Review Article

Empowering Occupational Health Doctors through the Occupational Safety & Health (Noise Exposure) Regulations 2019

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ABSTRACT: *The Department of Occupational Safety and Health Malaysia (DOSH) is the authority responsible to safeguard the occupational safety, health and welfare of workers in Malaysia. Occupational noise-related hearing disorders are the leading type of occupational diseases recorded by DOSH every year. Occupational Health Doctor (OHD) is a competency recognized by DOSH and their scope of duties in industries is currently confined to conduct medical surveillance for workers with hazardous chemical exposure and confined space medical fitness examination. The duties of OHD are good to be expanded by empowering more of their roles in industrial activities involving other legislations under DOSH. The noise exposure regulation under the Factories and Machinery Act (FMA) 1967 has been governing the worker's exposure to hazardous industrial noise and preventing noise-induced hearing loss (NIHL) since 1989. However, the provisions of the regulation need to be strengthened in some essential medical elements of the Hearing Conservation Programme (HCP) for a comprehensive prevention of NIHL at the workplace. Recently enacted Occupational Safety and Health (Noise Exposure) Regulations 2019 offer a wider coverage of workers in ten sectors of industries applicable under the Occupational Safety and Health Act (OSHA) 1994. The current regulatory requirements for management of workplace noise have many improvements compared to the existing law. Enhancement in the medical requirements of industrial audiometry is made prominent by involving OHDs to interpret audiograms and conduct medical examination for workers. The reporting of occupational noise-related hearing disorders to DOSH is outlined better in the new regulation. The occurrence of NIHL and other related hearing disorders are expected to reduce eventually after the introduction of Occupational Safety and Health (Noise Exposure) Regulations 2019. The OHDs will play a pivotal role in industrial audiometry and prevention of hearing disorders among the working population.*

Keywords – *Occupational Safety and Health (Noise Exposure) Regulations 2019, OHD*

1.0 INTRODUCTION

Noise which is defined as unwanted sound is the leading occupational hazard in industries worldwide. The health effects of noise may vary from auditory damages to other non-auditory problems, posing social and economic burden to a country. Legislations for managing noise at work are important to protect the working community against the adverse effects of noise. Progressive improvements in existing laws and regulations related to noise at work, ensure that the current developments in occupational hygiene and health aspects of noise management are taken into account in workplace safety and health policies.

2.0 DOSH AND OCCUPATIONAL SAFETY AND HEALTH IN MALAYSIA

The Department of Occupational Safety and Health (DOSH) under the Ministry of Human Resources is the government agency responsible to ensure the safety, health and welfare of the workforce in Malaysia. The department's objective is to minimize industrial accidents and occupational diseases by the year 2020 through: (a) Reduction in the rate of fatalities to 4.36 per 100,000 workers; (b) Reduction in the rate of accidents to 2.53 per 1000 workers; and (c) Increase in reporting of occupational diseases and poisoning among workers by 30% as enshrined in the Occupational Safety and Health Master Plan 2016-2020 (OSHMP 2020). The strategies and programmes under OSHMP 2020 are shown in Fig. 1. DOSH focuses in standards: setting, enforcement, promotion and other activities related to the field of occupational safety and health (OSH). Studying OSH policies, drafting and amending related regulations, guidelines and Industrial Codes of Practices (ICOP) are some of the core activities under the standard settings services by DOSH.

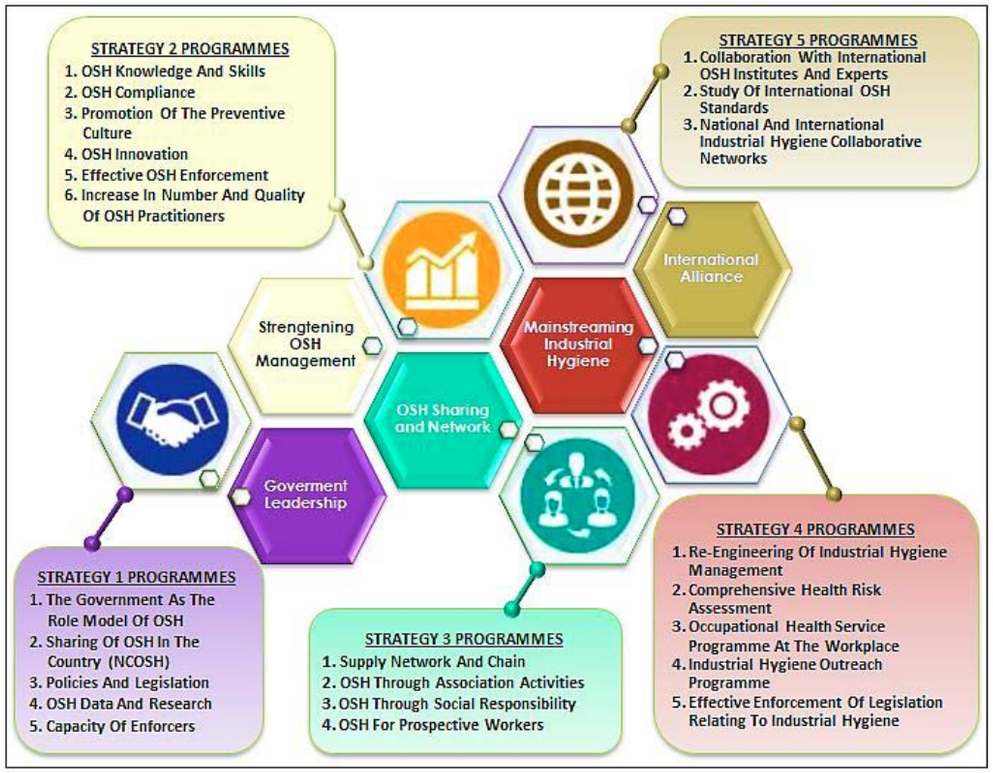

Figure 1 OSHMP 2020 Strategies and Programmes

3.0 BURDEN OF OCCUPATIONAL NOISE-RELATED HEARING DISORDERS

Hazardous industrial noise remains a significant problem globally. It is estimated that 9 million workers are exposed to 85 dB(A) and above time-weighted average level of noise in the United States. Seventeen studies conducted in 12 countries in South America, Africa, and Asia have revealed high occupational noise exposures with reported cases of hearing losses. Occupational noise causes 16% of disabling hearing loss in adults (more than 4 million disability-adjusted life years; DALYs), ranging from 7% to 21% in various subregions.

The Occupational Health section of DOSH conducts investigations on industrial incidents and manages occupational disease reports in Malaysia. Overall, the number of occupational diseases and poisonings recorded by this section are in an increasing trend significantly after the introduction of the OSH (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease - NADOPOD) Regulations 2004 and Occupational Safety and Health Master Plan 2015. However, the increase in awareness among employers and occupational health practitioners as well as the mushrooming number of industries with new-emerging industrial hazards may not be denied as factors contributing to this trend of increasing occupational diseases and poisonings.

As for the consequences of industrial noise, occupational noise-related hearing disorders (HD) have been contributing to more than 60% of the total recorded cases for the past decade. Cases of noise-induced hearing losses, hearing impairments and permanent shifts in hearing thresholds of workers (permanent standard threshold shifts - PSTS) due to industrial noise constitute these occupational noise-related hearing disorders. In 2017, there were 2478 cases (88%) of HD recorded, followed by occupational musculoskeletal diseases (OMSD), 126 cases (5%) and occupational skin diseases, 69 cases (2%). The trend of overall occupational diseases and poisonings compared to HD from 2008 till 2017 are shown in Fig. 2. The detailed type of diseases recorded in 2017 are shown in Fig. 3. Occupational diseases and poisonings by sectors revealed that the manufacturing sector recorded the most number of cases in 2017, a total of 2431 cases (86.5%). This is followed by the mining and quarrying sector, 97 cases (3.5%) and the public services sector with a total of 88 cases (3.1%). Industries manufacturing rubber and plastic products, fabricated and basic metal products, food products and beverages and textile industry reported high numbers of HD.

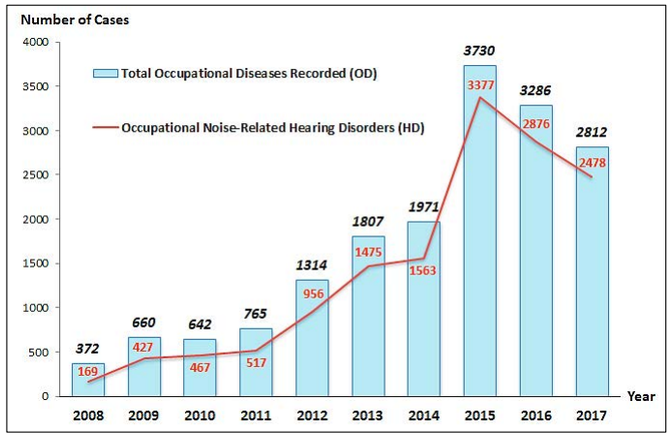

Figure 2 Trend of Overall Occupational Diseases & Poisonings and Occupational Noise-Related Hearing Disorders, 2008 – 2017, DOSH Malaysia[a]

[a] Based on progressive investigation of cases as of April 2019, data may vary depending on the time of analysis

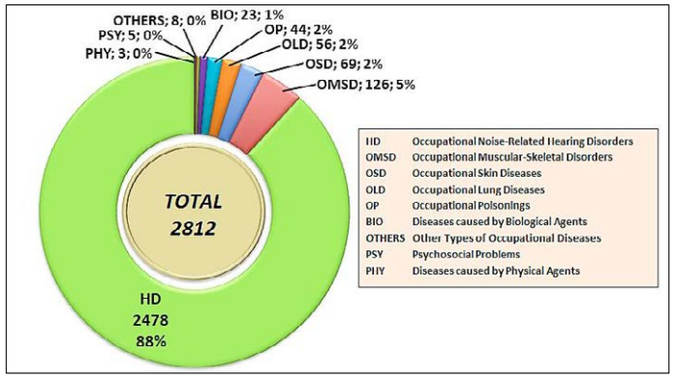

Figure 3 Occupational Diseases & Poisonings, 2017, DOSH Malaysia[a]

[a] Based on progressive investigation of cases as of April 2019, data may vary depending on the time of analysis

4.0 OCCUPATIONAL HEALTH DOCTOR AS A COMPETENT PERSON

Occupational Health Doctors (OHD) are medical practitioners whom had successfully completed a formal training in the field of occupational health. They are registered as a competent person with the Director General of DOSH to carry out medical surveillance programme for workers. There are many universities and training institutions conducting OHD or equivalent qualification training in Malaysia. The National Institute of Occupational Safety and Health (NIOSH) produce the most number of OHDs in the country every year.

OHDs' role was first recognized since the introduction of the Use and Standard of Exposure of Chemicals Hazardous to Health (USECHH) Regulations 2000 under the OSHA 1994. Their scope of duty was further expanded after the introduction of the ICOP's for Safe Working in the Confined Space in 2010. Under this ICOP, the employers of industries must ensure that its authorized confined space entrant person intending to work in confined space is certified medically fit by an OHD biennially. However, the OHDs role in industries was not prominent and appeared to be limited to medical surveillance and health examination for the purpose of fitness to work in confined space.

At present, there are a cumulative total of 1085 OHDs registered with DOSH and 871 doctors out of these registered OHDs are actively involved in delivering occupational health services particularly in USECHH medical surveillance and confined space health fitness examination. Most of these OHDs are practicing around the central region of Malaysia and in the heavily industrialised states of Selangor, Kuala Lumpur and Johor.

5.0 OVERVIEW OF LEGISLATIONS RELATED TO NOISE AT WORK IN MALAYSIA

In term of legislations under the purview of DOSH, comprehensive protection of the working population against the damaging effects of noise at work started after the introduction of the Factories and Machinery (Noise Exposure) Regulations 1989. The primary objective of this regulation is to prevent occupational noise-induced hearing loss (NIHL). The regulation outlines the legal obligations of employers as well as employees. The employers must not expose any of his employees to noise above the permissible exposure limit (PEL) - equivalent continuous sound pressure level of 90 dB(A); maximum sound pressure level of 115 dB(A) at any time and peak sound pressure level of 140 dB. Other responsibilities of the employers are to conduct noise exposure monitoring at the workplace, reduce noise exposure by either engineering, administrative or combined methods of control (as far as practicable), provide approved hearing protective devices to their employees, establish and maintain an audiometric testing programme, provide employees with information and institute noise-related training programme at least once in every two years at their premises.

The regulatory requirements of the noise exposure regulation under the FMA were in line with the Hearing Conservation Programme (HCP), a well-known systematic programme implemented in most major industries to prevent NIHL and tackle issues arising from noise at work. However, some of the HCP elements were not adequately addressed in the FMA noise regulation. Medical evaluation and referral for instance is not prominent in the FMA noise regulation. Registered medical practitioners are expected to conduct medical examination only to establish a diagnosis of PSTS. Requirement for specific noise management policy is often misunderstood as general occupational safety and health policy at work by the employers. Nevertheless, this noise exposure regulation served as the only important legislation since 1989 to control employees' noise exposure at work with requirements for health surveillance in the form of periodic audiometric testing. DOSH has produced many guidelines and directive letters to increase industrial compliance to this regulation, one of them is the Guidelines for Control of Occupational Noise which was published in 2005.

6.0 OVERVIEW OF OCCUPATIONAL SAFETY & HEALTH (NOISE EXPOSURE) REGULATIONS 2019

The Factory and Machinery (Noise Exposure) Regulations 1989 which has been in operation for 30 years was gazette under the Occupational Safety & Health Act (OSHA) 1994 as OSH (Noise Exposure) Regulations 2019 on 1st March 2019. This regulation is expected to be in force from June 2019. It will be accompanied by an ICOP on management of workplace noise, a legally-bonded document to serve as a reference for industries to comply with the regulation's requirements. The primary role of the regulation and ICOP is to reduce the occurrence of occupational noise-related hearing disorders especially NIHL.

As the new noise regulation was promulgated under the OSHA 1994, the major advantage is that all ten sectors covered under the OSHA 1994 will be applicable to this regulation as well. Thus, the protection of the working population against hazardous noise are being widely expanded under this regulation. This regulation, similar to the OSHA 1994, is not

applicable for work on board ships governed by the Merchant Shipping Ordinance 1952, the Merchant Shipping Ordinance 1960 of Sabah and Sarawak and the armed forces. Other important changes in the regulation are related to the requirements for noise risk identification, audiometric testing, medical evaluation, reporting of HDs and training. The key elements of OSH (Noise Exposure) Regulations 2019 are explained in Table 1 below.

Table 1 Key Elements of OSH (Noise Exposure) Regulations 2019

Essential Definitions
• Excessive noise : daily noise exposure level >82 dB(A), daily personal dose > 50%, maximum sound pressure level > 115 dB(A) at any time or peak sound pressure level > 140 dB(C)
• Abnormal audiogram : an audiogram that shows a hearing loss, hearing impairment or PSTS
• Medical Examination : an examination that includes history taking, physical examination and other relevant investigations to diagnose or rule out any occupational or non-occupational auditory disorder
Excessive Noise Identification
• Mandatory for employers to identify employees exposed to noise at places of work using methods determined by the Director General (DG) of DOSH • Employer to conduct review identification if: - there is change in the machinery, equipment, process, work, control measures or operation in which any employee may be exposed to excessive noise; - not more than 1 year after previous identification ; or - directed by the DG DOSH
Excessive Noise Risk Assessment
• Employer to appoint Noise Risk Assessor (NRA) registered with DOSH to carry out assessment if identification reveals employee exposed to excessive noise • NRA to use equipment complying with the standard determined by the International Electrotechnical Commission (IEC) for noise risk assessment at the workplace • Noise risk assessment report submission by the NRA to the employer within 1 month • Employer to carry out NRA's recommendations of actions within 30 days • Employer to conduct review noise risk assessment if: - not more than 5 years from the last assessment; or - directed by the DG DOSH
Information, Instruction, Training & Supervision
• Provision of adequate information on effects of noise and audiometric testing by the employer to employees exposed to excessive noise • Employer to supervise control of noise exposure implementation at the workplace • Employer to conduct training on personal hearing protection to employees exposed to excessive noise at least once a year
Noise Exposure Limit (NEL)
• Occupational exposure limits: daily noise exposure level of 85 dB(A) or daily personal dose of 100%; maximum sound pressure level of 115 dB(A) at any time or peak sound pressure level of 140 dB(C) • Employer to reduce noise exposures of employees below NEL by engineering, administrative, combined method of control or by utilizing personal hearing protectors (hierarchy of control to comply with the principle of "as far as practicable") • Employer to ensure engineering control equipment are working good and efficient
Personal Hearing Protector (PHP)
• Employer to ensure PHP are always available, suitable, efficient, appropriately maintained and inspected • Employer to use PHP which will attenuate the employee's personal noise exposure reasonably below NEL (if properly worn) and approved by DG of DOSH
Hearing Protection Zone
• Areas with noise exposure exceeding NEL to be demarcated and properly marked with appropriate warning sign by the employer

• Employer to provide and ensure the usage of PHP in hearing protection zones
Audiometric Testing Program
• Annual audiometric testing at approved Audiometric Testing Centre (ATC) for employees exposed to NEL at no cost to the employee • Employer to establish baseline audiometric testing within 3 months of employee's exposure to NEL • Interpretation of audiogram by OHD appointed by ATC • Mandatory medical examination by OHD for employee with abnormal audiogram • Reporting of occupational noise-induced hearing loss, hearing impairment or PSTS by the OHD and employer to DOSH within 7 days • ATC to submit audiometric testing report to employer within 30 days • Employer to inform audiometric testing results to his employees within 21 days • Employer to carry out audiometry retest for employees with temporary standard threshold shift and implement measures to protect the employees' hearing from worsening • Provision and training in the use of PHP for employees with occupational noise-induced hearing loss, hearing impairment or PSTS
Recordkeeping
• NRA report for not less than 30 years • Audiometric testing report for as long as the employee is employed and 5 years after he ceases his employment • Transfer of NRA and audiometric testing records to the employer's successor • Notice to the DG of DOSH 3 months prior to the disposal of records and transmit the records to the DG of DOSH if requested
Penalty for Offence
• Fine not exceeding RM 10,000 or imprisonment for one year or both

7.0 MEDICAL PERSPECTIVE OF OCCUPATIONAL SAFETY & HEALTH (NOISE EXPOSURE) REGULATIONS 2019

Managing the impact of industrial noise from a medical perspective has been given crucial emphasis in the current noise exposure regulation. This includes the role of medical professionals and delivery of industrial audiometric services. Industrial Audiometric Testing Centres (ATC) are registered and monitored by DOSH to follow standard procedures in conducting audiometry. ATC's need to be appointed by employers to perform audiometric testing for their employees. A list of registered industrial ATC's are available in DOSH website.

The role of the registered medical practitioners in the past regulation has been taken over by the OHDs whom have a better understanding of workplace hazards and work-related illnesses. The responsibilities of OHDs are clearly defined in this regulation whereby OHDs, being appointed by the ATC are required to interpret audiograms of workers exposed to excessive noise and perform medical examination for workers with abnormal audiograms. Initial interpretation is to differentiate between a normal and abnormal audiogram. An abnormal audiogram shows hearing loss, hearing impairment or PSTS. A guide to determine such abnormal audiograms is published in the ICOP. Comprehensive medical examination comprising of worker's history taking, physical examination and relevant investigations are required to be conducted by OHD in order to diagnose or rule out any occupational or non-occupational hearing disorders. The purpose of mandatory medical examinations stipulated under the regulation is to increase the diagnosis validity of occupational noise-related hearing disorders by not merely depending on audiometric results. ATC's are required to submit audiometric testing reports to the employers within 30 days to avoid any delay in managing the risk of further hearing damage posed by the workplace noise hazard and reporting of HD to the DOSH.

The reporting of occupational noise-related hearing disorders is also standardized through the current noise at work regulation. Reporting requirements which was partly spelled out in the FMA (Noise Exposure) Regulations 1989 as well as the OSH (NADOPOD) Regulations 2004 are being collectively expressed under the current regulation. The employers and OHDs are independently responsible to report occupational-related NIHL, hearing impairment and PSTS to DOSH. The definitions for NIHL, hearing impairment and PSTS will follow criterias given in international standards published and described in detail in the ICOP. Some other roles of OHDs in terms of occupational noise health surveillance are to act as the front-liners in diagnosing occupational and non-occupational hearing disorders, referring an employee with hearing disorder to relevant medical specialty to establish a diagnosis or for further management if necessary, advising the employers on training

their employees in the use of personal hearing protectors and educating an employee with an abnormal audiogram on best practices to conserve his hearing from NIHL.

8.0 CONCLUSION

The current changes in the noise exposure regulation are expected to bring major impact at workplaces in terms of better control over industrial noise exposure and progressively reducing the occurrence of noise-related hearing disorders among the working population. The DOSH hopes that the OHDs will carry out their duties professionally under the new regulation and deliver their best services in the field of industrial audiometry. As the saying goes, "With great power, comes great responsibility", empowering OHDs in the field of occupational audiometry and prevention of NIHL will be accompanied by a huge responsibility shouldered by these OHDs. In the future, the Department also anticipates increasing the roles of OHDs in a more diversified delivery of occupational health services to the workforce in Malaysia. Safeguarding the safety, health and welfare of employees are a joint responsibility between the employers, employees, the government and other stakeholders including competent persons such as the OHD.

"A Safe and Healthy Future of Work" – World Day for Safety and Health at Work 2019, International Labour Organization (ILO).

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