

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry
(Draft)

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Acknowledgments

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1 Introduction

This publication is intended for companies /organisations in the metalworking industry to implement an effective Workplace Safety and Health Management System (WSHMS) which is a requirement under Workplace Safety and Health (WSH) (Safety and Health Management System and Auditing) Regulations 2009.

Background

In July 2001, there was a set of Guidelines on the Implementation of Safety Management System for the Metalworking Industry developed by Metalworking Industry Safety Promotion Committee and Ministry of Manpower's Occupational Safety Department and Occupational Safety & Health (Training & Promotion) Centre – termed as 'Guidelines (2001)'. This document was based on 15 elements (Additional element "Element-15 on Document Control and Review" was included).

1.1 Scope and Objective

With the release of the International Organisation for Standardisation (ISO) 45001 : 2018 (Occupational health and safety management systems – Requirements with guidance for use), a review was done, as far as reasonably practicable, to integrate all elements in Annex A of Guidelines (2001) into Sections of this set of guidelines, with reference to the ISO 45001 : 2018 framework. Reference to SS ISO 45001 : 2018 is required to align to the standards. This will also facilitate any factory (engaged in the manufacturing of fabricated metal products, machinery or equipment in which 100 or more persons are employed) and the appointed WSH auditors to meet the legislative requirement on the conduct of audit at least once in every 12 months. Refer to Annex B (Summary of Sections with Elements from Guidelines (2001) and Annex C (Cross-Reference Matrix) of all mapped elements of Guidelines (2001) onto this set of guidelines.

1.2 Overview of ISO 45001 process (For further details, refer to SS ISO 45001 : 2018 document)

The Workplace Safety and Health Management System (WSHMS) in ISO 45001 : 2018 is based on the concept of Plan-Do-Check-Act (PDCA). Under this framework, the organisation is required to maintain and retain the documented information as evidence of the efforts to align to the WSHMS requirements. The relevant contents based on the clauses are as follow:

- Context of the organisation
- Leadership and worker participation
- Planning
- Resources support
- Operation
- Performance evaluation
- Improvement

(Source: Online browsing platform : <https://www.iso.org/obp/ui/#iso:std:iso:45001:ed-1:v1:en>).

Note: This set of guidelines replaces Guidelines on Safety Management System for the Metalworking Industry developed by Metalworking Industry Safety Promotion Committee and Ministry of Manpower's Occupational Safety Department and Occupational Safety & Health (Training & Promotion) Centre, published in July 2001.

2 Organisation – Context and Scope

Generally, organisation is driven mainly by people, process and technology in the execution of work processes such as life cycle of machines comprising tasks and activities through innovation, automation and other methodologies/ technologies. In line with changing working environment, organisation needs to address issues (internal and external issues) that may arise from individual and/ or organisational factors in order to achieve the desired /intended outcomes of the Workplace Safety and Health Management System (WSHMS). Organisation acknowledges that employees (or workers) and /or interested parties (e.g., contractors, suppliers) are important human capital resource where their needs and expectations are considered in mapping out its scope and context.

(Note: SS ISO 45001 : 2018 defines workers as comprising top management, managerial and non-managerial personnel. Refer to SS ISO 45001 : 2018 Annex A - A.4.2 for the detailed specification of the term 'interested parties').

2.1 Challenges organisations face

The context covers issues which range from internal (e.g., organisational structure, policies, knowledge, competencies, strategic objectives) to external (e.g., social, cultural, technological and economic aspects of organisation). Organisation should understand the issues of workers and /or interested parties and provide possible solution(s) or measure(s) through (a) group meetings discussion; (b) WSH promotional programmes/ activities, where applicable.

a) Group Meetings [\[Element 4\]](#)

- Motivate workers to participate in the discussion of WSH issues arising from the workplace in improving, promoting and reviewing WSH matters. [\[Element 4.1, 4.2.1\]](#).
- WSH committee shall have a clearly defined charter with prescribed functions, composition of members as well as their roles and responsibilities. [\[Element 4.2.2\]](#).
- Disseminate all relevant information to workers and contractors via an effective communication channel. [\[Element 4.2.4\]](#).
- Understand the WSH issues and follow-up with smaller group meetings (e.g., tool-box, sub-committee, working group, innovation team) to explore solutions to specific issues [\[Element 4.2.5\]](#).
- Communicate minutes of WSH/sub-group committee meetings with all department heads for information and /or necessary follow-up action. [\[Elements 4.2.3\]](#).

b) WSH promotional programmes/ activities [\[Element 7\]](#)

- Encourage workers and contractors to participate in promotional activities and to provide constructive suggestions to issues to improve WSH [\[Element 7.2.3\]](#).
- Foster a WSH culture based on mutual trust, care and concern that organisation work towards a positive working relationship with workforce to prevent ill health and injury at the workplace. [\[Element 7.1\]](#).

It is through effective communication and interaction based on mutual trust, care and concern that organisation can foster a close rapport towards a common objective of the WSHMS. (Refer to Clause 4.1 of SS ISO 45001 : 2018 for more details on these issues faced by organisation).

2.2 Managing expectations of workers

Prior to the planning of the WSHMS for workers, organisation should determine the relevant interested parties who should be involved too. By understanding the needs and expectations of workers and other interested parties, organisation is required to assess these needs to decide if they are mandatory and required by legislation. For instance, collective agreements by unions, in particular, are in line with workplace practices and should be considered. Other non-mandatory needs and expectations (e.g., voluntary initiative) may be adopted in establishing the WSHMS.

The needs arising from both Individual /personnel and organisational may include the following:

a) WSH training [\[Element 3\]](#)

Conduct training needs analysis for workers, including contractors (under purview of contractors' employers) with identification of relevant training, evaluation and review of training program. Organisation should verify contractors' training requirements, including mandatory training, where applicable. [\[Elements 3.2.1, 3.2.3\]](#).

b) In-house WSH Rules and Regulations [\[Element 6.1\]](#)

Ensure collective agreement by union or workers' representative, where applicable, in formulating WSH rules and regulations for the planning process, before endorsement by top management as acceptable workplace practices following industry consultation [\[Element 6.2.3\]](#).

2.3 Scope of Workplace Safety and Health Management System (WSHMS)

In setting the scope of WSHMS, organisation should consider the following:

- Its circle of influence where the WSHMS is applicable for the wide array of activities, products and services that may have implication on organisation's WSH performance which is in line with legal and other requirements.
- Individual business units or divisions in view of their specific nature, functions and constraints of these units.
- Harnessing new or existing technology, where applicable, for the business units and /or work processes to enhance productivity for the organisation.

For instance:

a) Management of Hazardous Substances [\[Element 12\]](#)

Organisation may need to establish a [Management of Hazardous Chemicals Programme](#) (refer to WSH guidelines in References) when using chemicals during machining where mists, vapours and /or aerosol may be emitted.

The programme should include the following:

- Establish a set of procedures on the control (e.g., receipt, issuance), procurement, storage, safe use (e.g., use of relevant PPE for workers), transportation, classification, labelling and disposal of hazardous substances. [Element 12.1].
- Provide designated storage with labelling according to Safety Data Sheets, and segregate hazardous chemicals from incompatible substances to prevent possible chemical reaction (e.g., chemical storage cabinets for small quantities of chemicals with physical barrier from incompatible materials). Bulk chemicals in drums or tanks should equip with secondary containment. Preventive or protective measures should include the identification of high-risk processes and the incompatible materials that may lead to potential hazardous combinations and /or conditions. [Elements 12.2.1, 12.2.2].
- Nominate a competent person responsible for periodic audit based on the register or list of hazardous substances/chemicals in the workplace [Element 12.2.1]
- Liaise with other agencies where necessary, for compliance with the respective legislative requirements. These include the spill prevention, containment and disposal procedures as well as related hazard communication training and documentation. [Elements 12.2.3, 12.3.4].
- Implement hierarchy of controls to eliminate or mitigate the risks in handling of machining fluids during machine operation.

b) Use of Technology

Explore the use of technology (e.g., virtual reality, augmented reality or other online simulation tools) for an interactive and dynamic learning environment, as part of the new addition or periodic review of WSH training programme to ensure relevancy of training. [Elements 3.2.6, 3.2.8].

2.4 Strategic WSHMS

Organisation ensures the processes are planned and implemented according to the strategic objectives with a review mechanism to achieve its desired /intended outcomes:

- Adopt the Plan-Do-Check-Act (PDCA) methodology with the provision of continual improvement to the WSHMS.
- Allow the flexibility or portability of the implemented policies and developed processes across other business units or parts of organisation where applicable, for consistency and sharing of good practices.

For example, Contractor Safety Management [Element 8] apply PDCA approach to evaluate the effectiveness of the system with identification of the WSH gaps in the implementation of the action plans to achieve WSH objectives - a control mechanism to be used for engagement of contractors for future work [Element 8.2.8].

The PDCA approach is applicable as follow:

- Ensure the contractual agreement for contractor safety management comprises evaluation, selection and control of contractors comply with organization rules, regulations and legal requirements. For instance, there should be a pre-approved list of contractors for major or specialised work. New contractors not in this list should be subjected to evaluation and selection process [Elements 8.1, 8.2.3, 8.2.4] - Plan

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- Conduct hazard analysis and risk management on the work activities. This includes joint audit inspection with contractors and senior management, including unannounced audits or spot-checks on housekeeping, unsafe act and unsafe condition [Elements 9.1, 11.2.3, 9.2.4, 9.2.5] - Do
- Checks to ensure only approved tools and equipment with certification mark can be used at the workplace [Elements 9.2.5, 8.2.9] - Check
- Follow up on audit findings [Element 9.2.6] and to review documents and records for effectiveness [Element 15.2.3] – Act
- Explore the use of punitive measure (e.g., demerit point system) for non-conformance of WSH rules and regulations as well as reward and recognition scheme (e.g., incentives, rewards) for exemplary WSH performance [Element 6.2.2] and align to consequence management process¹, where applicable (Refer to Annex F).

¹ Voluntary initiative

3 Leadership with workers involvement

The success of an organisation starts from top management leadership with the involvement of workers through participation of the Workplace Safety and Health Management System (WSHMS) activities. Organisation demonstrates top management's leadership through management commitment, WSH policy, organisational structure as well as consultation with workers. The commitment to eliminate hazards and to reduce WSH risks is a total effort that involves everyone in the organisation.

3.1 Management commitment

Management needs to be actively involved to show support throughout the various stages of the WSHMS to ensure workers' safety and health which include well-being and wellness. Evidence to demonstrate management commitment, include but not limited to the following (Refer to SS ISO 45001 : 2018 for details):

- Endorse the WSH policy by top management (e.g., Chief Executive, Site Director, Principal) with a commitment to set up a safe and healthy workplace [Elements 1.1, 1.2.3].
- Support WSH promotional programmes and activities with strong commitment towards a safe and healthy workplace. Top management to be present to rewards workers for good WSH performance [Elements 7.2.1, 7.2.4].
- Authorise revision of documents prior to distribution to workers [Element 15.2.5].
- Ensure WSHMS forms an integral part of the organisation's business, with sharing of good WSH practices to enhance safety and productivity (e.g., Demerit point system, reward and recognition scheme) [Elements 8.2.8, 6.2.2].
- Ensure availability of support (e.g., resources, formation of WSH committee) for the WSHMS with opportunity for continual improvement
- Encourage workers to make suggestions or report incidents, hazards, risks and opportunities without workers feeling threatened or reprimanded
- Set a culture with "no-blame" mindset that steers towards the desired /intended outcomes of WSHMS
- Top management to demonstrate leadership as follow:
 - conduct regular factory walkabout to address shop floor related WSH issues and concerns, if any, and to provide solutions, where applicable
 - lead town hall or dialogue sessions as part of effective communication strategy
 - adopt a zero-tolerance approach for unsafe acts and conditions based on WSH consequence management process ²(Annex F), where applicable
 - chair Apex (topmost level) WSH Committee Meetings for setting strategic direction on WSH and related matters

3.2 WSH Policy

The WSH policy provides a framework based on the principles which sets the directions through strategic objectives to prevent work-related injury and ill health to the workforce [Element 1.1].

Key features of the WSH policy to illustrate management commitment include:

² Voluntary initiative

- Formulate WSH policy with management commitment in line with WSHMS strategy based on context and scope of organisation that involves all levels of workforce whose roles and responsibilities form essential resource in ensuring a safe workplace [Element 1.2.1].
- Ensure contents of the policy are understood and accepted by workers and contractors [Element 1.2.4].
- Display WSH policy, incident statistics /trends, WSH bulletins and related information (e.g., posters, signs, pictograms, case studies with learning points) at various strategic workplace locations (e.g., reception, cafeteria, workers rest area, department's bulletin board) as a form of communication or publicity tool. [Elements 1.2.4, 7.2.2a, 7.2.2b, 7.2.2c, 7.2.2i].
- Review regularly with update on the review date followed by documentation of revised information [Element 1.2.5].

3.3 Organisational roles and responsibilities

The organisational chart displays the reporting or relationship hierarchy as follows:

- Incorporate a structure with clearly defined roles, responsibilities and authority, applicable to the business units functions of the manufacturing value chain of activities. [Element 1.2.2].
- Empower workers with the responsibility and authority in their areas of work. Overall accountability for the functioning of the WSHMS lies with top management.
- Report by department heads on WSHMS performance in terms of (non-exhaustive):
 - Relevancy (e.g., WSH policy, Safe Work Procedures - SWP, WSH rules and regulations)
 - Adequacy (e.g., Checklists, Drills, Training)
 - Timeliness (e.g., Completion of WSH projects /programmes, follow-up on audits findings /action items)
 - Rigour and robustness (e.g., Contractor Safety Management, Maintenance Regime)

3.4 Consultation with Workers

To demonstrate leadership in management of workforce, organisation needs to seek workers' inputs for the development of work processes which may include:

- a) WSH rules and regulations [Element 6]
 - Establish WSH rules and regulations for workers and contractors based on their roles and responsibilities, in line with relevant Singapore Standards, Code of Practices and WSH industry practice. [Elements 6.1, 6.2.1].
 - Ensure organisational WSH rules and regulations are relevant and effective through periodic review and consultation with workers or workers' representatives, including employees' union, where applicable [Element 6.2.3, 6.2.6].
 - Ensure top management endorses WSH rules and regulations prior to implementation for compliance [Elements 6.2.3, 6.2.5].
 - Communicate effectively and ensure its availability to workers and contractors [Elements 6.2.3, 6.2.4].

b) Group Meetings [\[Element 4\]](#)

- Engage small group discussion to cascade down WSH information from main WSH Committee. This forms the feedback gathering process to enhance communication and to promote worker participation in WSH activities [\[Elements 4.1, 4.2.5\]](#).
- Management to support formation of WSH improvement /innovation teams (formerly known as Safety Improvement Teams) with incentives for exemplary team performance under rewards and recognition scheme. [\[Elements 4.2.5, 7.2.2h\]](#).
- Conduct tool-box meetings or dialogue sessions in a language understood by workers, with a representative from each nationality for the translation, where necessary.
- Identify barriers which may affect worker participation and to remove or minimize these identified barriers, where possible.

Other mechanisms in place include:

- Involve relevant workers in the following:
 - Cycle of the Management of Change (MOC) to review changes or modifications (e.g., manufacturing conditions, process equipment, introduction of new materials). MOC may include but not limited to Safe Work Procedures, Safety Rules and Regulations, Risk Assessment, Maintenance Regime and Management of Hazardous Substances and Emergency Preparedness and Response Plan.
 - Analysis of incident reports on the findings, trends and follow-up actions. Outcomes of analysis can help determine the effectiveness of the control measures which can be used for planning of WSH promotional activities (e.g., WSH talks /seminars /campaign with issuance of WSH handbook /guide and screening of relevant WSH videos) to reinforce the WSH mindset through developing the interest and awareness [\[Elements 5.2.6, 7.1, 7.2.2d, 7.2.2e, 7.2.2g\]](#).
- Empower workers and supervisors to ensure operation and preventive maintenance of equipment or machine are conducted in accordance with manufacturer's guidelines by appointed competent persons [\[Element 10.2.1\]](#).
- Management to support continual improvement of the WSHMS with periodic review to evaluate the relevancy and effectiveness (e.g., risk control measures, WSH audits, document review, corrective actions) [\[Elements 10.2.2, 15.1, 15.2.6\]](#).

4 Work Processes Planning

Organisation is required to plan the work processes and implement the planned actions safely to ensure WSHMS achieve its desired /intended outcomes. Based on organisation's context and scope, risk management is done to address the WSH risks and opportunities in line with statutory and other requirements. Hierarchy of controls is one method to determine the appropriate risk control measures for the identified hazards in mitigating the risks. (Refer to Annex D – Common Hazards in the Metalworking Industry and Annex E - Hierarchy of Controls and Suggested Risk Control Examples).

Planning action should also include the emergency preparedness and response plan and the performance of organisation in the emergency evacuation drills and /or table-top scenario-planning exercise as a mean to evaluate effectiveness of the risk control measures. (Refer to Para 6.2 Emergency Preparedness and Response Plan for more details).

4.1 Risk Management Plan

Hazard analysis is a proactive process to identify common hazards (e.g., physical, chemical, mechanical, biological, psychosocial, electrical, ergonomic) affecting workers in a manufacturing environment where processes include but not limited to production, assembly, product testing and warehousing are carried out. (Refer to SS ISO 45001 : 2018, Para A.6.1.2.1 for the activities, situations and conditions where risk assessment which includes hazard identification is applicable at the planning stage of WSHMS).

Assessment of WSH risks and opportunities is an ongoing process and should cover day-to-day operations in the risk management plan which may include but not limited to Safe Work Procedures, WSH inspection, incident reporting, emergency preparedness and response. Evaluate the effectiveness of risk controls in mitigating or eliminating the risk based on the control mechanisms in place. In the event of any gaps identified, these should serve as opportunities for organisation to adapt and refine the work processes and /or work environment to enhance WSHMS. [Elements 2.1, 2.2.1, 9.2.5, 9.2.7, 9.2.8, 11.2.2, 11.2.3, 14.2.5, 14.2.6].

Refer to [Code of Practice on WSH Risk Management](#) for more details.

For instance, risk management plan should:

- Establish a formal programme for regular WSH inspection comprising the appointment of competent workers from shop floor to lead hazard analysis for routine and non-routine work activities involving the facilities and equipment in their work areas – One way for workers to ensure a safe and healthy workplace through ownership of the risks with risk controls in place. [Elements 9.2.1, 9.2.3, 11.2.1]. Responsible persons should also be appointed in line with the OH programme objective on the implementation of control measures to ensure improvement to the work environment and the well-being of the worker /affected worker. [Elements 13.1, 13.2.6].
- Include a well-established maintenance regime programme to ensure operational compliance of plant, equipment and machinery, property, relevancy and adequacy of risk control measures (e.g., safe work procedures, checklists, inspection, inspection schedule, maintenance and report). [Elements 10.1, 10.2.1, 10.2.2, 10.2.3 and 8.2.10]

Organisation should incorporate relevant Occupational Health (OH) programme [Elements 13.1, 13.2.1, 13.2.5] to protect all workers through identification, evaluation of possible chronic or other occupational diseases /illnesses as well as implementation of risk control of health hazards using hierarchy of controls where applicable, as follow:

- Work processes (e.g., exposure to hazardous substances) – Eliminate the use of hazardous substances or substitute with less hazardous substances, where applicable.
- Work environment (e.g., noisy machines) – Modify the work process or equipment using engineering controls (e.g., enclosure, mounting) to reduce noise level.
- Organisational factors (e.g., psychosocial due to changes) – Introduce job rotation or other administrative controls for affected workers to adjust to change(s).
- Personnel factors (e.g., WSH competency for the job or task) – Provide workers with suitable PPE, followed up with appropriate medical examination, training and education.

Details of the OH programmes should include relevant initiatives such as hearing conservation, management of hazardous chemicals, ergonomics, respiratory protection and other good industrial hygiene programmes, where applicable. For instance, in line with Global Harmonised System (GHS), organisation should introduce precautionary measures as SWP on the safe use, handling, transport, storage, classification, labelling and disposal of related chemicals or hazardous substances. All Safety Data Sheets (SDS) should be available for the chemicals used. Responsible persons should also be appointed in line with the OH programme objective on the implementation of control measures to ensure improvement to the work environment and the well-being of the worker /affected worker. The roles and responsibilities of all workers, including management should be clearly defined to ensure the effective implementation of the OH programmes. [Elements 13.2.2, 13.2.3, 13.2.4]

Planning should include possibility of integration of WSHMS into other business units functions (e.g., human resource, finance) for sharing of good practices to address other WSH risks, where applicable. It also applies to in-house WSH promotional activities with participation by workers and /or contractors as well as in activities outside of organisation (e.g., outdoor events or offsite meetings) too. [Element 7.2.1]

Communicate plan includes the sharing of follow-up actions, findings and recommendations in relation to relevant legislative and other requirements, including emergency preparedness and response plan in order to prepare workers and stakeholders on the awareness and compliance. [Elements 5.2.4, 9.2.6, 14.2.4].

4.2 WSH Objectives with Achievable Plans

In line with the strategy of the WSH policy, WSH objectives used in the planning of work processes should be specific and relevant to the work or issue(s). Prior to defining the WSH objectives, outcomes on the assessment of the risks and opportunities as well as the consultation with workers / workers' representatives and stakeholders (e.g., contractors) should be incorporated to ensure achievement of common goals for WSHMS with a provision for continual improvement of WSH performance.

The WSH objectives set the direction of organisation for alignment to WSH policy through monitoring of the work processes. These objectives should be linked to WSH performance with accountability within department heads of business units, and may include the following features:

- Strategic, measurable, achievable with a time frame for implementation within the organisational constraints (e.g., manpower, time, budget, equipment, infrastructure)

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- Integral to the organisation's business with a review mechanism by top management to refine the measurement indicators (quantitative and /or qualitative via survey or observation) to ensure WSH (inclusive of workers' mental well-being) of the workforce.
- Maintain and retain documented information (e.g., strategic plan and actions)
- Communication plan to include relevant information (e.g., findings, corrective actions, changes, deviations) which should be available and accessible to workers and relevant interested parties

[\[All 15 elements\]](#)

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5 Management Support

One of the success factors of the WSHMS requires the top management to provide the necessary support in leading the organisation and promoting a WSH culture towards the strategic objectives of the WSH policy.

5.1 Resource Allocation

In line with the context and scope of the organisation, resources are required for the operation of the business units or work processes. Adequate resources need to be allocated which may include human resource, finance, technology and infrastructure such as building, facilities, equipment, inter-related systems and processes. It covers most of the elements in Annex A where organisation's support is also required in additional areas such as workers' mental well-being in line with Total WSH, reporting of near misses and harnessing of technology in work processes [Element 4.1].

For instance, organisation involves worker participation in the following activities as follows:

- Align with WSH (WSH Committee) Regulations on formation of WSH committee, where applicable, with clearly defined functions and duties comprising members and the team composition. [Element 4.2.2].
- Evaluate the effectiveness of the WSHMS, audit findings and disseminate outcome of review to respective departments to ensure corrective actions are implemented promptly [Element 15.2.6].

5.2 Skills and Knowledge of Workers

The skills, knowledge, attitudes of the workers including contractors attained from the training and qualifications can have implication on the WSH performance of an organisation. The skillsets attained and experience gained are applicable in the hazard analysis, evaluation of risks and implementation of the risk control measures for tasks and /or WSH related issues.

WSH training [Element 3]

- Ensure workers (including supervisors/managers) are adequately trained with required skills and knowledge and to attend mandatory training courses required under WSH Act and its subsidiary legislations, including the Factories (Safety Training Courses) Order, to perform the work safely and competently. [Elements 3.1, 3.2.3, 3.2.4]
- Establish a comprehensive training program with the learning outcomes to address identified training needs of workers and contractors in Section 2.2, as follows [Elements 3.2.1, 3.2.2]:
 - Induction, orientation and on-the-job training for new workers (including contractors entering workplace to work for the first time) [Elements 3.2.5, 8.2.5].
 - Other specific training which may include auditing, incident reporting, equipment, contractor briefing / training and behavioural safety. [Element 3.2.2]
 - Provide refresher/ retraining where required in line with statutory requirements (e.g., occupational first-aid, mobile elevated work platform). [Element 3.2.3].
 - The training should be based on medium of instruction/ language understood by workers [Element 3.2.6].
 - All training records should be documented (e.g., date, type of training, training provider and results achieved) [Element 3.2.7].
- Review periodically with necessary updates on all WSH training programmes [Element 3.2.8].

5.3 Informed Workforce

Management should ensure workers are informed and made aware on WSH matters whether they are directly or indirectly involved for common alignment to WSH objectives of WSHMS, which include:

- Individual role and responsibilities defined in WSH policy, job description and reporting structure in the organisation chart. [Element 1.2.2].
- Workers to understand individual contributions to the WSH performance of WSHMS (e.g., outcomes and /or actions from incident investigation, risk assessment, WSH audits), benefits (tangible and intangible) of total efforts as well as the effects and consequences for nonconformance.
- Exercise of workers' rights to abstain from situation with imminent danger to health and safety with understanding that there should be back-up support from management for such action.
- Participation in WSH promotional activities to be apprised of issues faced by organisation and the adoption of appropriate solutions and /or suggestions to resolve these issues [Element 7.2.3].

5.4 WSH Communication

Communication is a key process of dissemination of WSH matters in relation to WSHMS for continual improvement. Need to consider the situational factors involving worker participation on the diversity of views. Other stakeholders such as contractors, workers' representative, visitors should be part of the 2-way communication process, both internally and externally.

a) Internal:

- Provide suitable communication platforms which may include
 - WSH meetings on workplace's WSH issues to brainstorm on solutions or risk control measures with a review mechanism in place [Element 4.2.1].
 - Site promotional activities for suggestions to eliminate hazards and to improve WSH including mental well-being at the workplace [Element 7.2.3].
- Record all minutes in the WSH/sub-group committee meetings and communicate to all department heads for information and /or necessary action [Element 4.2.3].
- Ensure the emergency preparedness and response plan include documentation and effective communication of emergency matters (e.g., procedures, drills and performances, training) to all workers at the workplace. [Elements 14.2.4, 14.2.5].
- Ensure Safe Work Procedures are written in easy-to-understand format, accessible and effectively communicated to all workers and contractors through briefing (e.g., tool-box meetings) and training. Briefing is part of effective communication prior to commencement of any new area /item of work at the workplace. This is important especially if there are new hazards due to the changes or new additions [Elements 2.2.3, 4.2.4, 4.2.5, 8.2.6].

b) External:

- Ensure the emergency preparedness and response plan include means of communication with the relevant agencies, as part of external communication to align with statutory and legal requirements [Element 14.2.3f]
- Establish effective communication channels to update contractors of relevant WSH information and /or changes (e.g., WSH rules and regulations, issues from WSH meetings) related to existing WSHSMS [Elements 4.2.4, 6.2.4, 8.2.7].

5.5 Documentation of WSH Information

Proper storage and documentation of WSH information (e.g., checklist, procedures, rules and regulations, work processes, notes of meetings, incident and /inspection report, records of training and certification, promotional activities, WSH performance, WSH audits and results, risk assessment forms) are testament to the evidence of work and actions carried out as planned which are required for WSHMS. [All elements].

This documented information should be retrievable and may include but not limited to the following:

Document features and control

- Ensure all relevant documents are maintained and updated with controlled referenced numbers, date of issue, descriptive title and authorized signatory [Elements 15.2.1, 15.2.5]
- Ensure a master list is established for the record of controlled documents and their distribution, where applicable. [Element 15.2.2]
- Ensure documents are available for use and protected from misuse especially for information with confidentiality matters [Element 15.2.3]
- Ensure revision to documents are properly recorded and authorized by management prior to distribution. As part of control, It should come with date of review, version number and reference with the change details. Remove promptly all obsolete, invalid and cancelled documents [Element 15.2.4]

6 Operational Implementation

Organisation needs to ensure the planned actions for the work processes in Section 4 with the criteria and control mechanism are implemented in accordance with WSHMS requirements. While the key objective is to enhance WSH by eliminating all the hazards at the workplace, in cases where if not practicable, it is the organisation's prerogative to reduce WSH risks to levels as low as reasonably practicable with the worker participation. Refer to A.8.1.1 SS ISO 45001 : 2018 on the examples of the operational control of the processes.

6.1 Planning and Controlling

Organisation is required to address the needs of workers and contractors (includes contracting and outsourcing personnel) as well as other interested parties, as follows:

- a) Incorporate in the evaluation, selection and control criteria of contractors /sub-contractors:
 - Aside to the competency (e.g., training and qualification) requirements as mentioned in Section 5.2, the tools and equipment to be used by contractors need to be type-approved and /or certified for use, prior to awarding any work. Contractors' work preparation and experience in the work or tasks allocated need to comply with WSH rules and regulations at the workplace [Elements 8.1, 8.2.1, 8.2.2, 8.2.9, 6.2.2, 6.2.5].
 - Incorporate in the contractors' selection criteria (e.g., WSH performance indicators, bizSafe certification, credibility and other WSH records).[Elements 8.2.2, 8.2.3]
- b) Conduct preventive and predictive maintenance for all tools, equipment (including statutory), machines /machineries used in the workplace to ensure the reliability in accordance with the risk management plan in Section 4.1. This prevents incident occurrence due to possible failure or malfunction of these tools, equipment and machine. [Element 10.1].

Appoint competent and qualified person to implement the effective maintenance regime programme based on the following components [Elements 10.2.1, 10.2.2, 10.2.3]:

- Master checklist of all hand tools, plant, machines and equipment
- Inspection and maintenance schedule with responsibilities of inspection team members and relevant follow-up inspections
- Inspection checklists to include instructions, where applicable, for specific items to be inspected.
- Inspection reports to be forwarded to relevant supervisors and /or managers for immediate corrective actions
- Review and evaluate the operational compliance and adequacy of the checklists at least once yearly by management.

Elimination of hazards and reducing WSH risks

This may include but not limited to the following:

- Establish a set of systematic risk management procedures on the identification, evaluation and control of hazards at the workplace. Refer to Annex D – Common Hazards in the Metalworking Industry. [Element 11.1]
- Formalise the outcomes of job hazard analysis or risk assessment, where applicable, into specific safe work procedures (SWP) related to work processes, facilities, tools,

equipment and machinery for both routine and non-routine activities performed by workers and contractors [Elements 2.2.5, 11.2.1].

- Ensure SWP address all potential energies that may be stored or released during work and /or present in the work process. Ensure these hazardous energy sources cannot be restored unexpectedly or accidentally during the course of repair and maintenance work [Element 2.2.6].
- Review and evaluate all SWP regularly to ensure its relevance and effectiveness. [Element 2.2.4]
- Establish lock-out tag-out (LOTO) procedures for implementation during machine /equipment inspection, cleaning, repair and maintenance, in line with statutory requirements. This ensures all hazardous energy sources cannot be restored unexpectedly or accidentally during the course of repair and maintenance work [Element 2.2.7].
- Evaluation of possible risks and the effectiveness of risk control measures for various probable workplace scenarios and in alignment with Code of Practice on WSH Risk Management [Element 11.2.2].
- Determine if additional risk control measures or safe work procedures (e.g., permit-to-work system) to be established for hazardous work and /or work processes which may include work at heights, working in confined spaces involving hot work. [Elements 2.2.2, 2.2.8]

Refer to Section 4.1 on the risk management plan as well as Annex E on the hierarchy of controls and suggested risk control examples.

Management of Change

Organisation should include control mechanism to cater for organizational changes (both temporary and permanent) which include but not limited to:

- Workflow, processes, equipment, workforce (e.g., training, staff /new staff), technology, new product /service and work environment.

Management of change procedure should include review of hazard analysis, safe work procedures, maintenance regime as well as WSH rules and regulations to ensure minimal implication to the WSHMS desired /intended outcomes. [Elements 2.2.9, 11.2.3]

6.2 Emergency Preparedness and Response Plan

Organisation should plan for events which occur by nature cause as well as created (e.g., exercises, drills) as part of gauging readiness of the workforce for emergency needs.

- Establish a written and updated response plan to mitigate consequences arising from potential emergency situations and to familiarize, prepare employees with the response procedures to respond in the event of an emergency [Elements 14.1, 14.2.1, 7.2.2f]
- Identify the potential emergency situations to plan for the response with the inputs of workers and interested parties (e.g., contractors) to cater to their needs at each level of organisation [Element 14.2.1].

- Incorporate in the emergency response plan (ERP) the following emergency situations (non-exhaustive) [Element 14.2.2], [Element 12.2.4 - indicated incorrectly as 12.2.3 in Guidelines (2001)]:
 - Fire and explosion
 - Toxic gas leakage
 - Chemical Spill
 - Failure and collapse of structure

Include emergency response equipment (e.g., First Aid, Automated External Defibrillator – AED, emergency shower, eyewash, firefighting and rescue)

- Ensure the ERP includes (i) formation of Company Emergency Response Team (CERT) comprising the required number of members with the composition and the roles to perform evacuation procedures, including rescue and first aid; (ii) procedures for notification and raising of alarms; (iii) communication with other relevant government agencies [Element 14.2.3]. Refer to SCDF's Evacuation Planning Guidelines (2018) for details.
- Ensure proper documentation of ERP information and records which should be communicated to all workers at the workplace [Elements 12.2.3, 14.2.4]
- Establish a training programme with the evacuation drills and exercises for workers and CERT to prepare for prompt response in an emergency in line with Fire Safety (Emergency Response Plan) Regulations. [Elements 12.2.3, 14.2.5]
- Evaluate the planned response after occurrence of each emergency situation. [Elements 14.2.6].

7 Evaluation of Organisational Performance

Organisation is required to establish a system to ensure various work processes are inter-related and integral to the business in line with the intended outcomes of the WSHMS. These include fulfilling the statutory requirements and other requirements as well as addressing the needs and expectations of workers and other interested parties.

7.1 WSH Performance and Indicators

Assessment of the WSH performance indicators can be done through behavioural observation, monitoring, measurement and analysis of documented information (e.g., data, trends, findings, corrective actions, other records) to ensure conformance to WSHMS objectives.

For instance, organisation is required to:

- Ensure the reliability of the monitoring and measuring equipment through testing, inspection, calibration and certification as required by manufacturer and /or maintenance schedule as well as statutory requirements, where applicable. [Element 10.1].
- Introduce relevant training (e.g., risk management, behavioural observation and intervention workshop) as part of training programme for supervisors and /or managers to fulfil the need for assessment of WSH performance [Element 3.2.4]
- Determine a set of assessment criteria (e.g., relevancy, adequacy, timeliness, rigour and robustness) on the processes under WSHMS, to ensure compliance with corrective actions for nonconformities - to facilitate the reporting on the WSH performance in Section 3.3 [All 15 elements].
- Communicate the results of WSH performance and /or indicators using various platforms accessible to workers and other interested parties [All 15 elements].

7.2 Audit and Programme

Audits are processes, both conducted internally and externally, help to ensure organisation's conformance to the WSH policy and objectives. The audit programme ascertains a fair and effective implementation and maintenance of the action plans. For instance, the selection of the internal auditors /competent persons should be objective and impartial without any biasness. Refer to para 9.2.2, SS ISO 45001 : 2018 for details on the components of the internal audit programme.

- Ensure there is a system of document control for proper storage and retrieval of documented information or records for review during the internal audit process [Element 15.1].
- Conduct internal audits at scheduled intervals based on audit criteria in line with all action plans to be implemented and maintained with a review process in place. Third party or external auditor is engaged in line with statutory requirements [WSH (Safety and Health Management System and Auditing) Regulations [Elements 15,15.2.6].

7.3 Review of WSHMS

Review of organisational WSHMS should be done at scheduled intervals or on a need basis to ensure it fulfils the assessment criteria in Section 7.1 on WSH performance and indicators. Unless otherwise specified, the scheduled intervals for review of organisational WSHMS should not exceed 12 months.

The review should address the overall direction of organisation in line with the strategic WSH objectives where all work processes are inter-related and integral to the organisation's business. It ensures the adequacy of resources to support WSHMS, effectiveness of risk control measures and the communication plan on the outcomes of review. [Elements 2.2.4, 15.2.6]

Top management leads the review which may include but not limited to the following considerations:

- Follow through from the previous reports or management reviews on the effectiveness of the recommendations and corrective actions [Elements 11.2.3, 15.2.3, 15.2.6]
- Examine response to the organisation's needs and expectations which may arise from external influences such as changes to statutory and legal requirements or presence of WSH risks, new WSH risks and opportunities [Element 13.2.6]
- Incorporate relevant information on WSH performance and /or trends - incidents, nonconformities, corrective actions, monitoring, measurement indicators, audit results, feedback or inputs from worker participation, new technology and knowledge on hazards and risk assessment. These information provide continual improvement and are useful in the evaluation of the effectiveness of WSHMS [Element 15.2.1]
- Identify risks and opportunities for continual improvement and the need to fill the identified WSH gaps (e.g., derived from outcomes of MOC cycle, incident investigation, WSH inspections /audits) in the WSHMS.
- Communicate effectively the outcomes and recommendations of the review to all workers and workers' representatives.

[All 15 elements]

8 Work Processes Improvement

The organisation determines the WSH opportunities for continual improvement to the work processes and procedures and to implement necessary actions to achieve desired /intended outcomes of WSHMS.

8.1 Corrective Actions for Nonconformities

Ensure the procedures in reporting and investigating all workplace incidents, including near misses with corrective actions on nonconformities are carried out promptly and effectively to prevent recurrence [\[Element 5.1\]](#)

This may include but not limited to the following procedures:

- Ensure reporting of incidents are done in accordance with the updated WSH (Incident Reporting) Regulations [\[Element 5.2.1\]](#)
- Form an investigation team with members of the relevant team composition and expertise comprising workers and other interested parties to determine the root cause of the incident with the recommended corrective actions [\[Element 5.2.3\]](#)
- Analyse all the investigation statistics (e.g., data, trends) to establish preventive or predictive maintenance programme on identified problematic areas or equipment for prompt actions. Integrate the outcomes of the analysis with the follow-up recommendations into other processes such as the WSH promotional planning programme to instil positive WSH mindset for the workforce. [\[Element 5.2.6, 7.2.2\]](#)
- Evaluate the investigative procedures (e.g., step-by-step process, checklist and investigation form) are aligned with industry practice for record of key information to facilitate further investigation by relevant authorities. Refer to WSH Guidelines on Investigating Workplaces Incidents for SME. [\[Element 5.2.2\]](#)
- Ensure all recommendations from investigation including corrective actions are implemented according to hierarchy of controls and management of change procedure [\[Element 5.2.4\]](#)
- Review the risk management of WSH risks and other risks arising from new or changed hazards and the effectiveness of risk control measures and corrective actions
- Communicate the documented information from the investigation (e.g., root causes, corrective actions, lessons learnt) to all workers, contractors and other interested parties at the workplace [\[Element 5.2.5\]](#)
- Assess the need to refine the WSHMS, if necessary.

8.2 Continual Improvement Process

A continuous and ongoing process to sustain the WSHMS and desired /intended outcomes with enhancement of WSH performance of all business units functions in Section 7.1. It promotes an open WSH culture for the organisation involving all workers and other interested parties driven by leadership and management commitment. The process may include but not limited to the following:

- Review the WSH policy endorsed with leadership and management commitment to meet the strategic WSHMS goals.
- Foster an open WSH culture with worker participation and inputs, including management (e.g., supervisors, managers, heads of departments) in the implementation of planned actions for work processes
- Sharing of information (e.g., results, audit findings, corrective actions, changes, hazards and risk control measures) with workers, workers' representatives where applicable
- Gather workers' input and feedback through effective communication on areas for improvement and /or areas of concern. This may include addressing workers' errors (e.g., slips, lapses, mistakes) as well as at-risks behaviours to reinforce safe practices and positive behaviour at the workplace, in line with consequence management process ³(Annex F). All levels of management should conduct the inspections to focus on appropriate behaviour and work practices at the workplace. [\[Elements 9.2.2, 9.2.4\]](#)
- Maintain and retain all documented information and relevant records as evidence of continual improvement efforts. [\[All 15 elements\]](#)

³ Voluntary initiative

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The WG members and the representation include:

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| Er Lim Sui Soon (Chairman) | Cameron (Singapore) Pte Ltd |
| Mr Vincent Lim | Bedok Safety Group |
| Mr Indira Kumar Gunasekaran | NatSteel Holdings Pte Ltd |
| Mr Wee Kia Hiong | Metal Industries Workers' Union |
| Mr Chan Hai Kiang | Singapore Manufacturing Federation |
| Mr Tony Tan | Singapore Precision Engineering and Technology Association |
| Mr Melvin Low | Ministry of Manpower |
| Mr Geoffrey Siaw | Workplace Safety and Health Council |

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References

Workplace Safety and Health (WSH) Act and subsidiary legislations

- WSH (Safety and Health Management System and Auditing) Regulations
- WSH (Risk Management) Regulations
- WSH (General Provisions) Regulations
- WSH (Incident Reporting) Regulations
- WSH (Noise) Regulations
- Factories (Safety Training Courses) Order

Fire Safety Act

- Fire Safety (Company Emergency Response Team) Regulations
- Fire Safety (Petroleum and Flammable Materials) Regulations

Environmental Public Health Act

- Environmental Public Health (Toxic Industrial Waste) Regulations

Code of Practice /Singapore Standards and International Practice

- Code of Practice on WSH Risk Management
- SS 537–1: 2008 Code of Practice for the Safe Use of Machinery – General Requirements
- SS 571: 2011 Code of Practice for Energy Lockout and Tagout
- SS 603: 2014 Code of Practice for Hazardous Waste Management
- SS 532: 2007 Code of Practice for The Storage of Flammable Liquids
- SS586:2008 – Specifications for Hazards Communication for Hazardous Chemicals and Dangerous Goods (Part 1, 2 and 3)
- SS 514 Code of Practice for office ergonomics
- SS 569: Code of Practice for manual handling
- ISO 10218-1:2011 Robots and robotic devices - Safety requirements for industrial robots, Part 1: Robots
- ISO 10218-2:2016 Robots and robotic devices - Safety requirements for industrial robots, Part 2: Robot systems and integration

WSH Guidance Documents

- WSH Guidelines Managing Safety and Health for SMEs in the Metalworking Industry
- WSH Guidelines on Management of Hazardous Chemical Programme
- WSH Guidelines for Hearing Conservation Programme
- WSH Guidelines on Improving Ergonomics in the Workplace
- WSH Guidelines on Safe Use of Machinery
- WSH Guidelines to Behavioural Observation and Intervention
- WSH Guidelines on Investigating Workplace Incidents for SMEs
- WSH Guidelines on Flammable Materials
- WSH Guidelines on Workplace Housekeeping

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

- WSH Guidelines on Fatigue Management
- WSH Guidelines on Managing Heat Stress in the Workplace
- Guide to Near Miss Reporting
- Guide to Effective Tool-Box Meeting
- ABC Checklist – Safe Electrical Maintenance Work
- ABC Checklist – Working Safely with Non-powered Hand Tools
- ABC Checklist – Working Safely with Machines
- ABC Checklist – Safe Loading of Materials
- ABC Checklist – Safe Storage in Warehouse
- ABC Checklist – Effective Tool-box Meetings
- ABC Checklist – Slips, Trips and Falls
- ABC Checklists – Working Safely At Heights

Others

- SCDF Guidelines for Emergency Response Plan
- SCDF Guidelines for Company Emergency Response Team
- SCDF Guidelines on Evacuation Planning
- SCDF Guidelines on Table-Top Exercise
- Globally Harmonised System (GHS) of Classification and Labelling of Chemicals Singapore – GHS booklet

Annex A - Guidelines on the Implementation of Safety Management System for the Metalworking Industry (July 2001) (Content page)

1. Safety policy & organisation *(WSH Policy)
2. Safe work procedures
3. Safety training *(WSH Training)
4. Group meetings
5. Accident & incident investigation and analysis
6. In-house safety rules & regulations *(WSH Rules and Regulations)_
7. Safety promotion *(WSH Promotional Programmes /Activities)
8. Evaluation, selection and control of contractors *(Contractor Safety Management)
9. Safety inspection *(WSH Inspection)
10. Maintenance regime
11. Hazard analysis *(Risk Management)
12. Use of hazardous materials *(Management of Hazardous Substances)
13. Occupational health programme
14. Emergency preparedness *(Emergency Preparedness and Response Plan)
15. Document control and review

*() : Reference names of elements used in this set of guidelines

Annex B - Summary of Sections with Elements from Guidelines (2001)

| S/N | Sections of this set of guidelines | Elements from Guidelines (2001) |
|------|---|--|
| 2 | Organisation – Scope and Context | |
| 2.1 | Challenges organisations face | 4.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.5.1, 4.2.5.2, 4.2.5.3, 7.1, 7.2.3 |
| 2.2 | Managing expectations of workers | 3.1, 3.2.1, 3.2.3, 6.1, 6.2.3 |
| 2.3 | Scope of WSHMS | 3.2.6, 3.2.8, 12.1, 12.2.1, 12.2.2, 12.2.3. #12.2.4 |
| 2.4 | Strategic WSHMS | 6.2.2, 8.1, 8.2.3, 8.2.4, 8.2.8, 8.2.9, 9.2.4, 9.2.5, 9.2.6, 15.2.3 |
| 3 | Leadership | |
| 3.1 | Management Commitment | 1.1, 1.2.3, 6.2.2, 7.2.4, 8.2.8, 15.2.5 |
| 3.2 | WSH Policy | 1.1, 1.2.1, 1.2.4, 1.2.5, 7.2.2, 7.2.2(a), 7.2.2(b), 7.2.2(c), 7.2.2(i) |
| 3.3 | Organisational Roles and Responsibilities | 1.2.2 |
| 3.4 | Consultation with workers | 4.1, 4.2.5, 4.2.5.1, 4.2.5.2, 4.2.5.3, 5.1, 5.2.6, 6.1, 6.2.1, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 7.1, 7.2.2, 7.2.2(d), 7.2.2(e), 7.2.2 (g), 7.2.2 (h), 10.1, 10.2.1, 10.2.2, 15.1, 15.2.6 |
| 4 | Work processes planning | |
| 4.1 | Risk Management Plan | 2.1, 2.2.1, 4.1, 5.2.4, 7.1, 7.2.1, 9.1, 9.2.1, 9.2.3, 9.2.5, 9.2.6, 9.2.7, 9.2.8, 10.1, 10.2.1, 10.2.2, 10.2.3, 11.1, 11.2.1, 11.2.2, 11.2.2(a), 11.2.2(b), 11.2.2(c), 11.2.2(d), 11.2.2(e), 11.2.3, 13.1, 13.2.1, 13.2.2, 13.2.3, 13.2.4, 13.2.5, 13.2.6, 14.2.4, 14.2.5, 14.2.6 |
| *4.2 | WSH Objectives with Achievable Plans | All 15 elements |
| 5 | Management Support | |
| 5.1 | Resource Allocation | 4.1, 4.2.2, 15.2.6(a), 15.2.6(b), 15.2.6(c), 15.2.6 (d), 15.2.6(e) |
| 5.2 | Skills and Knowledge of Workers | 3.1, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 8.2.5 |
| 5.3 | Informed Workforce | 1.2.2, 7.2.3 |
| 5.4 | WSH Communication | 2.2.3, 4.1, 4.2.1, 4.2.3, 4.2.4, 4.2.5, 4.2.5.1, 4.2.5.2, 4.2.5.3, 6.2.4, 7.2.3, 8.2.6, 8.2.7, 14.2.3(f), 14.2.4, 14.2.5 |
| *5.5 | Documentation of WSH Information | All 15 elements including 15.1, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5(a), 15.2.5(b), 15.2.5(c), 15.2.5(d), 15.2.5(e) |
| 6 | Operational Implementation | |
| 6.1 | Planning and Controlling | 10.1, 10.2.1(a), 10.2.1(b), 10.2.1(c), 10.2.1(d), 10.2.2, 10.2.3, 11.1, 11.2.1, 11.2.2(a), 11.2.2(b), 11.2.2(c), 11.2.2(d), 11.2.2(e), 11.2.3 |
| 6.2 | Emergency Preparedness And Response Plan | 6.2.2, 6.2.5, 7.2.2(f), 12.2.2, #12.2.4, 14.1, 14.2.1(a), 14.2.1(b), 14.2.1(c), 14.2.2(a), 14.2.2(b), 14.2.2(c), 14.2.2(d), 14.2.3(a), 14.2.3(b), 14.2.3(c), 14.2.3(d), 14.2.3(e), 14.2.3(f), 14.2.4, 14.2.5, 14.2.6 |
| 7 | Evaluation of Organisational Performance | |
| *7.1 | WSH Performance and Indicators | All 15 elements including 3.2.4 |
| 7.2 | Audit and Programme | 15.1, 15.2.6(a), 15.2.6(b), 15.2.6(c), 15.2.6(d), 15.2.6(e) |
| *7.3 | Review of WSHMS | All 15 elements including 2.2.4, 11.2.3, 12.2.3, 13.2.6, 15.2.1, 15.2.3, 15.2.6(a), 15.2.6(b), 15.2.6(c), 15.2.6(d), 15.2.6(e) |
| 8 | Work Processes Improvement | |
| 8.1 | Corrective Actions for Nonconformities | 5.1, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.6, 7.2.2(a), 7.2.2(b), 7.2.2(c), 7.2.2(d), 7.2.2(e), 7.2.2(f), 7.2.2(g), 7.2.2(h), 7.2.2(i) |
| *8.2 | Continual Improvement Process | All 15 elements including 4.2.4, 9.2.2, 9.2.4 |

Note

* Relevant Sections involve All 15 Elements of Guidelines (2001).

#Typo error in Guidelines (2001) printed as 12.2.3.

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

Annex C – Cross-Reference Matrix

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|------------|------------|------------|--|------------|------------|------------|-------------------------------|-------------|--------------------|------------|------------|------------|-------------|-------------------------------|------------|--|------------|-------------|----------------------------------|------------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 1 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | 8.2 |
| 1.1 | | | | | x | x | | | | x | | | | | x | | | x | | x | | x |
| 1.2.1 | | | | | | x | | | | | | | | | | | | | | | | |
| (a) | | | | | | x | | | | | | | | | | | | | | | | |
| (b) | | | | | | x | | | | | | | | | | | | | | | | |
| (c) | | | | | | x | | | | | | | | | | | | | | | | |
| 1.2.2 | | | | | | | x | | | | | | x | | | | | | | | | |
| 1.2.3 | | | | | x | | | | | | | | | | | | | | | | | |
| 1.2.4 | | | | | | x | | | | | | | | | | | | | | | | |
| 1.2.5 | | | | | | x | | | | | | | | | | | | | | | | |
| 2 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | 8.2 |
| 2.1 | | | | | | | | | x | x | | | | | x | | | x | | x | | x |
| 2.2.1 | | | | | | | | | x | | | | | | | | | | | | | |
| 2.2.2 | | | | | | | | | | | | | | | | x | | | | | | |
| 2.2.3 | | | | | | | | | | | | | | x | | | | | | | | |
| 2.2.4 | | | | | | | | | | | | | | | | x | | | | x | | |
| 2.2.5 | | | | | | | | | | | | | | | | x | | | | | | |
| 2.2.6 | | | | | | | | | | | | | | | | x | | | | | | |
| 2.2.7 | | | | | | | | | | | | | | | | x | | | | | | |
| 2.2.8 | | | | | | | | | | | | | | | | x | | | | | | |
| 2.2.9 | | | | | | | | | | | | | | | | x | | | | | | |

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| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|-------------------------------------|-----|-----|-----|-------------------------|------|--------------------|-----|-----|-----|------|----------------------------|-----|--|-----|------|----------------------------|-----|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 3 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | 8.2 |
| 3.1 | | x | | | | | | | | x | | x | | | x | | | x | | x | | x |
| 3.2.1 | | x | | | | | | | | | | x | | | | | | | | | | |
| 3.2.2 | | | | | | | | | | | | x | | | | | | | | | | |
| 3.2.3 | | x | | | | | | | | | | x | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | | | x | | | | | | x | | | | |
| 3.2.5 | | | | | | | | | | | | x | | | | | | | | | | |
| 3.2.6 | | | x | | | | | | | | | x | | | | | | | | | | |
| 3.2.7 | | | | | | | | | | | | x | | | | | | | | | | |
| 3.2.8 | | | x | | | | | | | | | x | | | | | | | | | | |
| 4 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | 8.2 |
| 4.1 | x | | | | | | | x | x | x | x | | | x | x | | | x | | x | | x |
| 4.2.1 | x | | | | | | | | | | | | | x | | | | | | | | |
| 4.2.2 | x | | | | | | | | | | x | | | | | | | | | | | |
| 4.2.3 | x | | | | | | | | | | | | | x | | | | | | | | |
| 4.2.4 | x | | | | | | | | | | | | | x | | | | | | | | x |
| 4.2.5 | x | | | | | | | x | | | | | | x | | | | | | | | |
| 4.2.5.1 | x | | | | | | | x | | | | | | x | | | | | | | | |
| 4.2.5.2 | x | | | | | | | x | | | | | | x | | | | | | | | |
| 4.2.5.3 | x | | | | | | | x | | | | | | x | | | | | | | | |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|--|-----|-----|-----|-------------------------------|------|--------------------|-----|-----|-----|------|-------------------------------|-----|--|-----|------|----------------------------------|------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 5 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 5.1 | | | | | | | | | | x | | | | | x | | | x | | x | x | x |
| 5.2.1 | | | | | | | | | | | | | | | | | | | | | | x |
| 5.2.2 | | | | | | | | | | | | | | | | | | | | | | x |
| 5.2.3 | | | | | | | | | | | | | | | | | | | | | | x |
| 5.2.4 | | | | | | | | | x | | | | | | | | | | | | | x |
| 5.2.5 | | | | | | | | | | | | | | | | | | | | | | x |
| 5.2.6 | | | | | | | | x | | | | | | | | | | | | | | x |
| 6 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 6.1 | | x | | | | | | x | | x | | | | | x | | | x | | x | | x |
| 6.2.1 | | | | | | | | x | | | | | | | | | | | | | | |
| 6.2.2 | | | | x | x | | | | | | | | | | | | x | | | | | |
| 6.2.3 | | x | | | | | | x | | | | | | | | | | | | | | |
| 6.2.4 | | | | | | | | x | | | | | | x | | | | | | | | |
| 6.2.5 | | | | | | | | x | | | | | | | | | x | | | | | |
| 6.2.6 | | | | | | | | x | | | | | | | | | | | | | | |
| 7 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 7.1 | x | | | | | | | x | | x | | | | | x | | | x | | x | | x |
| 7.2.1 | | | | | x | | | | x | | | | | | | | | | | | | |
| 7.2.2 | | | | | | x | | x | | | | | | | | | x | | | | | x |
| (a) | | | | | | x | | | | | | | | | | | | | | | | x |
| (b) | | | | | | x | | | | | | | | | | | | | | | | x |
| (c) | | | | | | x | | | | | | | | | | | | | | | | x |
| (d) | | | | | | | | x | | | | | | | | | | | | | | x |
| (e) | | | | | | | | x | | | | | | | | | | | | | | x |
| (f) | | | | | | | | | | | | | | | | | x | | | | | x |
| (g) | | | | | | | | x | | | | | | | | | | | | | | x |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|--|-----|-----|-----|----------------------------|------|--------------------|-----|-----|-----|------|-----------------------------------|-----|--|-----|------|-------------------------------|------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementatio n | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 7 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| (h) | | | | | | | | x | | | | | | | | | | | | | x | |
| (i) | | | | | | x | | | | | | | | | | | | | | | x | |
| 7.2.3 | x | | | | | | | | | | | | x | x | | | | | | | | |
| 7.2.4 | | | | | x | | | | | | | | | | | | | | | | | |
| 8 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 8.1 | | | | x | | | | | | x | | | | | x | x | | x | | x | | x |
| 8.2.1 | | | | | | | | | | | | | | | | x | | | | | | |
| 8.2.2 | | | | | | | | | | | | | | | | x | | | | | | |
| 8.2.3 | | | | x | | | | | | | | | | | | x | | | | | | |
| 8.2.4 | | | | x | | | | | | | | | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | | | x | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | | | | | x | | | | | | | | |
| 8.2.7 | | | | | | | | | | | | | | x | | | | | | | | |
| 8.2.8 | | | | x | x | | | | | | | | | | | | | | | | | |
| 8.2.9 | | | | x | | | | | | | | | | | | x | | | | | | |
| 8.2.10 | | | | | | | | | x | | | | | | | | | | | | | |
| 9 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 9.1 | | | | x | | | | | | x | | | | | x | | | x | | x | | x |
| 9.2.1 | | | | | | | | | x | | | | | | | | | | | | | |
| 9.2.2 | | | | | | | | | | | | | | | | | | | | | | x |
| 9.2.3 | | | | | | | | | x | | | | | | | | | | | | | |
| 9.2.4 | | | | x | | | | | | | | | | | | | | | | | | x |
| 9.2.5 | | | | x | | | | | x | | | | | | | | | | | | | |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|-------------------------------------|-----|-----|-----|-------------------------|------|--------------------|-----|-----|-----|------|----------------------------|-----|--|-----|------|----------------------------|------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 9.2.6 | | | | x | | | | | x | | | | | | | | | | | | | |
| 9.2.7 | | | | | | | | | x | | | | | | | | | | | | | |
| 9.2.8 | | | | | | | | | x | | | | | | | | | | | | | |
| 10 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 10.1 | | | | | | | | x | x | x | | | | | x | x | | x | | x | | x |
| 10.2.1 | | | | | | | | x | x | | | | | | | x | | | | | | |
| (a) | | | | | | | | | | | | | | | | x | | | | | | |
| (b) | | | | | | | | | | | | | | | | x | | | | | | |
| (c) | | | | | | | | | | | | | | | | x | | | | | | |
| (d) | | | | | | | | | | | | | | | | x | | | | | | |
| 10.2.2 | | | | | | | | x | x | | | | | | | x | | | | | | |
| 10.2.3 | | | | | | | | | x | | | | | | | x | | | | | | |
| 11 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 11.1 | | | | | | | | | x | x | | | | | x | x | | x | | x | | x |
| 11.2.1 | | | | | | | | | x | | | | | | | x | | | | | | |
| 11.2.2 | | | | | | | | | x | | | | | | | x | | | | | | |
| (a) | | | | | | | | | x | | | | | | | x | | | | | | |
| (b) | | | | | | | | | x | | | | | | | x | | | | | | |
| (c) | | | | | | | | | x | | | | | | | x | | | | | | |
| (d) | | | | | | | | | x | | | | | | | x | | | | | | |
| (e) | | | | | | | | | x | | | | | | | x | | | | | | |
| 11.2.3 | | | | x | | | | | x | | | | | | | x | | | | x | | |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|--|-----|-----|-----|-------------------------------|------|--------------------|-----|-----|-----|------|-------------------------------|-----|--|-----|------|-------------------------------|------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 12 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 12.1 | | | x | | | | | | | x | | | | | x | | | x | | x | | x |
| 12.2.1 | | | x | | | | | | | | | | | | | | | | | | | |
| (a) | | | x | | | | | | | | | | | | | | | | | | | |
| (b) | | | x | | | | | | | | | | | | | | | | | | | |
| (c) | | | x | | | | | | | | | | | | | | | | | | | |
| (d) | | | x | | | | | | | | | | | | | | | | | | | |
| (e) | | | x | | | | | | | | | | | | | | | | | | | |
| 12.2.2 | | | x | | | | | | | | | | | | | | | | | | | |
| 12.2.3 | | | x | | | | | | | | | | | | | | x | | | x | | |
| #12.2.4 | | | x | | | | | | | | | | | | | | x | | | | | |
| 13 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 13.1 | | | | | | | | | x | x | | | | | x | | | x | | x | | x |
| 13.2.1 | | | | | | | | | x | | | | | | | | | | | | | |
| 13.2.2 | | | | | | | | | x | | | | | | | | | | | | | |
| 13.2.3 | | | | | | | | | x | | | | | | | | | | | | | |
| 13.2.4 | | | | | | | | | x | | | | | | | | | | | | | |
| 13.2.5 | | | | | | | | | x | | | | | | | | | | | | | |
| 13.2.6 | | | | | | | | | x | | | | | | | | | | | x | | |
| 14 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 14.1 | | | | | | | | | x | x | | | | | x | | x | x | | x | | x |
| 14.2.1 | | | | | | | | | | | | | | | | | x | | | | | |
| (a) | | | | | | | | | | | | | | | | | x | | | | | |
| (b) | | | | | | | | | | | | | | | | | x | | | | | |
| (c) | | | | | | | | | | | | | | | | | x | | | | | |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|--|-----|-----|-----|-------------------------------|------|--------------------|-----|-----|-----|------|-------------------------------|-----|--|-----|------|-------------------------------|------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 14 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 14.2.2 | | | | | | | | | | | | | | | | | x | | | | | |
| (a) | | | | | | | | | | | | | | | | | x | | | | | |
| (b) | | | | | | | | | | | | | | | | | x | | | | | |
| (c) | | | | | | | | | | | | | | | | | x | | | | | |
| (d) | | | | | | | | | | | | | | | | | x | | | | | |
| 14.2.3 | | | | | | | | | | | | | | | | | x | | | | | |
| (a) | | | | | | | | | | | | | | | | | x | | | | | |
| (b) | | | | | | | | | | | | | | | | | x | | | | | |
| (c) | | | | | | | | | | | | | | | | | x | | | | | |
| (d) | | | | | | | | | | | | | | | | | x | | | | | |
| (e) | | | | | | | | | | | | | | | | | x | | | | | |
| (f) | | | | | | | | | | | | | | x | | | x | | | | | |
| 14.2.4 | | | | | | | | | x | | | | | x | | | x | | | | | |
| 14.2.5 | | | | | | | | | x | | | | | x | | | x | | | | | |
| 14.2.6 | | | | | | | | | x | | | | | | | | x | | | | | |
| 15 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| 15.1 | | | | | | | | x | | x | | | | | x | | | x | x | x | | x |
| 15.2.1 | | | | | | | | | | | | | | | x | | | | | x | | |
| 15.2.2 | | | | | | | | | | | | | | | x | | | | | | | |
| 15.2.3 | | | | x | | | | | | | | | | | x | | | | | x | | |
| 15.2.4 | | | | | | | | | | | | | | | x | | | | | | | |
| 15.2.5 | | | | | x | | | | | | | | | | x | | | | | | | |
| (a) | | | | | x | | | | | | | | | | x | | | | | | | |
| (b) | | | | | x | | | | | | | | | | x | | | | | | | |
| (c) | | | | | x | | | | | | | | | | x | | | | | | | |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Elements in ^Guidelines (2001) | Sections of this set of guidelines with reference to SS ISO 45001 : 2018 framework | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--|-----|-----|-----|--|-----|-----|-----|-------------------------------|------|--------------------|-----|-----|-----|------|-------------------------------|-----|--|-----|------|----------------------------------|------|
| | Organisation - Context and Scope | | | | Leadership with workers involvement | | | | Work Processes Planning | | Management Support | | | | | Operational Implementation | | Evaluation of Organisational Performance | | | Work Processes Improvement | |
| 15 | 2.1 | 2.2 | 2.3 | 2.4 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | *4.2 | 5.1 | 5.2 | 5.3 | 5.4 | *5.5 | 6.1 | 6.2 | *7.1 | 7.2 | *7.3 | 8.1 | *8.2 |
| (d) | | | | | x | | | | | | | | | | x | | | | | | | |
| (e) | | | | | | | | | | | | | | | x | | | | | | | |
| 15.2.6 | | | | | | | | x | | | x | | | | | | | | x | x | | |
| (a) | | | | | | | | x | | | x | | | | | | | | x | x | | |
| (b) | | | | | | | | x | | | x | | | | | | | | x | x | | |
| (c) | | | | | | | | x | | | x | | | | | | | | x | x | | |
| (d) | | | | | | | | x | | | x | | | | | | | | x | x | | |
| (e) | | | | | | | | x | | | x | | | | | | | | x | x | | |

Note:

'x' - Elements of Guidelines (2001) mapped onto SS ISO 45001 : 2018 framework

^ Guidelines on Safe Management System for the Metalworking Industry (2001).

#Typo error in Guidelines (2001) printed as 12.2.3.

* Relevant Sections involve All 15 Elements of Guidelines (2001).

Annex D – Common Hazards in the Metalworking Industry

Note: Hazards may result in injuries such as cuts, burns which may require first-aid. Appointed first-aiders should be aware of the location of the first-aid equipment (e.g., first-aid box) in the event of emergency.

| Hazards | Possible risks | Suggested risk controls |
|--|---|---|
| Mechanical (e.g. moving parts, rotating parts) | Crushing, cutting, severing, draw-in, punching, shearing, bending, entanglement, struck by ejected part, projectile, trapped between machine and material | <ul style="list-style-type: none"> • Install machine guard or enclosure to prevent unauthorised access which includes robotic operation. • Install shield to contain flying particle or projectile. • Install inter-locking system with limit switch and sensor to stop operation or prevent access to moving/rotating parts during operation. • Display signage for equipment under maintenance. • Follow Lockout Tagout (LOTO) procedures for repair and maintenance of equipment. • Ensure only competent workers allowed to operate machine or tools. • Provide PPE (e.g., gloves, safety footwear) and appropriate tools for the work activity. |
| Electrical (e.g. voltage, current, static charge, magnetic fields) | Shock, burns, electrocution | <ul style="list-style-type: none"> • Provide intermediate barrier to fully enclose all live conductors within distribution board (DB) enclosures. • Isolate, lock out the electrical power source and de-energise the equipment and system before operating. • Ensure installation by licensed electric worker. • Use cords with proper grounding. • Do not use equipment with damaged insulation or exposed electric wire. • Do not overload circuits, plugs or extension cords. • Ensure only competent workers allowed to operate equipment. • Ensure hands are dry before touching equipment. • Implement LOTO procedure before carrying out maintenance work. |

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| Hazards | Possible risks | Suggested risk controls |
|--|---|--|
| Chemical (e.g. flammables, toxics, corrosives, reactive materials) | Inhalation of vapour, fumes, mist, dust Exposure to chemical | <ul style="list-style-type: none"> • Substitute process or raw material with reduced residual hazard. • Adopt use of technology (e.g., unguided autonomous vehicle-UAV) to eliminate the risk of contact with chemicals. • Establish Management of Hazardous Chemical Programme (MHCP) • Reduce operation limits (e.g., temperature, pressure, flow). • Ensure Safety Data Sheets (SDS) are available at workplace. • Provide workers with PPE (e.g., chemical-resistant gloves, apron, eye protectors). |
| Noise & Vibration | Noise induced hearing loss, deafness | <ul style="list-style-type: none"> • Identify root cause of machine with extreme noise and vibration. • Substitute noisy machine parts (e.g., replace reciprocating machine parts with rotating parts instead) • Re-design work processes with less noisy options. • Install noise enclosure, barrier, personal enclosure. • Conduct noise monitoring • Introduce Noise Induced Deafness Prevention Programme (NIDPP). • Use of vibration dampening gloves. • Erection of noise barriers. • Isolating machine operator or introduce rotation of operators working in noisy environment. |

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| Hazards | Possible risks | Suggested risk controls |
|------------------------|---------------------------------|--|
| Slips, Trips and Falls | Fracture, bruise, head injuries | <ul style="list-style-type: none"> • Ensure shop floor clean and dry with no spills. • Check no leakage of oils or coolants from machine setup. • Ensure work areas and staircases are sufficiently illuminated. • Inspect regular floors and steps for irregularities e.g., damaged / raised tiles. • Install non-slip flooring or anti-slip mats / tape at strategic locations. • Place hazard signs to warn of slippery surfaces or tripping hazards. • Keep walkways free of obstacles • Instill good practice to hold onto handrails when using the stairs or using ramp / slope. • Advise workers to use the lift or trolley when carrying heavy loads. • Provide non-slip work shoes. |
| Extreme temperature | Burns, scalds, heat stress | <ul style="list-style-type: none"> • Ensure hot pipes and surfaces are properly insulated. • Provide appropriate signage to caution worker of heat-related hazard. • Ensure workers keep hydrated when working in hot environment. • Provide well-ventilated rest area with drinking water. |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Hazards | Possible risks | Suggested risk controls |
|-------------------------|--|--|
| Work At Heights (WAH) | Fall from height Fall through opening Fall due to tripping over debris | <ul style="list-style-type: none"> • Re-design work/workflow to ground level, to avoid work at heights, where possible. • Install guardrails at elevated work platform or use Mobile Elevating Work Platforms (MEWPs - Scissor Lifts, Boom Lifts) to eliminate the hazard of falling over the edge. • Implement permit to work system for hazardous work at heights • Assign workers trained on WAH (e.g., align with fall prevention plan, follow safe route of access and egress) for task. • Appoint a competent supervisor to oversee workers work at heights (e.g., inspection of anchor points and lifelines). • Ensure proper housekeeping while work at heights to prevent tripping over debris. • Provide workers with appropriate PPE (e.g., Personal Fall Arrest System (PFAS) or travel restraint) for work at elevated height. |
| Ergonomics Risk Factors | Work-related Musculoskeletal Disorders | <ul style="list-style-type: none"> • Store heavy loads at waist level, between shoulder and knee height. • Adopt proper posture at workstation and /or work area. • Use trolley or request co-worker for help for heavy loads (<25 kg). • Use anti-slip gloves for good grip of loads. • Adopt appropriate squatting down method to lift load. • Avoid awkward posture (e.g., bending sideways or over-stretched arm) in handling of load. |

Guidelines on the Implementation of Workplace Safety and Health Management System for the Metalworking Industry (Draft)

| Hazards | Possible risks | Suggested risk controls |
|--|---|--|
| <p>Psychosocial (e.g. fatigue, stress)</p> | <p>Muscle strains High absenteeism, high turnover rate Low productivity at work</p> | <ul style="list-style-type: none"> • Use appropriate tools (e.g., trolley, forklift) for handling heavy load, to make the work easier. • Do not work excessive hours without rest breaks, especially for work with physical exertion. • Provide shelters or rest areas for work in hot working environment. • Ensure work area is conducive e.g., sufficient illumination and ventilation. • Schedule complex tasks to be performed only during the day. • Restrict or limit nightshift work to a minimum, where applicable. • Introduce employee engagement programs e.g., feedback or suggestion program, counselling assistance. |

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Annex E – Hierarchy of Controls and Suggested Risk Control Examples

| Hierarchy of Controls | Suggested risk control examples |
|-----------------------|---|
| Elimination | <ul style="list-style-type: none"> • Movement of materials - Leverage on technology such as automated guided vehicle to eliminate the risk of collisions and crashes compared to manually done by workers. • Maintenance work (e.g., roofs/roof tops, lights) – (a) Explore use of drones for inspection work at roofs/roof tops without the need to work at heights; (b) Implement lighting system with flexibility to lower to ground level for ease of maintenance of lights. This eliminates the use of work platform (e.g., Mobile Elevating Work Platform - MEWP) at elevated level. |
| Substitution | <ul style="list-style-type: none"> • Replace riveting hammers with pressing tools to reduce vibration and noise. • Use pendant control to operate Electric Overhead Travelling (EOT) cranes, where possible, instead of cabin operation at elevated height • Select or replace noisy equipment/machine to ensure a noise level below 85dB. |
| Engineering Controls | <ul style="list-style-type: none"> • Use "glove boxes" or isolator in a ventilated and enclosed space to avoid direct contact of workers with chemical or hazardous substances. • Install guards or fencing on moving machinery (e.g., lathe chucks, milling/drilling parts, circular saw-blades, shearing jaws, belts, pulleys and flywheels) • Install interlocks on (a) machine guard/fencing to stop operation when guard/fencing is opened or removed; (b) gate of moving machinery for safe access and egress. • Provide intermediate barrier to enclose live conductors within distribution board (DB) to prevent operator from contact with live conductors when using the circuit breakers. • Install guardrails or barriers for open side or opening with fall distance of more than 2 metres. • Secure free-standing compressed gas cylinders with chain inside cage or enclosure to prevent toppling over. • Install crane safety features (e.g., limit switch to cut off crane operation for exceeding Safe Working Load (SWL); anti-collision sensor to avoid collision with nearby cranes). • Erect perimeter noise barrier and noise enclosure for noisy equipment/machine. |

| Hierarchy of Controls | Suggested risk control examples |
|-------------------------------------|--|
| Administrative Controls | <ul style="list-style-type: none"> • Implement safe work procedures for maintenance of tools and equipment using checklists. • Implement a Traffic Management Plan to avoid any collision incident through control of the movement of workers and material handling equipment (e.g., forklifts). • Obtain approval from original forklift manufacturer for any add-on attachments or modification to forklift. • Determine the SWL of storage racks and platforms with prominent display of SWL information to avoid overloading of racks and platforms. • Ensure workers and supervisors attend the respective metalworking accredited training courses (e.g., Apply Workplace Safety and Health in Metal Work, Basic Industrial Safety and Health Course for Supervisor). • Manage the use of forklifts and reach trucks to ensure only <u>authorised and trained</u> operator has access to the ignition keys/ number keypad/ proximity card. • Appoint competent person to manage and control all hazardous substances in the workplace. • Ensure inspection and maintenance of electrical hand tools by licenced electrical worker (LEW). • Display WSH pictogram/poster on safe work procedures/WSH rules at strategic locations (e.g., rest area, cafeteria, workstation) to remind workers of importance of safe workplace. • Display clearly warning signs (e.g., No Entry, Hot Surface, Lifting Zone) to communicate the safety message. |
| Personal Protective Equipment (PPE) | <ul style="list-style-type: none"> • Ensure PPE provided is fit for purpose. For instance, provide worker with chemical-resistant or impact-resistant glove for handling oils, solvents or corrosive substances. • Provide appropriate PPE such as Personal Fall Arrest System (PFAS) or Mobile Elevating Work Platforms (MEWPs - Scissor Lifts, Boom Lifts and Order Pickers) for work at heights activity. • Provide hearing protectors (e.g., ear plug, earmuff) for workers working in a noisy environment. |

Annex F - Consequence Management Process ⁴(Sample)

Objective

With the institutionalization of Workplace Safety and Health management system (WSHMS) in line with our WSH excellence journey, all employees of ABC Pte Ltd are required to understand the importance of accountability and compliance to WSH rules and procedures.

In view of repeated violations of our WSH norms, we have not yet achieved our aspiration to become a zero-incident company. WSH related incidents continue to occur despite having an established WSH management system built into our work processes. As such, we have developed a robust consequence management process to address individual responsibility and accountability in taking ownership of WSH risks at all times. This is done by instilling and reinforcing safe behaviour at the workplace for our workforce.

Scope

As the organisation is made up of workers at various levels of workforce, the scope of the consequence management process covers all employees, including top management, managers, supervisors as well as contractors who are performing work activities at the workplace.

The following types of WSH violations (non-exhaustive) will fall under the purview of consequence management process

1. Personal Protective Equipment (PPE) Violations
2. Permit to Work Violation
3. Equipment Maintenance/Inspection Violation
4. Work at Heights
5. Risk Management Violation
6. Vehicular/Road Safety
7. Legal non-compliances
8. Other /General Violations

⁴ Voluntary initiative

WSH Violations

Table 1 shows the categories of WSH Violations (non-exhaustive) with relevant examples which shall be taken into account in the consequence management process.

Table 1:

| WSH Violations Categories | Examples of WSH Violations |
|---|---|
| 1. Personal Protective Equipment (PPE) | <ol style="list-style-type: none"> 1. Fail to wear basic and job specific PPE 2. Improper use of PPE 3. Use of damaged or expired PPE |
| 2. Permit to work | <ol style="list-style-type: none"> 1. Work at heights without required permit 2. Lifting operation without required permit 3. Work in confined space without required permit 4. Welding and gas cutting without required permit 5. High voltage installation without required permit |
| 3. Equipment Maintenance /Inspection | <ol style="list-style-type: none"> 1. Operating heavy machinery (e.g., forklift, MEWP) without required licence, training certificate. 2. Allowing machinery to operate without guards and /or barricading 3. Bypass safety interlock without written approval from authorised person 4. Working without positive isolation for jobs which require energy isolation 5. Fail to apply or allow to work without Lock Out Tag Out 6. Fail to barricade work area with signage when carrying out lifting work using crane |
| 4. Work at Heights | <ol style="list-style-type: none"> 1. Allow to work at height without proper Fall Prevention Plan (FPP) put in place. 2. Fail to provide effective guard-rails or barriers for open sides or openings where a person is liable to fall more than 2 metres. 3. Fail to provide appropriate PPE (e.g., Personal Fall Arrest System (PFAS) or travel restraint) for work at elevated height. 4. Improper and unsafe use of MEWPs or ladders |
| 5. Risk Management | <ol style="list-style-type: none"> 1. Work without proper Risk Assessment (RA) or Safe Work Procedure (SWP) put in place 2. Fail to complete required training on RA or SWP, for regular or new/short-term workers or contractors. 3. Fail to conform to risk control measures as stated in RA or SWP 4. Use of machineries or equipment with defective or compromised safety features, e.g. inter-lock, sensors, machine guard, fire protection, etc. |

| WSH Violations Categories | Examples of WSH Violations |
|-------------------------------------|--|
| 6. Vehicular /Road Safety | <ol style="list-style-type: none"> 1. Driving without wearing seat belt 2. Driving vehicle exceeding designated speed limit 3. Driving vehicle recklessly, e.g. against traffic flow, not using turning indicator, etc. 4. Operating vehicle beyond safe working load limit 5. Operating vehicle without adequately securing the load 6. Leaving vehicle unattended with engine running 7. Fail to apply wheel chokes for unattended vehicles 8. Fail to complete vehicle inspection checklist 9. Parking vehicles at non-designated locations 10. Using vehicles with damaged safety devices i.e. headlights, indicators, horn, brake, seat belt, etc. 11. Misuse of vehicle, e.g. for sleeping, using forklift to ferry passenger, etc. |
| 7. Legal non-compliances | <ol style="list-style-type: none"> 1. Use of lifting machine, equipment, gears and/or appliances without required valid certificate. 2. Use of pressure vessels and statutory equipment without required valid certification, e.g. air receiver. 3. Performing high-risks work activities without required competent person present and supervision, e.g. work at heights, scaffolding, lifting, rigging and signal, confined space, etc. |
| 8. Other /General Violations | <ol style="list-style-type: none"> 1. Entering danger zone/area without permit 2. Did not stay clear of suspended load 3. Fail to use safety tools/equipment provided, e.g. push-pull rod, tag-line, platform ladder, etc. 4. Horseplay while at work 5. Smoking at non-designated location 6. Fail to maintain good housekeeping 7. Fail to conduct or attend routine tool-box meeting. 8. Tempering of safety critical equipment, e.g. inter-lock, sensors, machine guard, fire protection, etc. 9. Non-reporting or under-reporting of WSH incident, dangerous occurrences, near-misses, etc |

Consequence Management for WSH Violations

Table 2 lists the disciplinary actions to be taken based on the frequency of WSH Violation(s) in the current year, as follows:

Table 2:

| Frequency of WSH Violation(s) in the current year | Consequence Management for WSH Violations |
|---|---|
| 1 | <ol style="list-style-type: none"> 1. Warning /Caution Letter followed by and counseling with direct reporting Supervisor /Manager 2. Undertaking/Letter of Commitment by the concerned individual of not repeating similar violations in future 3. Attend WSH Induction by WSH Professional 4. Complete at least one WSH Observation per month for the next six months. |
| 2 | <ol style="list-style-type: none"> 1. Warning /Caution Letter from Department Manager 2. One day suspension of duty /work without pay 3. Complete at least one WSH Observation per fortnight for the next six months. 4. Implication on Performance Appraisal Rating in the current year. |
| 3 or more | <ol style="list-style-type: none"> 1. Warning /Caution Letter from CEO /President /Managing Director 2. Three days suspension of duty /work without pay 3. Complete at least one WSH Observation per week for the next six months. 4. Serious implication on Performance Appraisal Rating and will not entitle for promotion in the next one year from the date of third violation. |

Note:

- Investigation is mandatory for Fatalities, Major Injuries, Minor Injuries, Dangerous Occurrences
- All employees need to sign an undertaking on compliance to WSH norms. This would be facilitated /ensured by Human Resource /Administration Department
- All appeal cases will be reviewed according to established organisational grievance/ appeal procedures, if any.