

The control banding concepts health essay

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SCHOOL OF ARCHITECTURE, DESIGN AND CONSTRUCTION

**BSC (Hons) Occupational Safety, Health and Environment
Center: School of Business and Computer Science**

COURSE: Chemical Hazards.

RESEARCH TOPIC: Discussion on the use of Control Banding Techniques, such as COSHH Essentials in assessing and controlling the risk from exposure to hazardous substances in the workplace

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1. 0INTRODUCTION

During the late 1980s and early 1990s, an attempt to safeguard workers in the pharmaceutical industry, responsible for interacting with products for which there was insufficient toxicological data, resulted in the categorization of toxicological data and the association of these categories with control strategies (Zalk & Imel Nelson, 2008). This approach was termed control banding and allowed for a practical way of dealing with exposure when there was insufficient exposure and hazard data for chemicals (Tischer, et al., 2009). Additionally, the method introduced consistency across various risk assessors for the assessment of risks in the workplace and resulted in a simplified procedure for the assessment of risk (Money, 2003). Various models exist which employ the concept of control banding in workplace risk management (Jones & Mark, 2006). These control banding techniques are <https://assignbuster.com/the-control-banding-concepts-health-essay/>

inclusive of COSHH Essentials, Stoffenmanager and Einfaches Massnahmenkonzept (EMKG). These techniques are applied in various industries to assist with chemical hazard control in workplaces (Oldershaw, 2003). This research seeks to discuss control banding techniques and their use in the assessment and control of risks from exposure to hazardous substances in the workplace.

2. 0 CONTROL BANDING

Control Banding employs qualitative risk assessment in workplace hazard management (NIOSH, 2009); which takes into consideration the chemicals health hazard and the exposure potential (HSE, 2009). The hazard is then linked to a suite of control measures (NIOSH, 2009). Since the concept of hazard and risk are synonymous with the control banding approach these terms are briefly explored below.

2. 1 Chemical Hazard A hazard is the potential of an activity, process or substance to cause harm (Hughes & Ferrett, 2007). In control banding the prevalent hazards concerned are chemical hazards, which have the potential of resulting in ill health and discomfort for workers. These hazards include gases, mists, vapours and solids in the form of dust or fumes (Polg & Quinlan, 2002) and are usually determined by a simple measure of Toxicity (NIOSH, 2009).

2. 2 Risk Risk is the possibility that a hazard can cause harm (Cherie, et al., 2010). A risk assessment is a method which can be used in the identification of chemical hazards and determination of measures for controlling such hazards. It involves conducting an analysis of the workplace, identifying hazards and identifying control measures that will eliminate the hazards identified (Goetsch, 2005).

2. 3 Control Banding Concepts The logic of control banding

is based on exposure and hazard bands (Tischer, et al., 2009). The conceptual basis for Control Banding involves the stratification of chemical exposures based on common physical and chemical characteristics, the expected processes/handling and foreseen scenarios for exposure such as amount of chemical used and how workers would be exposed. This results in the determination of control strategies (NIOSH, 2009). The equation below relays the concept of control banding: Exposure potential + Health Hazard Qualitative risk assessment Control strategy (NIOSH, 2009)

2. 3. 1Exposure potential

Exposure influences the risk associated with handling a particular chemical substance (Polg & Quinlan, 2002) and its assessment helps to determine the risk potential of chemicals on human health (Jayjock, et al., 2007). Exposure potential- allocates chemical substances to bands based on physical properties such as dustiness or volatility. Substances are also allocated to bands based on scale of use (Brooke, 1998). The exposure potential is therefore based on the physical properties i. e. volatility of liquids, dustiness of solids, quantity in use and the relative hazard described in the R-phase (NIOSH, 2009). The physical property and quantity can be considered as determinants of exposure and are further described in appendix 2.

2. 3. 2Health hazard

For the hazard assessment, the model groups R-phrases into hazard bands and allocates them directly to target airborne concentration ranges (Tischer, et al., 2009). These R- phases (appendix 1) are numerical codes that are standardized and linked to information regarding health risks and toxic effects defined by the European Union. The Globally Harmonized System <https://assignbuster.com/the-control-banding-concepts-health-essay/>

(GHS), Chip R-phases offer an internationally recognised accepted means by which to indicate the nature of the toxicological hazard (Brooke, 1998). R-phases can also be sourced from: The National Chemical Emergency Center Lite Database, managed by HSE UK; the Hazardous substance database managed by the National Institute of Health and material safety data sheets (Jones & Mark, 2006).

2. 3. 3Qualitative Risk Assessment

Once the health hazard and the exposure potential are determined the process of combining these factors in the determination of a desired control method is termed the qualitative risk assessment (Brooke, 1998) .

2. 3. 4Control Approach

The control of hazards to health relies on the rationale of prevention and control; where applicable risks are eliminated or decreased to an acceptable level (Cherie, et al., 2010). Specific control measures are outlined in the hierarchy of control in which the effectiveness of the control measure increases as we move up the hierarchy. At the top of the hierarchy is elimination then substitution, these methods are followed by total enclosure, Technology, Segregation, partial enclosure, local and general ventilation and lastly personal protective equipment (Cherie, et al., 2010). As a result of the risk assessment conducted a control approach is identified and a control guidance sheet is provided which gives information on how to control a specific hazard (Garrod, et al., 2007). The basic control approaches stipulated by COSHH essentials are outlined in appendix 3 and an example of a control guidance sheet provided with the control approach is shown in appendix 4.

3. 0 CONTROL BANDING TECHNIQUES

Control banding techniques are existing models which employ the concept of control banding concepts in workplace risk management (Jones & Mark, 2006) Such Techniques include: COSHH Essentials (United Kingdom) Stoffenmanager (Netherlands) Chemical Control toolkit ILO Risk Potential Hierarchy (France) Einfaches Massnahmenkonzept Gefahrstoffe EMKG (Germany) Kjemi (Norway), Regetox & Sobane (Belgium) SQRA (Singapore) KCT (Korea) Some of the similarities and differences between COSHH Essentials, Stoffenmanager and the Chemical Control Toolkit are highlighted in the table below.

CONTROL BANDING TECHNIQUES

COSHH ESSENTIALS

STOFFENMANAGER

Chemical Control Toolkit

Developer UK health and Safety Executive Arboonie & TNO
 Chemistry International Labour Organisation
 Application Are internet-based tools which help small and medium-sized companies to handle hazardous substances with more care
 Hazard Assessment Group chemical compounds into hazard bands using R-Phases
 Group chemical compounds into hazard bands using R-Phases and the GHSE
 Exposure Hazard band is linked to a range of concentrations, termed exposure bands (appendix 2)
 More transparent exposure model. Estimates of exposure level are provided in addition to controls (appendix 5)
 Hazard band is linked to a range of concentrations, termed exposure bands (appendix 2)
 Risk Assessment Calculated based on hazard and exposure potential
 Control approaches General ventilation, engineering containment and special (appendix 3)
 Control at source, control

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direct area around source, modify controls in work area, control workers situation Number associated with, hazard, physical property and scale of use (appendix 6)(Marquart, et al., 2008)(Jones & Mark, 2006)

4. APPLICATION OF control banding in risk Assessment and control IN VAPOUR DEGREASING OPERATIONS.

Degreasing is the process whereby all greases and adherent material are removed from the surface of metal prior to undergoing electroplating, galvanising, tin plating, painting, varnishing and other surface protection processes. Vapour degreasing is one of the more common types of degreasing methods used in industry. Organic solvents are used in this process, such as: 1, 1, 1-trichloroethane, perchloroethylene, 1, 4-dioxane, isopropanol, Freon and methylene chloride (Jones & Mark, 2006). In the practical Application of COSHH essentials in vapour degreasing operations using the above-mentioned chemicals the following steps were taken:

Hazard group classification. The National Chemical Emergency Centers Lite database was utilized to source R-phases for the chemicals. Determination of the scale of use of the chemicals by calculating the volume of chemical as well as the duration and frequency of use of the chemicals. Data on operating temperatures along with boiling point / vapour pressure data was utilized to determine the volatility of the chemicals. The following information was entered into the to the COSHH essentials web tool: The process & tasks. The chemical / product name and the state of the chemical. The R-phase. The operating temperature and vapour pressure/ boiling point. The quantity of chemicals used, duration and frequency of the task. A control approach was recommended and a control guidance sheet was provided.

The control measures identified were Engineering and Special. (Jones & Mark, 2006)

5. 0 DISCUSSION

The original model of control banding established during the late 1980s and early 1990s seems to have evolved over the years and today control banding techniques such as COSHH essentials and Stoffenmanager are useful web based tools available free of charge to SMEs for the purpose of assisting with the determination of control methods for chemical hazards. The reviewed literature highlighted control banding as being a model of risk management in the workplace, which relies on data regarding the health hazard and the exposure potential of the chemical substance. Hazard and exposure data are utilized by the model to carry out a risk assessment and as a result of this assessment control methods are selected. An analysis of this control banding model has identified that in addition to providing a simple approach to hazard identification which enables the layman to conduct a qualitative risk assessment of chemical hazards in the workplace and determine relevant controls, the model also allows for the determination of management controls for chemicals with no Occupational Exposure Levels. Today control banding is successfully applied in industry to assist in the process of risk management as it recommends control measures that can be used for specific chemical hazards in the workplace.

6. 0 CONCLUSION

Control banding techniques are models are easy to use web based tools which assess the risk of chemical hazards and suggest appropriate control measures.(NUMBER OF WORDS = 1606)

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