Occupational Safety Management Practice in the University Residential College: A Study of its Physical Aspects Through Audit Programme

[1]Kadir Arifin, [1]Kadaruddin Aiyub, [1]Shaharuddin Ahmad, [1]Z.M. Lukman,
[1]Azahan Awang, [1]Azmi Aziz, [2]Muhammad Rizal Razman and [3]Samsu Adabi Mamat
[1]Faculty of Social Sciences and Humanities,
School of Social, Development and Environmental Studies, [2]Faculty of Science and Technology,
[3]Ungku Omar College, University Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor, Malaysia

Abstract: The management have to make sure the safety of the university's residential colleges at the highest level. Health and safety audit should be done frequently in order to reduce risks to staffs and residents in college. The implementation of health and safety audit in college also has to take into consideration the programme aspects like seminar, campaign and training. This will ensure the safety programme in college to be more effective and comprehensive. Lastly, the safety audit can be used as a monitoring tool as well as reducing the accidents cases in the workplace.

Key words: Health and safety, college, audit, physical aspects, residental block, college stairs

INTRODUCTION

Health and safety audit is important in reducing risks to employees and users if there is anything happens to the workplace or building affecting their life (Arifin *et al.*, 2009a). The audit or risk evaluation process should be done frequently and it must involve all activities in organization as to prepare actions or procedures that need to be taken to protect employees, users and the workplace or building itself (Dimond, 2002). According to ISO-10011-1, audit means a systematic evaluation process in determining the quality of an activity and the organization whether they are complying or not with the decision and regulation implemented (Razman *et al.*, 2009; Arifin *et al.*, 2008). Rainer *et al.* (2000) defines audit as an assessment process covering the aspect of analysing, testing and validating on method and procedure used in the organization in terms of its compliance with the standard regulation and policy. Almost all the time, the process collects the health and safety information to evaluate its ability and effectiveness (Gay and New, 1999). There are many researches on health and safety at the workplace. As for example, Auty (1999) looking at the auditing health and safety management system from insurer view. Grote and Kunzler (2000) did their research on safety culture in management at workplace among employees. Shelmerdine and Williams (2003) explaining the important of health and safety audit

in organization and how to audit health services and to manage health risk. Waclawski (2009) did a study on a clinical auditing in hospital focusing on occupational health. Birkmire *et al.* (2007) mentioned that the effective auditing system is not only following the existence regulations per sec but also identifying areas and actions that need to be improved.

MATERIALS AND METHODS

Based on the earlier view, one research had been conducted in the Dato' Onn Residential College as to find out the safety level of the college, the risks and the compliance level of the safety services provided according to the standard regulations. The research aims is to formulate a safety indicators for the college. The process of developing college's safety indicator can be summarised as: analysing the existence safety indicators using by the National Institute of Occupational Safety and Health and Department of Occupational Safety and Health Malaysia (DSH, 2007).

The indicators suggested by the three agencies have been customized to tailor with the need and environment of the residential college. In other words, only related indicators were selected and used to develop college's safety indicators. A few other suitable indicators also being included to develop college's safety indicators and to ensure all technical aspects of safety and health in the

Corresponding Author: Kadir Arifin, Faculty of Social Sciences and Humanities,
School of Social Development and Environmental Studies, University Kebangsaan Malaysia,
43600 UKM, Bangi, Selangor, Malaysia

Table 1: Residential college safety level indicator based on percentage

Level	Indicators	Percentage (%)
1	Very safe	75-100
2	Safe	51-74
3	Less safe	50
4	Unsafe	1-49

Modified from DSH (2007)

college are considered. The college's safety indicators have been presented in an audit form and named as the Residential College Safety Checklist.

The college has been divided into several sections and inspected of its safety level by using the Residential College Safety Checklist. All data collected from audit or checklist form are raw data. It has been analyzed cumulatively in the form of frequency and percentage. The total score for every section has been calculated by using the formula: the percentage has been used in determining the college safety level and portraying the significant role of employer in evaluating and preventing risk at workplace (Table 1):

$$\Sigma = \frac{\text{Score achieved}}{\text{Maximum score}} \times 100\%$$

RESULTS AND DISCUSSION

College office: The study shows that the Dato' Onn college office has a score of 187 points (85.5%) from the maximum score of 220 points (Table 2). Based on the Table 1, the safety level of the section is very safe. However, the management needs to focus on two parts in order to improve the safety level of the office i.e., floor plan to show the exit pathway and safety policy which is not displayed for office users.

Administration blocks: There are three rooms inspected for their safety level i.e., the meeting room, the college students' committee room and the multimedia and resources room. The results can be shown.

Meeting room: From Table 3, the score percentage of meeting room is 75.5% showing that the room is very safe in terms of its safety level.

However, the management should provide the floor and the exit pathway plan to help the users taking right procedures while emergency.

College students' committee room: The score percentage of college students' committee room is 70.0%. The result shows that the safety level of the room is safe. The score obtained by very component is considered high showing that the management has implemented a good safety procedure practice (Table 4).

Table 2: Safety indicators in the college office

Criterion	Maximum scores	Actual scores
Floor	16	16.0
Roof	12	12.0
Stair	28	25.0
Exit pathway	16	16.0
Exit signboard	12	12.0
Layout (floor arrangement)	16	13.0
Fence/partition	8	7.0
Door	16	10.0
Illumination	12	12.0
Safety equipment	8	6.0
Fire extinguisher	32	30.0
Fire alarm	8	7.0
Host roll	8	7.0
Floor plan	12	6.0
Safety policy	16	8.0
Total of score	220	187.0
Percentage (%)	100	85.5

Table 3: Safety indicator for the college's meeting room

Criterion	Maximum scores	Actual scores
Floor	16	14.0
Roof	12	12.0
Exit pathway	16	14.0
Exit signboard	12	12.0
Layout (floor arrangement)	12	8.0
Door	16	10.0
Illumination	12	10.0
Safety equipment	8	4.0
Fire extinguisher	32	28.0
Fire alarm	8	4.0
Host roll	8	4.0
Floor plan	12	6.0
Safety policy	16	8.0
Total of score	180	142.0
Percentage (%)	100	75.5

Table 4: Safety indicator for the college students' committee room

Criterion	Maximum scores	Actual scores
Floor	16	12
Roof	12	9
Stair	28	24
Exit pathway	16	12
Exit signboard	12	8
Layout (floor arrangement)	12	10
Fence/partition	8	6
Door	16	9
Illumination	12	10
Safety equipment	8	4
Fire extinguisher	32	24
Fire alarm	8	6
Host roll	8	6
Floor plan	12	8
Safety policy	16	6
Total of score	220	154
Percentage (%)	100	70

Multimedia and resources room: The multimedia and resources room is in the category two in terms of its safety level as the score percentage of the room is 67.3% (Table 5). The component of safety policy and the floor plan has obtained lower score than other components. Both components have been displayed for the users but it is hard to understand especially by college residents. This can lead students to confusion during emergency.

Facilities in college: There are 5 sections of the college's facility had been inspected i.e., the photocopy room, the parking area, the playing courts, the prayer room and the cafe.

Photocopy room: From Table 6, the safety score obtained by the photocopy room is 161 points or 73.2%. It shows that the room is in a safe category. However, the management should improve the quality of lighting and safety equipments as well as provide fire alarm and host roll in this room. The illumination level of this room is not so good because the light bulbs have not been cleaned from dusts.

Parking area: The safety level of college's parking area is vey safe with the score percentage of 77.5% (Table 7). The section gets lower score on roof as it is easy to break and produce noisy sound during raining day.

Playing courts: There are four playing courts in the college for basketball, futsal, takraw and football. The college students are regularly used the courts for sport

and recreation. Table 8 shows that the courts are in a safe category as the safety score percentage obtained is 58.3%. Most of the courts' floor is patchy and uneven because of crack and broken. It will increase the risk of accident particularly during raining days. The management also need to give attention on lighting as the illumination level is not so good.

Table 5: Safety indicator for the college's multimedia and resources room

Criterion	Maximum scores	Actual scores
Floor	16	11.0
Roof	12	9.0
Stair	28	24.0
Exit pathway	16	10.0
Exit signboard	12	8.0
Layout (floor arrangement)	12	10.0
Fence/partition	8	6.0
Door	16	9.0
Illumination	12	10.0
Safety equipment	8	4.0
Fire extinguisher	32	24.0
Fire alarm	8	5.0
Host roll	8	6.0
Floor plan	12	6.0
Safety policy	16	6.0
Total of score	220	148.0
Percentage (%)	100	67.3

Table 6: Safety indicator for the college's photocopy room

Criterion	Maximum scores	Actual scores
Floor	16	12.0
Roof	12	9.0
Stair	28	24.0
Exit pathway	16	12.0
Exit signboard	12	8.0
Layout (floor arrangement)	16	10.0
Fence/partition	8	6.0
Door	16	9.0
Illumination	12	11.0
Safety equipment	8	4.0
Fire extinguisher	32	26.0
Fire alarm	8	6.0
Host roll	8	6.0
Floor plan	12	8.0
Safety policy	16	10.0
Total of score	220	161.0
Percentage (%)	100	73.2

Table 7: Safety indicator for the college's parking area

Criterion	Maximum scores	Actual scores
Floor	16	12.0
Roof	12	9.0
Illumination	12	10.0
Total of score	40	31.0
Percentage (%)	100	77.5

Table 8: Safety indicator for the college's playing courts

Criterion	Maximum scores	Actual scores
Floor	16	13.0
Roof	8	2.0
Illumination	12	6.0
Total of score	36	21.0
Percentage (%)	100	58.3

Table 9: Safety indicator for the college's prayer room

Criterion	Maximum scores	Actual scores
Floor	16	14.0
Roof	12	12.0
Stair	28	25.0
Exit pathway	16	12.0
Exit signboard	12	3.0
Layout (floor arrangement)	12	9.0
Door	16	12.0
Illumination	12	10.0
Safety equipment	8	2.0
Fire extinguisher	32	28.0
Fire alarm	8	8.0
Host roll	8	6.0
Floor plan	12	3.0
Safety policy	16	4.0
Total of score	208	148.0
Percentage (%)	100	71.1

Table 10: Safety indicator for the college's cafe area

Criterion	Maximum scores	Actual scores
Floor	16	16.0
Roof	12	11.0
Stair	28	25.0
Exit pathway	16	13.0
Exit signboard	12	8.0
Layout (floor arrangement)	12	9.0
Fence/partition	8	6.0
Door	16	10.0
Illumination	12	9.0
Safety equipment	8	5.0
Fire extinguisher	32	30.0
Fire alarm	8	8.0
Host roll	8	8.0
Floor plan	12	3.0
Safety policy	16	4.0
Foods	20	15.0
Cooking equipments	8	5.0
Total of score	244	185.0
Percentage (%)	100	75.8

Prayer room: The score percentage of college's prayer room is 71.1% showing that the safety level of this room is in a safe category (Table 9). The room obtained lower score on fire alarm, safety equipment and floor plan. The management should give more attention to this room by providing equal facilities with other sections or rooms.

Cafe: Cafe is one of the most important areas in college as it has been used by staff, student and visitor almost all the time. In this case, there are two other aspects have been included for safety audit a part from the building technical aspects i.e., foods and cooking equipment. From Table 10, cafe area is in a safe category in terms of its safety level as the score percentage obtained by this section is 75.8%. The management has practised a good safe procedure for this area. However, this area needs to be improved by providing a floor plan for emergency exit. From health point of view, the quality of foods and food preparation in this college needs to be

improved as well as a few number of students reported experience food poisoning and diarrhoea.

Students' residential blocks: Dato' Onn College has three types of residential for student i.e., hostel (5 blocks), pangsasiswa (4 blocks) and pangsarama (1 block).

Hostel: There are five hostel blocks in this college i.e., K2A-E. This research found that all the hostel blocks are in a safe category (Table 11).

However, there is no floor plan and safety policy displayed for students. The management should provide both aspects to improve the level of safety in this hostel.

Pangsasiswa: The pangsasiswa has four blocks of residential students i.e., K3C-F. The research found that the K3D and K3F blocks in a very safe category and the K3C and K3F blocks in a safe category (Table 12).

Table 11: Safety indicator for the college's hostel block

Criterion	Maximum scores	Actual scores				
		K2A	K2B	K2C	K2D	K2E
Floor	16	12.0	13.0	12.0	12.0	13.0
Roof	12	9.0	10.0	9.0	9.0	10.0
Stair	28	21.0	22.0	24.0	23.0	22.0
Exit pathway	16	12.0	12.0	13.0	13.0	12.0
Exit signboard	12	9.0	9.0	9.0	10.0	9.0
Layout (floor arrangement)	12	6.0	6.0	7.0	7.0	8.0
Fence/partition	8	6.0	6.0	6.0	6.0	7.0
Door	16	11.0	10.0	12.0	11.0	13.0
Illumination	12	9.0	9.0	10.0	9.0	10.0
Safety equipment	8	2.0	2.0	2.0	2.0	2.0
Fire extinguisher	32	27.0	26.0	29.0	28.0	30.0
Fire alarm	8	6.0	6.0	7.0	7.0	7.0
Host roll	8	6.0	6.0	5.0	5.0	6.0
Floor plan	12	3.0	3.0	3.0	3.0	3.0
Safety policy	16	4.0	4.0	4.0	4.0	4.0
Total of score	216	143.0	144.0	152.0	149.0	156.0
Percentage (%)	100	66.2	66.6	70.3	69.0	72.2

Table 12: Safety indicator for the college's pangsasiswa blocks

Criterion	Maximum scores	Actual scores			
		K3C	K3D	K3E	K3F
Floor	16	13.0	14.0	12.0	14.0
Roof	12	10.0	12.0	10.0	10.0
Stair	28	22.0	25.0	24.0	26.0
Exit pathway	16	16.0	14.0	13.0	15.0
Exit signboard	12	11.0	8.0	10.0	10.0
Layout (floor arrangement)	12	12.0	10.0	11.0	12.0
Fence/Partition	8	8.0	8.0	7.0	8.0
Door	16	4.0	9.0	8.0	7.0
Illumination	12	11.0	10.0	10.0	11.0
Safety equipment	8	2.0	2.0	2.0	4.0
Fire extinguisher	32	29.0	30.0	27.0	28.0
Fire alarm	8	8.0	8.0	8.0	8.0
Host roll	8	6.0	7.0	8.0	8.0
Floor plan	12	3.0	3.0	3.0	3.0
Safety policy	16	4.0	4.0	4.0	4.0
Total of score	216	159.0	164.0	157.0	168.0
Percentage (%)	100	73.6	75.9	72.6	77.7

Pangsarama: The pangsarama has only one block of residential students i.e., K3A. From Table 13, the block is in a safe category with the score percentage obtained is 70.8%. Like other blocks of students residential, there is no floor plan and safety policy displayed for students. The residents maybe know on what to do when the emergency happened. However, the management should provide both aspects as it is a part of safety procedures.

The comparison of safety level between sections in the Dato' Onn College: Table 14 shows the score percentage and average obtained by the college sections i.e., the college office, the administration block, the facilities and the students residential. Based on the average score, there are two sections in a category very safe in terms of

Table 13: Safety indicator for the college's pangsarama block (K3A)

Criterion	Maximum scores	Actual scores
Floor	16	13.0
Roof	12	10.0
Stair	28	25.0
Exit pathway	16	13.0
Exit signboard	12	9.0
Layout (floor arrangement)	12	6.0
Fence/partition	8	6.0
Door	16	10.0
Illumination	12	9.0
Safety equipment	8	6.0
Fire extinguisher	32	27.0
Fire alarm	8	6.0
Host roll	8	6.0
Floor plan	12	3.0
Safety policy	16	4.0
Total of score	216	153.0
Percentage (%)	100	70.8

Table 14: Safety level between sections in Dato' Onn College

Sections	Percentage (%)
College office	85.5
Average score	85.5
Administration block	
Meeting room	75.5
College students' committee room	70.0
Multimedia and resources room	67.3
Average score	70.9
Facilities	
Photocopy room	73.2
Parking area	77.5
Playing courts	58.3
Prayer room	71.1
Café	75.8
Average score	71.2
Residential	
K2A	66.2
K2B	66.6
K2C	70.3
K2D	69.0
K2E	72.2
K3A	70.8
K3C	73.6
K3D	75.9
K3E	72.6
K3F	77.7
Average score	71.5

safety level i.e., the college (85.5%) office and the administration block (79.4%). It shows that the safety procedure has been employed and practised effectively. However, the college facilities (72.8%) and the residential blocks (61.4%) are in a safe category. Both sections need to be improved in the future.

To improve the safety level of the college, the management also should provide first-aid box and its basic equipments. It should be placed near to other safety equipments for the residents to use during emergency. Host rolls and fire alarms should be monitored or inspected periodically and systematically in order to ensure the equipments in good condition and well function when it needed.

Some floors in the residential blocks are entrapped water particularly during raining days causing the floor to become slippery. The management should take immediate action to avoid any accident or injury happened to the residents. The floor arrangement in the residential and administration blocks also need to be more organized, tidy and coordinated. Anything that barren the doors should be removed to ensure the residents can go out or escape easily during emergency. The exit sign panels have to be lighted 24 h a day as a precaution for any emergency.

The research also found that the stairs in the residential college are too stiff. It is unsafe for students to use during night. The management should look into the stiffness level of stairs in the residential blocks as it has potential to increase the college's injury cases.

As well as, the management has to improve the illumination level of this college by changing the malfunctioning lamps and cleaning the dirty lamps. It is important for the management to improve the illumination level of the college to ensure the residents feel safe and sound while living in the college.

CONCLUSION

The management should play a key role in ensuring the safety quality of the college at the highest level (Arifin *et al.*, 2009b). The implementation of health and safety in the college also has to take into consideration the programme aspects like seminar, campaign and training. This will ensure the safety programme in college to be more effective and comprehensive. Lastly, the safety audit can be used as a monitoring tool as well as reducing the accidents cases in the workplace.

ACKNOWLEDGEMENT

REFERENCES

Arifin, K., M.R. Razman, J.M. Jahi and R. Zainon, 2008. Exploring the malaysian occupational safety and health act 1994 as a tool to control industrial accident at workplace. Environ. Res. J., 2: 159-166.

Arifin, K., J.M. Jahi, M.R. Razman, K. Aiyub and A. Awang, 2009a. OHSAS 18001 vs implementation cost: Risks that will be faced by the organisation management in Malaysia. Social Sci., 4: 332-339.

Arifin, K., K. Aiyub, A. Awang, J.M. Jahi and R. Iteng, 2009b. Implementation of integrated management system in Malaysia: The level of organization's understanding and awareness. Eur. J. Sci. Res., 31: 188-195.

Auty, A.R., 1999. Auditing health and safety management system: An insurer's view. Occup. Med., 49: 566-567.

Birkmire, J.C., J.R. Lay and M.C. McMahon, 2007. Keys to effective third party process safety audits. J. Hazard. Mater., 142: 574-581.

DSH, 2007. Checklist form: National occupational safety and health excellent award. Department of Safety and Health, Human Resources Ministry, Putrajaya.

Dimond, B., 2002. Risk assessment and management to ensure health and safety at work. Br. J. Nurs., 11: 1372-1374.

Gay, A.S. and N.H. New, 1999. Auditing health and safety management systems: A regulator's view. Occup. Med., 49: 471-473.

Grote, G. and C. Kunzler, 2000. Diagnosis of safety culture in safety management audits. Safety Sci., 34: 131-150.

Rainer, D., K. Kretchman and J. Cox, 2000. The power and value of environmental health and safety audits. Chem. Health Safety, 7: 20-25.

Razman, M.R., A.S. Hadi, J.M. Jahi, K. Arifin and K. Aiyub *et al.*, 2009. The legal approach on occupational safety, health and environmental management: Focusing on the law of private nuisance and International Labour Organisation (ILO) decent work agenda. Int. Business Manage., 3: 47-53.

Shelmerdine, L. and N. Williams, 2003. Occupational health management: An audit tool. Occup. Med., 53: 129-134.

Waclawski, E., 2009. Clinical audit in occupational health services. Occup. Med., 59: 74-75.