadequate space to work, such as low headroom, leading to head impacts;
- Poor ergonomics (e.g. bad posture or repetitive work), leading to acute or chronic health effects;
- Manual lifting/handling of materials, etc., with the potential for back, hand and foot injuries (linked to factors such as the characteristics of the load);
- Trappings, entanglement, burns and other hazards arising from equipment;
- Transport hazards, either on the road or on the premises/sites, while traveling or as a pedestrian (linked to the speed and external features of vehicles and the road environment);
- Fire and explosion (linked to the amount and nature of flammable material);
- Harmful energy sources such as electricity, radiation, noise or vibration (linked to the amount of energy involved);
- Stored energy, which can be released quickly and cause physical harm to the body (linked to the amount of energy);
- Frequently repeated tasks, which can lead to upper limb disorders (linked to the duration of the tasks);
- Unsuitable thermal environment, which can lead to hypothermia or heat stress;
- Violence to staff, leading to physical harm (linked to the nature of the perpetrators)
- Ionising radiation (from x- or gamma-ray machines or radioactive substances);
- Non-ionising radiation (e.g. light, magnetic, radio-waves).

Chemical hazards

- Substances hazardous to health or safety due to inhalation [such as carbon monoxide (CO) – the hazard would be linked to the amount of CO];
- Contact with, or being absorbed through, the body (such as acids – the hazard would be linked to the strength and amount of the acid);
- Ingestion (i.e. entering the body via the mouth), such as lead paint;
- Stored materials that degrade over time (such as oxidizers);
- Lack of oxygen.

Biological hazards

- Biological agents, such as bacteria or viruses that might be:
- Inhaled;
- Transmitted via contact with bodily fluids (including needle-stick injuries);

- The hazard would be linked to the nature of the pathogen;
- Ingested (e.g. via contaminated food products).

Psychological hazards

- Excessive workload, lack of communication or control, workplace physical environment, leading to stress (linked to the magnitude and duration or stressors);
- Physical violence, bullying or intimidation within the workplace, leading to stress;
- Involvement in a major incident, leading to post traumatic stress – the hazard would depend on the nature of the incident.

VII. Requirements – Training and Awareness

Z10
Ensure effective access to, and remove barriers to participation in education and training as defined in the organization's OHSMAS; Ensure that training is provided in a language trainees understand; and Ensure that trainers are competent to train employees. The organization shall establish processes to: ensure through appropriate education, training, or other methods that employees and contractors are aware of applicable OHSMS requirements and are competent to carry out their responsibilities as defined in the OHSMS.
ILO – OSH 2001
Training programmes should: A) Cover all members of the <i>organization</i> as appropriate; B) Be conducted by competent persons; C) Provide effective and timely initial and refresher training at appropriate intervals; D) Include participants' evaluation of their comprehension and retention of the training; E) Be reviewed periodically. The review should include the safety and health committee, where it exists, and the training programmes, modified as necessary to ensure their relevance and effectiveness; and F) Be documented, as appropriate and according to the size and nature of activity of the <i>organization</i> Training should be provided to all participants and no cost and should take place during working hours, if possible. [3.4]
OHSAS 18001
The organization shall identify training needs associated with its OH&S risks and its OH&S management system. It shall provide training or take other action to meet these needs, evaluate the effectiveness of the training or action taken, and retain associated records. The organization shall establish, implement and maintain a procedure(s) to make persons working under its control aware of: D) The OH&S consequences, actual or potential, of their work activities, their behavior, and the OH&S benefits of improved personal performance; E) Their roles and responsibilities and importance in achieving conformity to the OH&S policy and procedures and to the requirements of the OH&S management system, including emergency preparedness and response requirements F) The potential consequences of departure from specified procedures. Training procedures shall take into account differing levels of: A) Responsibility, ability, language skills and literacy; and risk

VIII. Guidance – Training and Awareness

Z10

Organizations should periodically evaluate the effectiveness of training and education.

Education and training on OHSMS issues can be included on the basic training of an employee on the performance of their job. This includes other individual(s), as defined by the organization (e.g. volunteers, unpaid interns, students, inmate labor), not employed by but who perform work for the organization.

Training in OHSMS responsibilities should include, for example, training for:

- A) Engineers in safety design;
- B) Those conducting incident investigations and audits for identifying underlying OHSMS deficiencies;
- C) Procurement personnel on impact of purchasing decisions; and
- D) Others involved with the identification of OHSMS issues, methods of prioritization, and controls. Examples of hazard-related training include training in hazard identification, good safety practices, and use of personal protective equipment.

Barriers to participation can include disability issues, training on uncompensated time, scheduling, training environment, and literacy language issues.

OHSAS - 18002

The organization should consider the roles, responsibilities and authorities, in relation to the OH&S management system, in determining its training or other actions needed for those persons working under its control (including contractors, temporary staff, etc)

The training or other actions should focus on both competency requirements and the need to enhance awareness.

The organization should evaluate the effectiveness of the training or actions taken. This can be done in several ways, e.g. by written or oral examination, practical demonstration or observation, or other means that demonstrate competency and awareness.

Training records should be maintained.