CENTRE OF STUDIES FORBUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA

A STUDY OF IMPACT OF CEMENT EXPOSURE TO HEALTH OF CONSTRUCTION WORKERS

ROS AINI BINTI RAZALI
(2013645098)

Academic Project submitted in partial fulfilment of the requirements for the degree of
Bachelor of Building Surveying (Hons)
Centre of Studies for Building Surveying
Faculty of Architecture, Planning & Surveying

March 2015

CENTRE OF STUDIES FOR BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA

A STUDY OF IMPACT OF CEMENT EXPOSURE TO HEALTH OF CONSTRUCTION WORKERS

"I hereby declare that this academic project is the result of my own research except for the quotation and summary which have been acknowledged"

Student's Name : **Ros Aini Binti Razali**

Signature :

UITM No. : **2013645098**

Date : **July 10th, 2015**

ABSTRACT

Rosenthal (2007), in booming economies from Asia to Eastern Europe, cement is literally the glue of progress. A binding agent that holds the other ingredients that together make concrete, cement is a crucial component in buildings and roads. Cement is a basic problem such as the chemical reaction that can creates it releases large amounts of carbon dioxide which can cause a pollution. Despite the pollution, people may not know from cement raw materials can affect to one's health and bodily harm.

This study will provide the level of workers awareness of working with cement that can adverse to their health and bodily harm in future. They may say experience taught them to be extra cautious in future to prevent and dangers or mistakes. However, at the end of the least of knowledge on the harm of cement can cause play an important role. From that, any incidents or hazardous can be void or lessen in construction site area.

Though the workers are not aware of these dangers coming from cement exposure they should be taught and guided on how to handle cement with right and safe. From a rough observation cement raw materials may seem fine and would not give such a huge impact to the person handling it. Unfortunately, it does not what it seems to be as it will affect to the person where it cannot be seen with a proper observation. This should be given a lot of concern from the responsible employer for the worker welfare.

Cement is not only harmful to the environment where it came from the cement dust that spread in the air. But, it also have an after effect once it has completely hardened and become a concrete. So, the beginning of these harm is come from the cement that people do not aware and this is getting a lot of concern from the industry sector. So, a proper education regarding cement hazard should be taken for the people that handling it and people that surrounded by it.

CHAPTER 1 - INTRODUCTION

1.0 Introduction

Concrete is an essential material. With a worldwide estimated consumption of between 21 and 31 billion tonnes of concrete in 2006, concrete is the second most consumed substance on earth after water. A world without concrete is almost inconceivable(Concrete, Asbl, & Sustainability, n.d.). concrete is not found in nature way we would find aluminium, nickel or iron. Concrete is formed from combining water, a special cement and rock("Concrete properties," n.d.)

A common mistake people make is to use the words cement and concrete interchangeably. It is important to remember that cement is only a component of concrete and concrete is the structural material. The cement used in concrete is not used as a building material because it would be too expensive and not as strong as concrete("fracture process zone in concrete - Google Groups," n.d.)

Portland cement is the most common type of cement in general usage. It is a basic ingredient of concrete, mortar, and plaster. English masonry worker Joseph Aspdin patented Portland cement in 1824(Department of Materials Science and Engineering, 2013). It was named because of the similarity of its colour to Portland limestone, quarried from the English isle of Portland and used extensively in London architecture (internachi, n.d). It consists of a mixture of oxides of calcium, silicon and aluminium. Portland cement and similar materials are made by heating limestone with clay and grinding this product called clinker with a source of sulfate(Association, 2008)

In modern cement kilns many advanced features are used to lower the fuel consumption per ton of clinker produced. Cement kilns are extremely large, complex, and inherently dusty industrial installations, and have emissions which must be controlled. Of the various ingredients used in concrete the cement is the most energetically expensive(Sector, 2005)

1.1 Research Problem

Based on the previous research, the cement industry is an energy intensive and significant contributor to climate change. The major environment health and safety issues associated with cement production are emissions to air and energy use (Mishra and Siddiqui, 2014). These emissions are not only deteriorating air quality but also degrading human health. Emissions have local and global environment impact resulting in global warming, ozone depletion, acid rain, biodiversity loss, reduced crop productivity etc (Pariyar. Das and Ferdous, 2013). There are many other sources of emissions from cement manufacturing, such as emissions from transportation equipment used in the mining and transporting raw and finished material, fuel used for electricity production for operating other process in cement manufacturing(EPA, 2010).

Other studies have shown that cement dust may enter into the systematic circulation and thereby reach the essentially all the organs of body and affects the different tissues including heart, liver, spleen, bone, muscle and hairs and ultimately affecting their micro-structure and physiological performance. Most of the studies have been previously attempted to evaluate the effects of cement dust exposure on the basis of spirometry or radiology or both(Suadi, 2004).

Other studies have shown that cement dust may enter into the systemic circulation and thereby reach the essentially all the organs of body and affects the different tissues including heart, liver, spleen, bone, muscles and hairs and ultimately affecting their micro-structure and physiological performance. Most of the studies have been previously attempted to evaluate the effects of cement dust exposure on the basis of spirometry or radiology, or both (Suadi, 2004)