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Guidelines to implementation of health and safety management system through OHSAS

T. Ramesh Aravind[1], N. Saravanan[2]
[1]PG Students, Industrial Safety,[2]Professor, Department of Mechatronics Engineering, K.S.Rangasamy College of Technology, Tiruchengode

Abstract - In the recent years, management system certification has become an essential requirement in manufacturing sectors. Success of an organization is dependent on its ability to improve its operations by reorganizing itself, so as to meet the challenging environmental contingencies on a continuous basis. The OHSAS 18001 standard, which provides a framework for organizations to put in place proper and effective management of health & safety in the workplace. In fact, this standard is aimed at supporting and helping to control the management of risk factors and the promotion of good working conditions. The safety management system according to Standard No. OHSAS 18001:2007 is a continuous process of a number of structured and related activities in the safety department that allows a business processes and functioning of the business system, as well as achieving better economic results. The standard requires a health and safety policy, planning procedures for the identification of hazards and risks, and control measures concerning accidents and incidents connected to health and safety. In order to implement change and improvement related to safety and health in the workplace environment the active participation of the entire corporate structure is necessary. The implementation guidelines was carried out to investigate the Decisional, Success, Failure and Enterprise Improvement Factors adopted by companies that chose OHSAS 18001 certification.

Keywords: Management system, OHSAS 18001, Health and safety, Improvement

I. INTRODUCTION:

In recent years the certification of management systems has become fundamental to achieving competitiveness for firms (20).The occupational health and safety standard OHSAS 18001 has gained considerable acceptance worldwide, and firms from diverse sectors and of varying sizes have implemented it (19).OHSAS 18001 is a management tool, and its success depends on how adopting organizations employ the standard requirements to manage OHS (8). the common belief of managers, there is a good return of investment on OHS, and it is hoped that the findings of the present study will encourage the employers to invest in OHS (4) .OHSAS 18001 contributes, to a great extent, to establishment of company's written safety policy, development of physical work conditions, training needs of systematic training approach, better dissemination of information at all levels of organization (7).The main reason for certification is also analyzed and companies mentioned ''Valuing human capital - Eliminate or minimize risks to workers'' (13). The implementation of Standard No. OHSAS 18001:2007 reduces the number of injuries at work (2).The effectiveness of a safety management system and its practices in reducing accident rates depends on the levels of safety-focused cognitive and emotional worker engagement(11). (17) Voluntary OHS management systems are often employer dominated, with both narrow objectives and inadequate feedback from workers and unions. (1)The implementation of OHSAS 18001 and safety training were significant factors for improving the safety climate. (3) Encourage companies to adopt certification (OHSAS 18001), which factors lead to success In an Italian scenario. (9) Certifiable management systems that work separately are more bureaucratic and costly, and generate poorer results than those obtained employing integration. (12) Integrating the safety & health and environment, quality systems and developing an integrated system to reduce the workplace burdens is resulted from a Korean investigation on management systems. (5)Support for the positive effects of triple accreditation (ISO 9001 & ISO 14001 & OHSAS 18001) on perceived environmental and

occupational health and safety performance. (18)Integration of Management Systems has advantages. The integration and unification of the three management systems will be the future of management systems but the responses from companies registered to ISO9001 and OHSAS18001, the improvement of performance outcomes were not significant (16).

1.1 OCCUPATIONAL HEALTH AND SAFETY ASSESSMENT SERIES (OHSAS 18001:2007)

Organizations of all kinds are increasingly concerned with achieving and demonstrating sound occupational health and safety (OH&S) performance by controlling their OH&S risks, consistent with their OH&S policy and objectives. They do so in the context of increasingly stringent legislation, the development of economic policies and other measures that foster good OH&S practices, and increased concern expressed by interested parties about OH&S issues. Many organizations have undertaken OH&S "reviews" or "audits" to assess their OH&S performance. On their own, however, these "reviews" and "audits" may not be sufficient to provide an organization with the assurance that its performance not only meets, but will continue meet, its legal and policy requirements. To be effective, they need to be conducted within a structured management system that is integrated within the organization.

1.2 Occupational health and safety management system requires:

• General requirements

• OH & S policy

• Planning

O HIRA

O Legal and other requirements

O Objectives and programs

• Implementation and operation

O Resources, roles, responsibility, accountability and authority

O Competence, training and awareness

O Communication, participation and consultation

O Documentation

O Control of documents

O Operational control

O Emergency preparedness and response

• Checking

O Performance measurement and monitoring

O Evaluation and compliance

O Incident investigation, non conformity, CAPA

O Control of records

O Internal audit

• Management review

1.3 METHODOLOGY TO IMPLEMENT THE OHSAS 18001:2007

Phase-I (PLAN)

• Preliminary Visit

• Kick off meeting

• Gap Analysis

• Review existing system [Prerequisites]

Phase-II (DO)

• Training

• Proposed Documentation

• Documentation harmonization

• Documentation review

• Review of documentation

• Implementation

• Deliverable:

O Training material

O Training Certificates

O Proposed documentation

O Revised documentation

O Interim meeting minute

Phase-III (CHECK)

• Audit planning

• Audit Conduct

• Audit reporting

• Debriefing meeting

• Deliverable:

O Open meeting minute

O Audit report

O Close meeting minute

O Debriefing Meeting Minute

Phase – IV (ACT)

• Wrap up meeting

• Management Review

• Final report

• Short listing of notified bodies

• Deliverable:

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O Wrap up meeting minute

O Short listing for certification body

II. METHODOLOGY

2.1 BASIC METHODOLOGY OF OHSAS:

This OHSAS Standard is based on the methodology known as Plan-Do-Check-Act (PDCA). PDCA can be briefly described as follows:

a) Plan: establish the objectives and processes necessary to deliver results in accordance withorganization's OH&S policy;

b) Do: implement the processes;

c) Check: monitor and measure processes against OH&S policy, objectives, legal and otherrequirements, and report the results;

d) Act: take actions to continually improve OH&S performance. Many organizations manage their operations via the application of a system of processes and their interactions, which can be referred to as the "process approach". ISO 9001 promotes the use of the process approach. Since PDCA can be applied to all processes, the two methodologies are considered to be compatible.

2.2 OH & S MANAGEMENT SYSTEM MODEL:

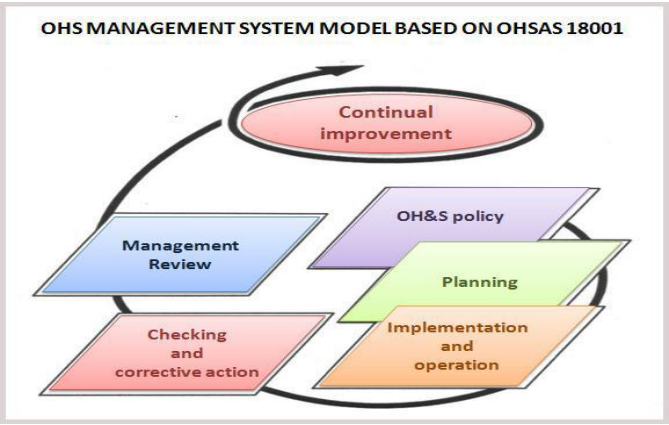

FIGURE 2.1 OH&S SYSTEM MODEL

2.3 HAZARD IDENTIFICATION AND RISK ASSESSMENT GUIDELINES:

Rating	Scale (Scl) No of persons Exposed	Severity of impact (SEV) INJURY	NOISE	TEMPERATURE/ HEAT	FUMES/VAPORS & GASES	DUST	ILLNESS	ERGONOMICS	Probability of occurrence (POC)	Present control (PC)	
1	1	Results in First Aid Cases& can immediately return back to work	up to-80 dB	Frequent Perspiration at work but the exposure is minimal, or 1/4 th of the average work schedule.	Momentary Discomfort, odor, itching etc.	Momentary discomfort / Nuisance, sneezing, cough.	Momentary discomfort / Nuisance Eg. Head ache, Burning of eyes, Giddiness, person can return back to work immediately after rest	Stress / Strain / Frustration / Depression	More than six months	Applicable Control available and effective	1
2	2 to 05	Results in minor injury or occupational illness & can return back to work with or without rest (within 24 hours)	81 to 85 dB	Heat Compliant or Temporary State of Discomfort, temporary mental or psychological Strain or transient Heat Fatigue.	Suffocation, Respiratory tract or eye irritation, sneezing, dizziness, Temporary Headache or other temporary Discomfort	Prolonged discomfort / Nuisance/ Temporary Headache, eye or respiratory tract irritation.	Prolonged discomfort, Eg. Diarrhoea, vomiting, Constipation , Vision Impairment	Effect on vision / Mild ache	Once in a month to six month	Applicable Control available and not effective	2
3	06 to 10	Results inSevere injury or Occupational Illness which leads to loss of 24 man hours or more.	86 to 90 dB	Prolonged exposure to high heat and temperature (exposure to heat is 2/3rd of the average work schedule) which may result in unconsciousness or Fainting , Blurred Vision , lightheadedness, Nausea & vomiting	Exposure which leads to Unconsciousness , Faint or collapse, Vomiting & leads to hospitalisation.	Un consciousness, Faint or Collapse, blurred Vision, Vomiting and requires immediate medical attention.	Minor health impact / requiring nurse/Self attention Eg. Viral Fewer, fewer due to water contamination etc.	Upper limb disorder / repetitive strain injury (RSI)/Back Ache	Once in a week to month	Applicable Control not available	3
4	11 to 15	Amputation, Permanent Damage, Any internal damage which restricts normal work capability.	91 to 105 dB	Heat Cramps, Painful Spasm in the muscle & other Body parts, Throbbing Headache, Profusely Sweating/ perspiration & of sudden collapse	Prolonged exposure which can lead to triggering asthma, Chronic Respiratory or Dermatory illness or other occupational Diseases.	Major Health impact which leads to chronic Respiratory , Dermatory illness or any other long term occupational illness.	Major Health impact requiring doctor's attention returning back to work after 2 days tolerable residual risk with medication	Blood pressure / Heart disease / Nervous breakdown/ Sprain	Once in a day to week	-	
5	above 16	Fatal injury or Death	> =105 dB	Heat Stroke / Exhaustion , which lead to hospitalisation and death or permanent damage.	Over exposure which may lead to immediate death.	Over exposure which may lead to immediate death.	Permanent disability / residual impact eg. Resperatory illness	Residual occupational ergonomic risk	Multiple times a day or continuous	-	

Present control	Emergencies are significant by default and is not rated. They are classified in to major, minor &local.The following are some of the common emergencies:	Action Plan Priority		Control Methods Administered to control the significance of hazard / risk		Criteria for significance:
				1 MP	OH&S Management program	1. Rating product >24 (Scl x sev x Poc x Pc)
1. Trained personnel	1. Fire/ Explosion – Major	Elimination	To remove the process / activity / chemical	2 OCP	Operational control procedure	2. Emergency (No rating given)
2. Operation control	2. Uncontrolled release of toxic / hazardous / flammable substances into atmosphere / Land / Water which leads to property damage and mass illness.– major	Substitution	To replace source of high hazard with a lesser one	3 ERP	Emergency response procedure	3. Legal requirement applicable (No rating given)
3. Emergency preparedness	3. Death of personnel due to fall from heights / accidents – Major	Engineering controls (Modification)	To implement Engineering controls to reduce the severity of hazard/ risk	4 PMP	Performance Monitoring Plan	4. Present control not available
4. Monitoring & Measurement	4. Medical Emergency due to injury by accident in the shopfloor - Minor	Administrative controls	To implement controls through OCP, MSDS, internal voluntary practices etc.	5 TP	Training Plan	5. Severity 4 and above
5. Control equipment	5. Asphyxiation to a person due to exposure to gas leakage – Local	PPE	Personnel protective equipment is last & least measure	6 HP	Health Plan	6. The interrested party feedback from employees if it from more than 50% of the employees working in the area.
6. PPE	Note: Emergency is identified as Local - L, Minor- m, Major – M			7 MSDS	Material Safety Data Sheet	
				8 PPEP	Personnel protective equipment plan	

The hazard identification to be effective, the organization should use an approach that includes information from a variety of sources, especially inputs from people who have knowledge of its processes, tasks or systems. Risk is the determination of likelihood and severity of the credible accident/event sequences in order to determine magnitude and to priorities identified hazards. The risk assessment should involve consultation with, and appropriate participation by,

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workers and take into account legal and other requirements. An organization can use different risk assessment methods as part of an overall strategy for addressing different areas or activities.

2.4 DERIVING CONTROL METHODOLOGY FOR OH&S HAZARDS:

All significant hazards and risks need to be controlled only after evaluating the methodology of controls as described below. When determining controls or considering changes to existing controls, consideration shall be given to reducing the risks according to the following hierarchy:

Elimination	The job is redesigned so as to remove the hazard. Elimination is a permanent solution and will be attempted in the first instance. **Ex. Elimination of process**
Substitution	To replace source of high hazard with a lesser one. **Ex: Replacement of material**
Engineering control	Involve some structural change to the work environment or work process to place a barrier to or isolation of the hazardous process or interrupt the transmission path between, the worker and hazard. This may include isolation or enclosure of hazard, machine guards and manual handling devices / extraction system etc.,.
Administrative controls	Reduce or eliminate exposure to a hazard by adherence to procedures or instructions / signage board. Eg. OCP, MSDS etc.
Personnel Protective equipment	Personal protective equipment will be considered as a last measure when all the above mentioned controls are not feasible due to technological options, financial, operational and business requirements and the views of interested parties etc. If chosen, PPE will be selected and fitted to the person who uses it. Workers will be trained in the function and limitation of each item of PPE. PPE may be used as a temporary control measure until other alternatives are installed.

The selected control methods are established through any of the control methods. The significant impacts and risks are controlled through appropriate control methods selected.

2.5Selection of Control Methods for Elimination of hazards and Reduction of significant aspect / significant Risk:

The significant hazards are considered for selection of appropriate control methods. The prioritized action plan gives the input on the type of control methods to be identified so as to reduce the significance of the hazard and associated risk. The significant risks are to be controlled by any one of the control methods listed below.

1 - OH&S Management Program: To reduce the significant Impact / risk level, priority will be given for identification of EOH&S objective and EOH&S Management program for risk elimination or substitution or process modification or introduction of new engineering control methods. Other Controls: If not feasible to eliminate or substitute the hazard / impact through EOH&S Management program suitable administrative control methods will be selected to protect the operator from the risk available and identified. The list of administrative control methods identified is as follows:

2. Operation control procedure (Work Instruction) – The operation control procedures brief the operating criteria to conduct the activity so that significant impact / hazards are controlled. The procedure to carry out the corrective actions during the deviations to the defined procedures is also described.

3. Emergency response procedure – The emergencies are identified for the response procedure through the Emergency Manual and maintained by Maintenance. This describes the specific role, responsibility and procedure to be followed in responding to the specific type of emergencies identified.

4. Performance measurement & monitoring plan – This is a compilation of all the monitoring & measuring parameters related to system performance or the key characteristics selected from the OCP's and the legal requirements or other requirements applicable to the operation / area. It describes the parameters and the standard limits with the frequency of monitoring.

5. Training Plan. – Training is seen as one of the important

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control methods allotted in areas were significant Impact / hazards are identified to ensure the operator is made to understand the nature of the hazard/ significant impact and the control methods allotted and his role in exercising the same.

6.MSDS abstract – this format describes the important elements of the safety data sheet necessary for the operator to understand the nature of the chemical handled and the precautions he should follow.

7. Health Plan – this control method is the compilation of all the medical examinations to be conducted on the persons exposed to various types of hazards having medical attention due to its impact over a period of time. The legal requirements are taken as input in identifying the requirements of the type of test and periodicity.

8. Personal protective equipment plan -Suitable personal protective equipment will be selected if the risk is not controllable through OH&S Management program or through any other controls mentioned under administrative control list.

2.6DOCUMENTING THE RESULTS:

The organization should document and keep the results of hazard identification, risk assessment and determined controls. When existing or intended controls are used in determining OH&S risks, the measures should be clearly documented so that the basis of risk assessment will be clear when it is reviewed later.

2.7 MANAGEMENT REVIEW:

The management review by OHSAS18001 requires,

• The suitability, adequacy and effectiveness of current hazard identification, risk assessment and risk control process.

• Current levels of risk and the effectiveness of existing control measures

• Adequacy of resources (financial, personnel, material)

• The state of emergency preparedness

III. CONCLUSION

In recent years, firms have implemented quality (ISO 9001), environmental (14001) and occupational health and safety (OHSAS 18001) management standards, in order to remain competitive and meet their stakeholders' objectives. Rather than viewing only it as an additional cost, consider a way to obtain a general improvement of small enterprises to adopt certification and to implement BS OSHAS 18001. A number of previous studies have demonstrated that there are many factors which influence the choice to adopt certification andHave highlighted its importance in different contexts (Zutshi and Sohal, 2005; Zeng et al., 2007; Chen et al., 2009; Granerud an Rocha, 2011; Vinodkumar and Bhasi, 2011; Fern_andez-Mu~niz et al., 2012a; Hohnen and Hasle, 2011; Santos et al., 2013; TsaiAnd Chou, 2009; Duijm et al., 2008).

In conclusion, this study has an important role in describing the interesting information for researchers and practitioners since it defines the main enabling factors for successful BS OHSAS 18001 implementation and the mainproblems that practitioners could face in its implementation. Moreover it illustrates the improvement in firm's safety performance and competitiveness.

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