

Governance in Occupational Safety and Health in the Aspect of Indoor Air Quality in Malaysia

Sytty Mazian Mazlan, Muhammad Rizal Razman, Kadir Arifin

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v8-i3/3918>

DOI: 10.6007/IJARBSS/v8-i3/3918

Received: 20 Feb 2018, **Revised:** 21 Mar 2018, **Accepted:** 24 Mar 2018

Published Online: 26 Mar 2018

In-Text Citation: (Mazlan, Razman, & Arifin, 2018)

To Cite this Article: Mazlan, S. M., Razman, M. R., & Arifin, K. (2018). Governance in Occupational Safety and Health in the Aspect of Indoor Air Quality in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 8(3), 236–247.

Copyright: © 2018 The Author(s)

Published by Human Resource Management Academic Research Society (www.hrmars.com)

This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen

at: <http://creativecommons.org/licences/by/4.0/legalcode>

Vol. 8, No. 3, March 2018, Pg. 236 - 247

<http://hrmars.com/index.php/pages/detail/IJARBSS>

JOURNAL HOMEPAGE

Full Terms & Conditions of access and use can be found at
<http://hrmars.com/index.php/pages/detail/publication-ethics>

Governance in Occupational Safety and Health in the Aspect of Indoor Air Quality in Malaysia

Sytty Mazian Mazlan¹, Muhammad Rizal Razman¹, Kadir Arifin²

¹ Research Centre for Sustainability Science and Governance (GSK), Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia.

² School of Social Development and Environment Studies (PPSPP), Faculty of Sciences Social and Humanities (FSSK), Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia.

Email: miss_mazian.mazlan@yahoo.com

Abstract

Occupational safety and health are a field that is often attracted by various parties and organizations and is a modern social movement. The issue of the deterioration of indoor air quality in the work environment is one of the environmental issues. However, when discussing the issue of indoor air quality in terms of occupational safety and health in Malaysia, most of the studies conducted were more focused on the aftermath of indoor air quality and steps its escort to ensure internal air quality problems in the work environment are more temporary. The implementation of governance in occupational safety and health in the aspects of indoor air quality in Malaysia is divided into two, through legal and non-legal methods. Based on the basic beliefs of sustainability governance there are two main approaches namely holistic approach and reductionism. Thus, this study discusses whether the implementation of governance in occupational safety and health governance in the aspects of indoor air quality is influenced by one or a combination of holistic approaches and reductionism based on the analysis of relevant documents. The findings show that each approach has its own payoff and importance in ensuring the implementation of governance occupational safety and health with the involvement of various and structured stakeholders.

Keywords: Occupational Safety and Health, Sustainability Governance, Holistic, Reductionism, Indoor Air Quality

Introduction

Occupational safety and health are a branch in safeguarding the safety, health and welfare of workers and people in workplaces. It is aligned in the current flow of industrialized flow of industrialization that relates to the safety and health aspects of workers especially in factories, city mines (Rosner & Markowitz, 1987). Improvements in product development, machinery or technology development have created hazards or disasters to workers in terms of

safety, health and environment (Kadir, 2004). However, at the very beginning of global industrial development, the awareness of the safety and health of workers was very low because at that time most of the country's focus, institution parties, companies and employers only concentrated on raising profits alone. The workers at that time were as intermediaries in the production of an output alone. At the same time, the use and exploitation of natural resources is used to the maximum possible.

In Malaysia, the focus on workers' safety and health is from early 1878 (Manimaran, 2002). Prior to the 1980s, only the personnel department handled employee-related matters such as selection and file systems. The task of this section is in a small and structural form where routine tasks without the need for renewal and innovation in carrying out tasks. However, the ever changing organizational environment from day to day in line with the development era has led to human resource management has become important in every organization known as Human Resource Management Department located under the Ministry of Human Resources. This department is responsible for all matters involving employees and organizational management including occupational safety and health issues in the industry and human resource management has become an important element for all large companies and small and medium industries (Junaidi, 2004).

Occupational safety and health in the aspect of indoor air quality in ensuring safe and healthy working environment in Malaysia has been getting attention from year to year since the awareness of clean air and safe inner space throughout the work area and complaints received by employers and employees and studies Researchers on the deterioration of indoor air quality. Internal air quality is indoor air quality that can lead to comfort, health (Yau et al. 2012) and productivity of workers (Wargoeki, 2000).

Indoor air quality is a term that refers to the indoor air quality, surroundings and structures of the building and it also relates to the health and comfort of the person in the building (Latif et al. 2009) and is also defined as the air properties as a whole and give a health and wellness effect to someone. As people spend around 87 percent in indoor buildings such as homes, offices, restaurants and others (Yang & Heinsohn, 2009). Therefore, the US Environmental Protection Agency (USEPA) recommends indoor air quality issues as one of the environmental risks, especially in distressed buildings (Goyal & Khare, 2011).

However, when discussing the issue of indoor air quality in terms of occupational safety and health in Malaysia, most of the studies conducted were more focused on the aftermath of indoor air quality (Bandli & Gunter, 2006, Lippmann, 1990, Spengler & Qingyan, 2000) and steps its escort to ensure internal air quality problems in the work environment are more temporary. This can be seen in the case of 2004, a case of "fungal attack" occurred at the Sultan Ismail Hospital, Johor Bharu and resulted in the hospital being closed for 17 months to repair the situation and in 2008, this problem was diagnosed even though not seriously. This is particularly alarming to some in our country as the level of internal air quality control and the implementation of occupational safety and health are still low.

The deterioration of indoor air quality is a major concern for the business building, school, building managers, tenants and workers as it can affect the health, comfort, well-being and productivity of building residents (OSHA, 2011). Additionally, occupational safety and health management also recognizes the deteriorating internal air quality can have harmful effects on the health of workers.

According to Ongwande et al. (2011), if net air intake is reduced in an internal environment it can cause indoor air quality to deteriorate due to increased pollutant emissions and thereby negatively impact people inside the building. In addition, the failure of owners and building operators in responding promptly to resolving internal air quality problems can effectively lead to some health effects to building residents. Air movement from outdoor environments that enters the indoor environment can also cause indoor air quality deterioration and at the same time cause changes in the physical environment factors of the indoor environment that induce an increase in existing internal pollutants (USEPA, 2010).

In order to create a sustainable work environment in the context of governance in occupational safety and health in the aspect of indoor air quality there are two methods that are used is through legal and non-legislation. Implementation of legislation and non-legislation is one of the most important methods in managing a good, efficient environment and also addressing environmental pollution problems that can disturb the environment and human habitat (Razman et al. 2009) Environmental management through legal methods comprises private law and public law and environmental management through non-legislation consisting of guidelines, codes of practice, permissions, planning, public policy, education, research and development (Jamaluddin et al. 2001).

Sustainability Governance

Sustainability governance defines critical interaction at various levels either locally, nationally and globally in formal or informal interactions in enacting and implementing policies in response to environmental and input from the public to achieve development sustainable environment (Razman et al. 2009). Sustainable governance shows how changes in understanding environmental issues have led to the movement of local opinion to recognize larger and more complex scale. This move leads to an increase in the diversity, specificity and complexity of the initiative (Meadowcroft 2002). Innovation is being done on layered structures as well as on existing processes, rather than replacing existing stakeholder stakeholders (Meadowcroft, 2002). Furthermore, through a comprehensive approach and the involvement of various institutions in addressing environmental issues that can be undertaken on both scales whether smaller or larger (Lefferty & Meadowcroft, 2000).

When discussing occupational safety and health management in terms of indoor air quality involves the involvement of various stakeholders. These stakeholders are structured organizations that have hierarchical processes and their own streams and perceptions from stakeholders involved and comprise several levels and institutions namely the government, statutory bodies of the industry sector, society, individuals and non-governmental organizations (NGO). Participation and participation of this diversity show important interactions in the decision-making process and also have the power to change the relationship structure as well as the approaches implemented in occupational safety and health management by the government through more strategic and dynamic management based on established objectives (Pearce & Robinson, 1991). This is known as sustainability governance which is a multidisciplinary and transdisciplinary discipline (Komiya & Takeuchi, 2006).

Holistic Approach

A holistic approach refers to an approach in understanding a management through a structured organizational structure with the involvement of various stakeholders in the management of occupational safety and health in terms of indoor air quality. The organizational structure formed in occupational safety and health management is a hierarchical process and has a distinctive perspective as there is a diversity of institutional participation which together in achieving the same objectives in providing a sustainable work environment based on one common objective (Pearce & Robinson, 1991).

In order to achieve harmony among the participating institutions, leadership skills, feedback and management of internal systems are critical in evaluating internal strengths and weaknesses in the involvement of institutions and subsequently taking corrective actions to create harmony (Freedman, 1995). Awareness in keeping and meeting the needs of the institutions is an important focus on the government. This is because each institution has its own specific targets and interests that need to be taken care of, especially the industry and society such as employers in calculating profits in every activity carried out and at the same time ensuring the safety and health of the workers are maintained.

At the same time, this approach also encompasses the implementation of legislation and systems relating to occupational safety and health in the aspect of internal air quality resulting from the concerns of high-level stakeholders namely the government who is responsible in regulating the law and establishing a security management system and occupational health that require the involvement of various stakeholders.

Reductionism Approach

The approach to reductionism focuses on the fundamental principles of science in describing the work environment or finding causes that lead to the deterioration of indoor air quality in occupational safety and health management. According to studies, most individuals spend almost 80-90% of the building including workers (Herberger et al. 2010), so the working environment is an important factor in ensuring the safety, health and productivity of employees are always in good shape.

Productivity of an employee depends on the health aspect as well as the healthy work space environment. This is because a good working space has a scientific connection with indoor temperature, relative humidity, ventilation rate and also the presence of internal pollutants (OSHA, 2011). Examples of indoor air pollutants are physical, biological, chemical and stress hazards (Murray & Lopez, 1997). Relatively high temperatures and humidity can affect not only the sharpness of the mentality and disturb the feeling of subjective work but also contribute to the increase in internal air pollutants that can cause health problems amongst employees (Burroughs, 2004).

In addition, this approach concerns the aspects of knowledge and experience gained by stakeholders in the management of occupational safety and health in terms of indoor air quality. Aspects of knowledge are the expertise found in an organizational body while the experience aspect is based on the last study to find out the easy relationship and response in addressing the problem, focus and needs of an organization in creating a sustainable working environment (Scott & Hughes, 1995).

The enforcement aspect is an act imposed on stakeholders who are found guilty of violating the legislation (Razman, 2009; Hussin, 1998), especially legislation relating to occupational safety and health. The amount of penalties and types of penalties is different for offenders in accordance with the hierarchical structure in the management of occupational safety and health as provided in the statutory law (Razman 2009; Koh et al. 1989).

Method

The early stages of this study involved the collection of basic information and secondary data that have been published. It is important in responding to a research problem that is whether the successful management of a sustainable work environment based on legislative and non-legislative safety and occupational health in the aspect of indoor air quality is influenced by one or the combination of holistic and reductionism approaches. Next is the data collection section. The selected documents are occupational safety and health studies related to indoor air quality and there are also documents that are procedures performed by a party to address internal air quality problems in the work environment. All selected documents can illustrate how the implementation of legislative and non-legislative occupational safety and health in addressing the problem of indoor air quality deterioration.

The main documents in this study are: -

1. Industry Code of Practice on Indoor Air Quality (ICOP IAQ)2010
2. Occupational Safety and Health Act 1994 (Act 514)
3. Factories and Machinery Act 1967 (Act 139)
4. Occupational Safety and Health Management System (OSHMS)

Data Analysis

The above mentioned documents were analyzed using Nvivo version 11 software. By using the software, researchers have built and tested coding schemes. This action should be evaluated for the reliability of the lecturers who are specialized in qualitative research at Universiti Kebangsaan Malaysia (UKM). The analysis of this theme is based on the reliability index of Cohen Kappa (Cohen, 1960).

Result

The entire analysis of this document contains 7 themes and 23 sub themes to illustrate the factors that influence the successful management of a sustainable working environment. The overall theme and sub theme illustrate the approaches that influence the success of sustainable work management through document analysis as shown in Figure 1.

Table 1 Overall Theme and Sub Theme in Document Analyse

Theme	Sub Theme
HOLISTIC APPROACH	
Community	Authorities, Industries, Society
Management	Legal, Small legislation
System	Mechanical Ventilation and Air Conditioning System, Occupational Safety and Health Management Systems,
REDUKTIONISME APPROACH	
Mechanistic	Work environment
Knowledge	Employers, Employees, Designers, Manufactures, Suppliers
Experience	Employers, Employees, Designers, Manufactures, Suppliers
Enforcement	Investigation, Compound, Prosecution, Appeals, Court

Source: Document Analyse 2016

In the analysis of documents made on four documents comprising legislation and non-legislation, it was found that a total of 1081 paragraphs (para) illustrated the overall approaches studied. The most are those who describe a holistic approach of 546 people. For the approach of reductionism shows 535 para.

Dependency in Holistic Approach

Document analysis found that there was a dependence on the holistic approach as shown in Table 2. A total of 24 para in the theme of the community found that there was a dependency on the management theme and 28 for the theme of the system. For management themes, reliance on the theme of community is as many as 35 para and 1 para for system theme. While for the theme of the system there are 31 dependencies with community themes and 1 for management theme.

Table 2. The frequency of the paragraph passages (para) shows dependence in a holistic approach through document analysis

Holistic Approach	Community	Management	System
Community	-	24	28
Management	35	-	1
System	31	1	-

Source: Document analyse 2016

Dependency in Reductionism Approach

Documents analysis found that there was dependence on the reductionism approach as shown in Table 3. A total of 27 para in the mechanistic theme found the reliance on the theme

of knowledge, 7 elements for experience themes and 9 for enforcement themes. For the theme of knowledge there are 20 dependents with a mechanistic theme, 10 para themes of experience. While for the theme of experience there are 40 dependents with a mechanistic theme, 35 with the theme of knowledge and 29 with the theme of enforcement. Finally, as one of the dependencies with a mechanistic theme, 4 with the theme of knowledge, 4 with the theme of experience.

Jadual 3 The frequency of the paragraph passages (para) shows dependence in a reductionism approach through document analysis

Reductionism Approach	Mechanistic	Knowlegde	Experience	Enforcement
Mechanistic	-	27	7	9
Knowledge	20	-	10	-
Experience	40	35	-	29
Enforcement	1	2	4	-

Source: Document analyse 2016

Discussion

Holisitic approach

Based on the findings from document analysis on holistic approaches, this approach consists of 3 themes with 7 sub themes. The main theme of a holistic approach is community, management and systems. While the theme covers the government, industries, society, legislation, small legislation, the Mechanical Ventilation and Air Conditioning System (MVAC) and the Occupational Safety and Health Management System (OSHMS). All themes and sub themes for holistic approaches as in Table 1.

Based on the results of the document analysis found that the factors that most affected the governance in occupational safety and health in terms of indoor air quality were community factors ranging from involvement of stakeholders. The government as a leader and catalyst in legislative and non-legislative implementation governance in occupational safety and health in terms of indoor air quality. Based on the documentary evaluation findings only involve the involvement of government, industry and society. This indicates that the government, Department of Occupational Safety and Health (DOSHS), is a stakeholder with a stable power in influencing other stakeholder (industry and society) as well as regulating occupational safety and health legislation in order to create a sustainable environmental management environment.

In addition, although the frequency of the number of dependent management themes with system themes based on the results of document analysis and interviews is low but in the implementation of a system, especially OSHMS by an organization is guided by two major legislations namely the Occupational Safety and Health Act 1994 and the Act Factories and Machinery 1967. Hence, the frequency of low numbers does not indicate that management themes with system themes are not important in governance in occupational safety and health in the aspect of indoor air quality but it also indicates that the implementation of Occupational Safety and Health OSHMS must be based on legislation and must be adhered to by organizations in Malaysia.

While OSHMS does not have the specificity in the indoor air quality aspect but this system requires the most important legal requirement of Section 15 AKKP 1994, whereby each employer has provided a safe and healthy working environment to its employees depending on the type of activity, process and service provided by the organization. This suggests that the deterioration of indoor air quality in the work environment is also an element that the employer has to pay attention to its employees in implementing this OSHMS.

The MVAC is a major system of attention in ICOP IAQ 2010 in determining the indoor air quality of a closed building. On the contrary, the involvement of various stakeholders has their respective roles either in the implementation of legislation as well as systems related to occupational safety and health in ensuring a sustainable work environment.

Reductionism Approach

In establishing a safe and healthy working environment, the control of measurement of physical, chemical and biological parameters in a building must be monitored if the occupants of the building start showing the experienced in Sick Building Syndrome (SBS) will start to have health and comfort in the building. This is a good working environment can be determined by ensuring that these three parameters are at a good level as recommended by the DOSH and safe and healthy working environment and can increase employee productivity within an organization. This can be explained through the mechanistic factors.

The knowledge factor of each stakeholder involved in the implementation of governance in occupational safety and health in ensuring a sustainable working environment is an important factor. This is due to the fact that DOSH's superior knowledge in conducting research, awareness programs, seminars, modules, standards-related standards of occupational safety and health is a reference material for industry, employers and employees. Knowledge from industry comprising manufacturers, suppliers and designers in preparing and designing materials and plants can also assist employers. While employers' knowledge through activities, processes and services carried out in a job can help employers to provide preventive measures and control measures to their employees, especially to meet the legal requirements and OSHMS.

At the same time, the knowledge factor from the employer can also assist the National Institute Occupational Safety and Health (NIOSH) in providing employees and technology training appropriate to the organization's activities, processes, and services. Additionally, workers who have the knowledge and awareness of the effects of the awareness program provided will help the employees be more cautious during their work activities.

Furthermore, factors such as the experience of stakeholder diversity are the highest frequencies of both the analysis of documents. This clearly demonstrates that many factors influence the performance of governance in occupational safety and health governance in the aspect of indoor air quality. Based on the experiences factors of a stakeholder can make improvements especially meet the requirements of documents in the implementation of OSHMS.

Awareness levels for employers and employees can also be enhanced based on these experience factors such as the incidence of illnesses faced by workers impacting on the issue of indoor air quality decline as well as the culture brought about by employees who are not concerned about the safety and health of themselves as well as the workers who others. On behalf of the government, the outcome of an investigation into internal air quality deterioration in Malaysia has provided an overview and appropriate control measures in resolving new cases.

Conclusion

Based on the assessments made by the analysis of the document on the strength of factors affecting the success of sustainable environmental governance, both approaches play a key role.

The main factor is the strength of the community which consists of various stakeholders under the government under the DOSH, the Human Resources Ministry assisted by the NIOSH. The influence of power based on the power of authority from these superiors (Edward, 1979; Salaman, 1979 and Junaidi, 2004) can define strategic directions that define objectives in key plans in creating a sustainable work environment.

Subsequently, the assessment made shows that every factor in both approaches has its own strengths and interdependencies which are supported by the strength of the affected community as described above. Organizational innovations and cultures need to be implemented on the existing stakeholder structures instead of supplying stakeholders in achieving its objectives (Meadowcroft, 2002) to ensure a sustainable work environment based on the basic principles of sustainability governance.

Finally, the results of this study also found that the beginning of the idea in an effort to create a sustainable working environment is based on scientific information adapted by standards from abroad and adapted and subsequently developed as a reference in Malaysia. This idea is a trigger for the implementation of occupational safety and health governance in terms of indoor air quality.

However, the idea of this trigger has changed to the operational vision of which occupational safety and health governance in the aspect of indoor air quality is influenced by factors that depend on both holistic and reductionism approaches. The findings of this study show that these operating ideas are influenced by political ideas and ideas of triggers based on the idea of scientific information.

Acknowledgements

The authors gratefully acknowledge financial support from the Ministry of Higher Education, Malaysia. In addition, we wish thanks to the Department of Occupational Safety and Health (DOSH), Malaysia and National Institute Occupational Safety and Health (NIOSH), Malaysia on their cooperation to give the information and data in this research.

References

- Bandli, B. R., & Gunter, M. E. (2006). A review of scientific literature examining the mining history, geology, mineralogy and amphibole asbestos health effects of the rainy Creek igneous complex, Libby, Montana, USA. *Inhalation Toxicology*, 18 (12), 949-962.
- Burroughs, H. E. (2004). *Managing Indoor Air Quality*. Third ed. United States of America: Fairmont Press, Inc.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20(1), 37-46.
- Edward, R. (1979). *Contested terrain*. New York: Basic Books
- Freedman, A. M. (1995). Why managers don't manage. Eds: Ritvo, R.A., Litwin, A.H. & Butler, L. *Managing in the age of change*. New York: Irwin Professional Publishing, 3-13.

- Goyal, R., & Khare, M. (2011). Indoor air quality modeling for PM10, PM2.5, and PM 1.0 naturally ventilated classrooms of an urban Indian School Building. *Environmental Monitoring Assessment*, 176 (1), 501-516.
- Herberger, H., Herold, M., Ulmer, H., Burdack-Freitag, F., & Mayer, F. (2010). Detection of human effluents by a MOS gas sensor in correlation to VOC quantification by GC/MS *SciencesDirect*, 45(11), 2430-2439.
- Md. Jahi, J. (2001). *Dari Stockholm ke Rio de Janeiro dan seterusnya: Pengurusan alam sekitar di Malaysia*. Bangi: Penerbit Universiti Kebangsaan Malaysia.
- Junaidi, A. B. (2004). Amalan Pengurusan Sumber Manusia Dalam Pengurusan Keselamatan Industri Di Malaysia. *Jurnal Komunikasi*, 20(1), 95-115
- Kadir, A. (2004). Integrasi Siri Sistem Pengurusan Kualiti (ISO 9001:2000), Siri Sistem Pengurusan Persekitaran (ISO 14001:1996) dan Siri Sistem Pengurusan Keselamatan dan Kesihatan Pekerjaan (OHSAS 18001:1999): Ke arah Perlaksanaan dan Pembentukannya di Malaysia. Tesis Dr. Fal. Universiti Kebangsaan Malaysia.
- Koh, K. L., Clarkson, C. M. V., & Morgan, N. A. (1989). Criminal Law in Singapore and Malaysia. Kuala Lumpur: *Malayan Law Journal*.
- Komiyama, H., & Takeuchi, K. (2006). Visualizing Relationship Between Drivers on Environmental Change and Pressures on Land-Based Ecosystems. *Research Gate*, 1(1), 1-6.
- Lafferty, W., & Meadowcroft, J. (2000). *Implementing Sustainability Development*. Oxford: Oxford University Press.
- Latif, M. T., Othman, M. R., Kim, C. L., Murayadi, S. A., & Sahaimi, K. N. A. (2009). Composition of Household dust in semi-urban areas in Malaysia. *Indoor and Built Environment* 18 (2), 155-161.
- Lippmann, M. (1990) Man-made minerals fibers (MMMF): Human exposures and health risk assessment. *Toxicology and Industrial Health*, 6 (2), 1-10.
- Manimaran, G. (2002). Mengurus tempat kerja yang selamat. *Utusan Malaysia*, 10 Julai: 22.
- Meadowcroft, J. (2002). Politics and scale: Some implications for environmental governance. *Landscape and urban planning*, 61, 169-179.
- Razman, M. R. A., Hadi, S., Jahi, J. M., Shah, H. H., Sani, S., Yusoff, G. (2009). A study on negotiation of the Montreal Protocol: Focusing on global environmental governance specially on global forum of the United Nations Environmental Programme. *Journal of Food, Agriculture and Environment*, 7(3-4), 832-836.
- Murray, C. J. L., & Lopez, A. (1997). Global mortality, disability and the contribution of risk factors: Global Burden of Disease Study. *Lancet*, 349, 1436-1442.
- OSHA. (2011). *Indoor Air Quality in Commercial and Institutional Buildings*. United State: Occupational Safety and Health Administration.
- Ongwandee, M., Moonrinta, R., Panyametheekul, S., Tangbanluekal, C., & Morrison, G. (2011). Investigation of volatile organic compounds in office buildings in Bangkok, Thailand: Concentrations, sources and occupant symptoms. *Buidings and Environment*, 46 (7), 1512-1522.
- Pearce, J. A., & Robinson, R. B. (1991). *Strategic management: Formulation, implementation and control*. Boston: Irwin.
- Lippmann, M. (1990). Man-made minerals fibers (MMMF): Human exposures and health risk assessment. *Toxicology and Industrial Health*, 6 (2), 1-10.
- Rosner, D., & Markowitz, G. (1987). *Dying for Work. Worker Safety and Health in Twenty Century America*. Bloomington: Indiana University Press.

- Salaman, G. (1979). *Work organizations: resistance and control*. London: Longman.
- Scott, A., & Hughes, S. (1995). Developing the whole person in organizations. Eds: Ritvo, R.A., Litwin, A.H. & Butler, L. *Managing in the age of change*. New York: Irwin Professional Publishing, 158 -163.
- Spengler, J. D., & Qingyan, C. (2000). Indoor air quality factors in designing a healthy building. *Energy and Environment*, 25 (1), 567-600.
- USEPA. (2010). An Introduction to Indoor Air Quality (IAQ). edited by Agency, U.S.E.P. United States.
- Wargocki, P., Wyon, D. P., & Fanger, P. O. (2000). Productivity is Affected by the Air Quality in Offices. *Proceeding of Health Buidings*, 1, 635-640.
- Yang, C. H., & Heinsohn, P. A. (2009). Sampling and analysis of indoor microorganism. A John Wiley and Sons. First Edition. Inc. Publisher.
- Yau, Y. H., Chew, B. T., & Saifullah, A. Z. A. (2012). Studies on the indoor air quality of Pharmaceutical laboratories in Malaysia. *International of Sustainable Built Environment*, 1(1),110-124.