

**THE RELATIONSHIP BETWEEN CHEMICAL AWARENESS AND
CHEMICAL SAFETY AMONG THE FIRST YEAR STUDENTS OF
ENGINEERING CAMPUS, UNIVERSITI SAINS MALAYSIA**

By

FARIS BIN ABDULLAH

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Othman Yeop Abdullah
Graduate School of Business

Universiti Utara Malaysia

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ABSTRAK

Kajian ini dilakukan bertujuan untuk mengkaji korelasi antara kawalan risiko, kesedaran terhadap hazard-hazard kimia dan kesedaran terhadap risiko kimia dengan keselamatan kimia di kalangan pelajar-pelajar tahun pertama Kampus Kejuruteraan Universiti Sains Malaysia. Sejumlah 174 orang pelajar dari tiga bidang pengkhususan iaitu Kejuruteraan Kimia, Kejuruteraan Awam dan Kejuruteraan Bahan dan Sumber Mineral telah melengkapkan soal kaji selidik yang terdiri daripada 45 soalan. Korelasi signifikan antara kawalan risiko, kesedaran terhadap hazard-hazard kimia dan kesedaran terhadap risiko-risiko kimia dengan keselamatan kimia telah dikenalpasti. Namun, turut didapati bahawa tiada perbezaan yang signifikan dilaporkan oleh jantina lelaki dan wanita terhadap keselamatan kimia. Ini mungkin kerana kedua-dua jantina, lelaki dan perempuan mempunyai persepsi yang sama terhadap keselamatan kimia. Selain itu, tahap pendidikan oleh responden juga menunjukkan ada perbezaan signifikan terhadap keselamatan kimia. Didapati bahawa hubungan yang paling kuat adalah antara kawalan risiko dengan keselamatan kimia manakala hubungan yang paling lemah adalah antara kesedaran terhadap risiko kimia dengan keselamatan kimia. Oleh itu, program sedia ada yang berkaitan dengan keselamatan dan kesihatan pekerjaan di Kampus Kejuruteraan, Universiti Sains Malaysia adalah didapati efektif dan masih mempunyai ruang untuk penambahbaikan bagi meningkatkan tahap kesedaran di kalangan pelajar-pelajar tahun pertama. Langkah-langkah proaktif boleh diambil untuk meningkatkan dan menggalakkan tahap kesedaran.

ABSTRACT

The study conducted is meant to investigate the correlation between risk control, awareness on chemical hazards and awareness on chemical risks with chemical safety among first year students of Engineering Campus of Universiti Sains Malaysia. A total of 174 students from three programs of studies which are Chemical Engineering, Civil Engineering and Material and Mineral Resources Engineering completed the 45 item questionnaire. Significant correlation between risk control, awareness on chemical hazards and awareness on chemical risks with chemical safety were established. However, it is also found that there was no significant difference reported by male and female gender towards chemical safety. This is most probably both gender, male and female have same perception towards chemical safety. Other than that, it is also found that there is a significant different in education level of the respondents towards chemicals safety. It is discovered that the strongest association is between risk control and safety precautions with chemical safety while the weakest connection is between awareness on chemical risks with chemical safety. Therefore, the current programs of occupational safety and health in Engineering Campus, Universiti Sains Malaysia is found to be effective and there are still rooms for improvement in order to increase the awareness level among the first year students. Proactive measures can be taken in order to enhance and to boost the current level of awareness.

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LIST OF ABBREVIATIONS

UUM	Universiti Utara Malaysia
USM	Universiti Sains Malaysia
MOSH	Master of Science in Occupational Safety and Health
DOSH	Department of Occupational Safety and Health
USECHH	Use and Standards Exposure for Chemicals Hazardous to Health
SPSS	Statistical Packages for Social Sciences
ANOVA	Analysis of Variance

LIST OF APPENDICES

Appendix A: Questionnaire Set

CHAPTER 1

INTRODUCTION

1.0 BACKGROUND

Chemicals are widely used in our daily life. Either it is a non-toxic or toxic chemicals, chemicals play a very important role in our daily activities. However, the use of toxic chemicals is never to be taken lightly. Accidentally released, they are a potential and frequently an actual danger to human life and also to the environment. Chemicals can be divided into two categories. One is the natural type and the other is man-made chemicals. Man-made chemicals are used in all parts of daily life and provide essential benefits to modern societies. However, at the same time, multiuse chemicals may pose risks to human health and the environment that are not easily manageable (Wormuth, 2007).

Basically, chemicals may pose one or more of the following hazards: toxic, flammable, explosive, reactive and radioactive. To assess the potential hazard of a chemical, one should not just look at the inherent properties such as flammability, toxicity, reactivity or radioactivity of the chemical but also, the degree of exposure to the users. The latter would depend on many factors such as the chemical and physical properties, frequency of usage, amount of materials being used and manner in which such chemicals are handled (Ministry of Manpower, n.d).

In a workplace which deals with chemicals daily, it is common to see accident happens in place of work. However, this can only be prevented if the safety aspects of the chemicals are well taken care of and enough knowledge is provided to the workers. For example, workers and students of Universiti Sains Malaysia shall

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Likewise, the research study conducted is also important and useful to the workers of Engineering Campus, Universiti Sains Malaysia. The results can also be used to provide better risk control measure which can be used to reduce accident cases among students and workers in the chemical laboratories in the campus. This will eventually help to improve the working condition in the chemical laboratories and help the university to increase their output in order to provide better educational services.

5.6 CONCLUSION

From the study and as depicted in Table 4.18 and table 4.22, it is proven that there is a relationship among risk control and safety precautions, awareness on chemical hazards and awareness on chemical risks towards chemical safety. Other than that, it is also found that there is no significant difference among male and female in their perception towards chemical safety. This is probably because both of the genders have same perception about chemical safety. Other than that, there is a significant difference in education level with chemical safety. Therefore, the education level does have an influence on the level of chemical safety among the first year students of Engineering Campus, Universiti Sains Malaysia. For the correlation between independent variables with dependent variable, risk control, awareness on chemical risks and awareness on chemical hazards are positively correlated with chemical safety.

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