UNIVERSITI TEKNOLOGI MARA

IDENTIFICATION THE EFFECT OF MODIFIED HEAT RADIATION MODEL TO HUMAN BASED ON FEYZIN DISASTER

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ABSTRACT

The broad definition of BLEVE is that any liquefied vapour can cause a BLEVE. It can occur on catastrophic failure of a vessel containing even high-pressure hot water in a steam boiler, which is above its atmospheric boiling temperature. Such explosions can be very destructive of plant and equipment because they give rise to fragments from the exploding vessel. Any mechanism of catastrophic vessel failure include an impact damage, exposure to fire, fatigue, corrosion, and flawed construction can give rise to a BLEVE. A BLEVE also can give rise to a fireball. In this thesis, we are identified the effect of thermal or heat radiation toward human in Feyzin, France. By giving the parameters such as the distance of the explosion sources, time exposure and heat radiation value, the percentage of lethality found. We are proposed seven models, which is Point Source Model by Hymes and Lees, Static Model by TNO and CCPS, Dynamic Model, Maurer Correlation Model and Pool Fire Model. We are comparing the nearest value approach the data report from French Ministry of the Environment (ARIA, 2008). Besides, this thesis also discussing the relation between heat radiation with distance and time exposure where contributes and affecting the probit value and lethality.

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CHAPTER ONE

INTRODUCTION

1.1 Research background

1.1.1 Define Major Accident Hazard

A Major Accident Hazard is very common things in the chemical industry in the world. Based on this cases, meaning and definition through that accident. For United Kingdom Legislation, fire, explosion and the emission of hazardous substance where involve fatality and a severe injury to an individual person or in a group and community. The other definition by Disaster Management Institute means the incident involves loss of life outside or inside the location then affect the injuries. That statement supported by Control of Major Accident Hazards Regulations (COMAH), where it stated that situation where occurs from the lack of control event on work operation. This condition will affect the health of workers, society, and environment. It also affect the economy of the Chemical Plant Industry (CPI).

There are many factors to cause the death especially when the incident happen will cause the extremely danger toward human. It can be fast and slow, but the effect will be happen. Respiratory system will influence by the emission of toxic substance. (Health and Safety Executive, 2016).In 2013, the resources and procedure such as environmental risk tolerableness from COMAH installation, where it produce the guideline to handle the major accident and finding the tendency of accident during the operation. It also provides threshold of primary hazard, based on severity and the frequency of the event. The damage given by three categories, which is damage to the area or designated location, ecosystem or populations of habitats in the area. Then, a damage to the construction building and last to the marine or aquatic environment (HSE, 2016).