

Comparative Content of Harmful Substances Contained In the Raw Material for Various Types of Printing Ink

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Abstract—Printing ink is one of the chemical industry that can be considered as a high risk industry due to it is a manufacture industry that involved all kinds of chemical materials. Thus, reliability data is important for the environmental safety in chemical industries. This study aims to compare the hazardous substances in raw materials for various printing ink production and propose the control measures in the ink production process. Three types of printing ink raw material i.e sheet-fed ink, cold-set ink and heat-set ink were considered in this study. This study was conducted by using a quantitative approaches. Data were collected through Material Safety Data Sheet (MSDS). Hazardous substances were identified from the Chemical Abstract Service (CAS) registry number of the raw materials. The result of the study shown that there are eight hazardous chemical substances in sheet-fed ink, cold-set ink and heat-set ink. The hazardous raw materials identified are mainly from the category of pigment, solvents and additives. From the study of the three types of ink printing, sheet-fed inks contain harmful chemicals that are the lowest of 33.27%, followed by thermal ink-set of 41.73% and cold-set inks of 61.86%. The results also shown that solvents are identified to contribute highest percentage as hazardous chemical substances in the printing ink, followed by additives and pigment. The results of the research shown that the production workers in the printing ink production process are at highly exposed to the hazards. The hierarchy of hazard control based on Department Occupational Safety and Health (DOSH) are proposed to control the hazardous chemical substances. The recommended control measures of possible hazards and risks based on the work activities are elimination, engineering control, administration control and personal protective equipment. This research is very important as it will enhance the precautions and safety knowledge of the employer and employee in handling the chemical substances in the printing ink production process.

Keywords- Safety and Health, Material Safety Data Sheet, Control Measures, Printing Ink, hazardous chemical substances