UNIVERSITI TEKNOLOGI MARA

CONFERENCE PROCEEDING

ICITSBE 2012

1ST INTERNATIONAL CONFERENCE ON INNOVATION AND TECHNOLOGY FOR SUSTAINABLE BUILT ENVIRONMENT

16 -17 April 2012

Organized by:
Office of Research and Industrial
Community And Alumni Networking
Universiti Teknologi MARA (Perak) Malaysia
www.perak.uitm.edu.my

PAPER CODE: FM 22

ASSESSMENT OF SAFETY COMPLIANCE TOWARDS OSHA 1994 AMONG MALAYSIAN MAINTENANCE CONTRACTORS

Huraizah Arshad[a] and Noraini Johari[b]
Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA (Perak), Malaysia
[a]hurai543@perak.uitm.edu.my, [b]norai127@perak.uitm.edu.my

Abstract
Malaysia is a steadily developing country currently striving to become a developed country with a first class infrastructure by 2020. Towards that vision and mission, various developments have been planned notably in the building construction sector to fulfill the needs of society. In the hectic rush of new developments, building maintenance works should not be neglected. Nowadays, various issues on occupational safety and health as well as on the quality of building maintenance standard reflecting weaknesses in safety practices such as building impairments, fires, collapse and failures of building structures have been raised and require immediate attention. Maintenance is vital to keep machines and work environments safe and reliable – lack of maintenance or inadequate maintenance can cause serious and fatal accidents or health problems. Maintenance itself is a high-risk activity and should be carried out without producing any risk and hazards to ensure all the occupants of the building are safe, healthy, and comfortable while not being exposed to any risks during occupation of the building. Hence, in order to delve deeper into the issue of safety compliance in performing building maintenance work, a questionnaire survey was distributed among building maintenance contractors in Kuala Lumpur, Selangor and Johor Bahru.

Keywords: Building maintenance works, occupational safety and health, building maintenance standard.

1. Introduction

Building maintenance is a combination of technical and administrative actions to ensure building elements are at acceptable standards to perform their required functions (Seeley, 1987). In implementing building maintenance tasks efficiently, proper building maintenance plan and monitoring system are necessary. Good building maintenance is essential to keep building services and work environment safe and reliable. Thompson (1994) noted that building maintenance is so important that its role is not only to ensure that facilities and services in buildings are operating at the optimum standards, but also to satisfy the performance requirements of the building's occupants. However, maintenance is a high-risk activity which has to be performed in a safe way; with appropriate protection of maintenance workers and other people (visitors, suppliers or customers) present at the workplace.

The aim of this study is to assess the level of compliance among Malaysian maintenance contractors towards OSHA 1994 in performing building maintenance works. To achieve the above aim, two (2) objectives have been identified which are to assess the level of compliance towards safety regulations in performing maintenance works among maintenance practitioners/contractors; and to determine the association between types of organizational set-up with the level of compliance towards safety regulations.

According to Chanter and Swallow (2007), maintenance can be distinguished into two (2) main types:

i. **Preventive maintenance** – when actions are carried out at predetermined intervals or according to prescribed criteria intended to reduce the probability of failure or the degradation of the functioning of an item. Actions are scheduled, proactive and intended to control the deterioration process leading to failure of a system (e.g. replacement, lubrication, cleaning or inspection).
ii. **Corrective maintenance** – when actions are intended to restore a system from a failed state to a working state (e.g. repair or replacement of broken components). Also known as 'reactive maintenance' because the action is initiated when the unscheduled event of an equipment failure occurs.

A report from the European Agency for Safety and Health at Work (2010) revealed that in 2006 around 10%–20% of all fatal accidents were related to maintenance operations, indicating that maintenance workers are significantly more likely to be exposed to a variety of workplace hazards such as noise, vibration, different kinds

of radiation, dangerous substances, vapour, fumes and ergonomics hazards. Figure 1 shows the proportion of occupational accidents related to maintenance operations in comparison with total accidents in selected European countries. Maintenance operations typically include both disassembly and reassembly, often involving complicated machinery. This can be associated with a greater risk of human error and a higher risk of accidents.

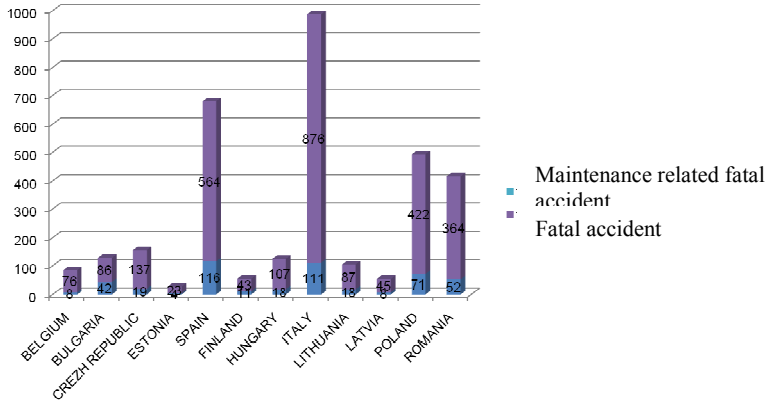

Figure 1 Fatal Accidents Related to Maintenance Operation in Selected European Countries 2006
Source: Statistical Office of the European Communities (EUROSTAT), Luxembourg (2010)

There is always an element of risk in every activity but a successful manager will be able to look ahead, foresee the risks and eliminate or reduce their effects (John Ridley, 1994). In the context of building maintenance, a Facility Manager or Property Manager is the person who is responsible to assess, manage and control the risk through strategic occupational safety and health (OSH) management system. This strategic approach of OSH management system into maintenance management can help the manager manage health and safety in a structured way based on an adequate risk assessment, ensuring training and competency of employee, complying with regulations to improve efficiency, productivity and business performance (John Ridley, 1994).

2. Managing OSH at the Workplace

It is very important for employers to manage occupational safety and health (OSH) at their workplaces because lack of management control often leads to the existence of causes of accidents and unsafe practices among workers. Suraji (2001) indicated that high rates of injury are primarily due to inadequate or non-existent safety regulation systems. Managing OSH at workplaces is vital as accidents have direct and indirect costs on organizations. Direct costs include loss of time, damage to work equipment and premises, loss of productivity and costs of goods and services replacement; while indirect costs may include costs of replacement for injured workers and costs arising from loss of commitment and motivation of workers involved in the accidents. Creating a safe and conducive environment through the implementation of safety and health at work results in indirect cost savings as workers' efficiency and productivity will be enhanced under such favorable environment.

In Malaysia, many lives are lost annually due to workplace accidents and work related health hazards such as cancer, chemical burns, hearing loss and partial loss of eyesight. Based on SOCSO annual report 2009 (as shown in Figure 2.1), a total of 55,186 industrial accidents were reported whereby up till September 2010, the number of accidents reported were 42,657 cases.

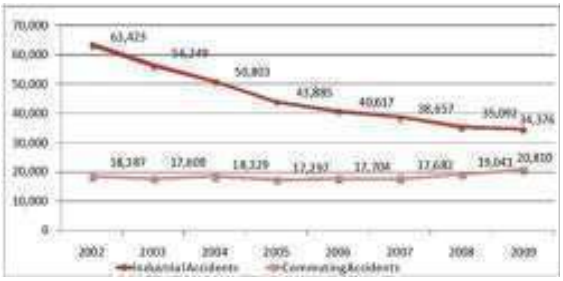

Figure 2 Frequencies of Industrial and Commuting Accidents 2002-2009
Source: SOCSO Annual Report 2009

Loss of human lives, bodily handicaps, ill health and disease contracted at work places lead to loss of income, huge economical and productivity loss to the country in billions of ringgit. In 2009, SOCSO paid out RM1.4 billion in compensation for industrial accidents and occupational diseases with only RM1.8 billion collection in contribution. According to the Human Resources Minister; Datuk Dr S. Subramaniam, beginning 2012, the Government will increase the amount of contribution by employers to ensure SOCSO could continue to operate efficiently considering there has never been any increase in contributions since 1969. The payout in 2005 is RM830 million and this amount has tremendously increased every year. The figure is indirectly proportionate with the number of accidents occurring at the workplace.

Health and safety risks are needed to identify, assess, and take certain action to eliminate or minimize the probability of occurrence. In order to reduce the accident or incident level and subsequently cut the losses, it is important to ensure that safe working practices are being observed (Radhlinah, 2000). Hinze (1997) claimed that managing safety essentially involves four levels: the company policy level, project management level, site management level and individual level. Failure at each level is the reason for the occurrence of accidents. Failure at the first level will increase the probability of failures at the second level and so on. Improper OSH management leads to poor safety records. Each and every organization should strive for a zero accident target at the workplace. Most developed nations like Finland, Japan, Canada, Germany and Australia recorded only three (3) fatalities per 100,000 workers; while Malaysia, Thailand and other industrialized/developing countries recorded fatality rates of twelve (12) to seventeen (17) cases for every 100,000 workers (OSH MP 15).

3. Occupational Safety and Health Act (OSHA) 1994

Safety is an important issue, but many employers/organizations do not feel it is vital to the success of companies. Understanding the concept of the OSH management system will help management to comply with the provisions of OSHA 1994 that need to be adhered to by the industry. The law protects the workers' safety and ensures healthy workplaces to prevent accidents, ill health and injury. OSHA 1994 is the latest act relating to occupational safety and health in addition to the still enforceable Factories and Machinery Act (FMA) 1967.

The OSHA 1994 is enforced by the Department of Occupational Safety and Health (DOSH), a government department under the Ministry of Human Resources Malaysia. Through enforcement and promotional works, the DOSH ensures that employers, self-employed persons, manufacturers, designers, importers, suppliers and employees practice safe and healthy work culture, and comply with existing legislation, guidelines and codes of practice. There are seven (7) regulations under OSHA 1994 namely:

Table 1 Regulations made under OSHA 1994

OSHA 1994 Regulations	Year
Employer's Safety and Health General Policy Statement (Exception)	1995
Control of Industrial Major Accident Hazards	1996
Safety and Health Committee	1996
Classification, Packaging, and Labelling of Hazardous Chemicals	1997
Safety and Health Officer	1997
Safety and Health Officer Order	1997
Prohibition of Use of Substance	1999
Use and Standards of Exposure of Chemicals Hazardous to Health	2000

Source: OSHA, 1994

Under the OSHAS 18001 management system, the most important elements of safety and health management system include the Policy, Organization, Planning and Implementation, Evaluation, and Action and Improvement with relevant provisions relating to the employer's duty provided under statute.
According to Section 4 OSHA 1994, the aims and objectives of this Act are to:

i. Secure the safety, health and welfare of persons at work against risks to safety or health arising out of the activities of persons at work,
ii. Protect persons at a place of work other than persons at work against risks to safety or health arising out of the activities of persons at work,
iii. Promote an occupational environment for persons at work which is adapted to their physiological and psychological needs,
iv. Provide the means whereby the associated occupational safety and health legislation may be progressively replaced by a system of regulations and approved industry codes of practice operating in combination with the provisions of this Act designed to maintain or improve the standards of safety and health.

3.1 General Duties of Employer

The general duties of employers and self-employed persons such as designers, manufacturers, importers and suppliers of plant or substances are clearly defined under Section 15, OSHA 1994. Employers must safeguard as far as is practicable, the health, safety and welfare of the people who work for them. This applies in particular to the provision and maintenance of a safe plant and system of work.

Arrangements must also be made to ensure safety and health in the use, handling, storage and transport of plant and substances. Under OSHA 1994, 'plant' includes any machinery, equipment, appliance, tool and component, whilst 'substance' means any natural or artificial substance whether in solid, liquid, gas, vapour or combination thereof, form. Risks to health from the use, storage or transportation of substances must be minimised. To meet these aims, all practicable precautions must be taken in the proper use and handling of any substance likely to cause a risk to health.

3.2 Safety Manual

A safety manual mainly outlines specific essential measures that will be taken by the employer to prevent human injuries and property damage. For outsourced contractors, this manual is usually submitted by the contractor to the facility owner representative for approval. The contractor should appoint a qualified full-time safety supervisor to coordinate the implementation of the manual (Gallagher, 1993). While for in-house operations, the owner or Property Manager should prepare this manual as basic tools in effective occupational safety and health management (Section 15 OSHA 1994).

3.3 The Existence of Safety Professional or Safety Department

In the Occupational Safety and Health (Safety and Health Officer) Order 1997, an employer of the class of industries listed in the Order must employ a competent and qualified person to act as a safety and health officer at the workplace. Under this Order it is compulsory to employ a safety and health officer for an employer of any building operation or work of engineering construction where the total contract price of the project exceeds twenty million ringgit, any ship building, and gas processing activity or petrochemical industry and any chemical and allied industry employing more than a hundred employees. It also covers any boiler and pressure vessel manufacturing activity, metal industry, wood working industry, and cement manufacturing activity employing more than a hundred employees and any manufacturing industry other than boiler, metal, wood and cement manufacturing employing more than five hundred employees.

3.4 Safety Policy

All employers with more than 5 employees are required by the law to formulate a written Safety and Health Policy (Section 16 OSHA 1994). The main objective of the Policy is to demonstrate the company's commitment and concern to ensure safety and health at the place of work. When making decision or performing work activities of the organization, issues on safety and health stated in the policy must be taken into account.The General Policy Statement concerns the overall intent of the employer to look after the safety and health of the workforce. This statement can be simple and brief. Essentially it should:

i. Point out that the management accepts responsibility for the safety and health of the employees and others who may be affected by the work activities
ii. A summary of the policy's goals
iii. Emphasise the importance of safety and health to overall business performance
iv. Include a reference to other parts of the policy document which go into more details and
v. Be dated and signed by the person at the top management in the organization such as the chairman or managing director.

It is important that the contents of the policy be made known to employees during induction course and job training. The policy statement should be displayed at strategic locations in the workplace.

3.5 Safety Inspection

Safety and health officer, supervisor, Property Manager and safety committee members must inspect the place of work to determine whether any plant such as machinery, equipment and appliance or substance or process or any description of manual worker used in the workplace, is of such nature liable to cause bodily injury to any person working there. Some operations, installations, maintenance and dismantling of equipment and process need competent persons to inspect. Thus, during the installation of machinery and equipment such as cranes, lifts and local exhaust ventilation systems, competent persons are compulsory to ensure safe erection/installation. Processes that use hazardous chemicals require competent persons to conduct the indoor air

quality and personal monitoring, and a safety and health officer and an occupational health doctor is required to ensure the proper health surveillance of the workplace.

3.6 Safety Committee and Safety Meeting

Pursuant to Section 30 of the Occupational Safety and Health Act 1994, every employer shall establish a safety and health committee at the workplace if there are 40 or more persons employed at the place of work. The committee's main function is to keep under review the measures taken to ensure the safety and health of persons at the workplace and investigate any related matters arising. The OSH Committee shall consist of a chairman, a secretary, representatives of employer and representatives of employee.
The functions of the safety and health committee include:

i. To keep under review the measures taken to ensure the safety and health of persons at the place of work
ii. Investigate any matter at the place of work which a member of the committee or a person employed thereat considers is not safe or is a risk to health and which has been brought to the attention of the employer
iii. Attempt to resolve any matter referred to and if it is unable to do so, shall request the Director General of Occupational Safety and Health to undertake an inspection of the place of work for that purpose.

3.7 Safety Training

A key element in achieving and maintaining high levels of safety is knowledge of the hazards, their effect and the techniques to avoid those effects. It is the duty of employers to provide the necessary information, instruction, training and supervision in safe practices, including information on the legal requirements as stated clearly in Section 15 OSHA 1994. Employers need to consider the specific training needs of their organisations with particular reference to processes with special hazards. According to Toole (2002), lack of safety training by an organization is the barrier to implement safety and health regulation at the workplace.

3.8 Accident Report

An employer must notify the nearest DOSH of any accident, dangerous occurrence, occupational poisoning or disease which has occurred or is likely to occur at the workplace (Section 32, OSHA 1994). Accident means an occurrence arising out of or in the course of work which results in fatal injury or non-fatal injury. Fatal injury means injury leading to immediate death or death within one year of the accident. Non fatal injury means a lost-time injury which prevents an employee from performing normal work and leads to permanent or temporary incapacity for work; or a no-lost-time injury where no work time is lost beyond that required for medical attention.

4. Research Methodology

This study was carried out based on literature review and questionnaire survey. Subsequently, data collection from the questionnaire survey was analysed using the statistical methods, and their results were presented**.** The research first identified the requirements by OSHA 1994 through a literature review. A total of 41 questionnaires were then distributed to relevant respondents which were maintenance contractors in Kuala Lumpur, Selangor and Johor Bahru to form a database for descriptive and ranking analysis. The questionnaires used in this study consist of two parts; which is Part A containing general information about maintenance contractor organisations and Part B containing ten (10) requirements of OSHA 1994. The ten (10) factors were ranked and calculated to assess the level of compliance among all maintenance contractors. Scoring procedure of the factors:

i. Yes and always - 4 points
ii. Most of the time - 3 points
iii. Sometimes - 2 points
iv. Rarely - 1 point
v. Never/No - 0 point

5. Data Analysis and Discussion

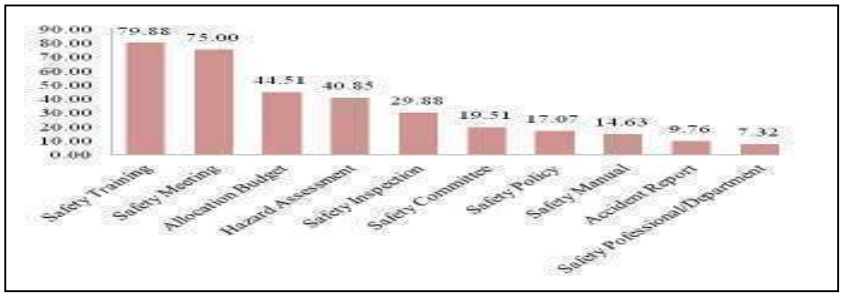

Figure 3 OSHA 1994 Requirements ranked based on the Importance Index

Based on Figure 3, it was shown that the most important OSHA requirements indicated by maintenance contractors in performing maintenance works are safety training, safety meeting, allocation budget and hazard assessment. The least important OSHA requirements are safety policy, safety manual, accident report and safety professionals. To fulfill the second objective, this study used one-way ANOVA to determine the association between types of organisational set-up with level of compliance to safety regulations. There are 41 maintenance contractors selected for this study; 17 companies practiced in-house maintenance and 24 companies practiced out-sourced maintenance for their properties.

6. Conclusion

The analysis above indicated that most of the respondents are aware of and have experience with OSHA 1994 regulations. This infers that there is no significant association between in-house or out-source maintenance contractors in terms of ignoring the requirements of safety and health by OSHA 1994. This paper concludes that there was no significant difference in association between types of organisational set-up with level of compliance towards OSHA 1994.

References

European Communities - Agency for Safety and Health at Work (EUROSTAT), Luxembourg (2010)

Gallagher, Vincent A. (1993), "Safety of Outside Contractors", Professional Safety, Vol.38, No.1, pp. 29-33.

Hinze, J. W. (1997). *Construction Safety.* Columbus, Ohio: Prentice Hall. 1-6.

John Ridley (1994). *Safety At Work.* Great Britain: Butterworth-Heinemann.

Malaysia (1994). *Occupational Safety and Health Act 1994.* Act 514.

Malaysian Standard: *Occupational Safety and Health Management System-Guidelines (MS 1722:2003).* Department of Standards Malaysia.

Ministry of Human Resource (2007) *Occupational Safety and Health Master Plan for Malaysia 2015(OSH MP 15).*

Radlinah Kunju Ahmad (2000). *Developing a Proactive Safety performance Measurement Tool (SPMT) For Construction Sites.* Loughborough University: Degree of Doctor of Philosophy.

Sariwati, M. S. (2010). *Occupational Safety and Health Management.* UPENA UiTM

Seeley, I.H. (2003). *Building Maintenance.* New York: Palgrave

SOCSO Annual Report 2009

Suraji, A., A.R and Duff (2001) *Development of Casual Model of Construction Accident Causation.* Journal Civil Engineering Management, 127 (4), 337-344.

Thompson, P. (1994). *The Maintenance Factor in Facilities Management.* Vol.12 No.6
Toole, T. M. (2002) *Construction Site Safety Roles*. Jurnal of Civil Engineering Management, 128 (3), 203-210. (COBRA) 2010. Paris, France. Pp 1- 15