Analisis Kecelakaan Kerja Akibat Gas Beracun Dengan Menggunakan Metode Human Factors Analysis and Classification System di Tambang Bawah Tanah PT Freeport Indonesia = Analysis of Occupational Accident by Using Human Factors Analysis and Classification System in Underground Mine in PT Freeport Indonesia

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Abstrak

Tesis ini membahas studi kasus kecelakaan kerja akibat gas beracun di tambang bawah tanah PT Freeport Indonesia. Penelitian ini adalah penelitian desain deskriptif dan analisis dilakukan menggunakan metode Human Factor Analysis and Classification System (HFACS). Hasil penelitian mendapatkan bahwa terdapat 3 kasus kecelakaan akibat gas beracun di seluruh blok penambangan bawah tanah PTFI selama periode 2019-2022 dengan faktor risiko berasal dari tindakan tidak aman yang dikategorikan dalam Human Factor Analysis and Classification System (HFACS) yang terbagi menjadi empat yaitu organizational influences, unsafe leadership, precondition for unsafe acts, dan unsafe acts. Pada penelitian didapatkan hasil kegagalan sistem pertahanan pada pengaruh organisasi dalam kasus keracunan gas beracun di dominasi kategori resource management berjumlah 7 kegagalan (57%), faktor-faktor penyumbang kegagalan sistem management antara lain SOP, safety sign, Planned Inspection, PJO, Kebijakan K3, Database incident management system dan komunikasi saat penyampaian instruksi kerja. Tingkat Unsafe Supervision dalam kasus keracunan gas beracun berjumlah 11 kegagalan (55%) dengan dominasi oleh kategori Supervisory Violation, faktor-faktor penyumbang kegagalan sistem manajemen antara lain Neil George Checklist, Bulkhead Ventilation, Re-entry Checklist, Airlock Door, Vent bag, Supervisor Inspection, Alat Pelindung Diri, Pengawasan di lapangan, kelayakan sistem ventilasi di lokasi kerja, observasi pengawas ke pekerja terkait pengoperasian portable gas detector dan instruksi kerja. Tingkat Precondition for Unsafe Acts dalam kasus keracunan gas beracun didominasi kategori Personal Readiness berjumlah 8 kegagalan (38%), faktor-faktor penyumbang kegagalan sistem management antara lain peralatan blasting, PDA, pemahaman bahasa pengantar, emission test alat berat, ceklist stope vent dan ventilasi di area blasting, tidak mempedulikan alarm gas detector. Tingkat Unsafe Acts dalam kasus keracunan gas beracun berjumlah 11 kegagalan (46%) dari dominasi kategori Violation Routine, faktor-faktor penyumbang kegagalan sistem management antara lain chemical handling, prosedur yang tidak memadai, sign nilai ambang batas dalam satu bahasa, dumper vent terhalang lumpur dan vent bag rusak, fixed gas detector belum terkalibrasi dan tertutup lumpur, evaluasi pelatihan tidak konsisten dilakukan, barikade area, tidak mengikuti re-entry protocol. Perusahaan disarankan untuk melakukan evaluasi pada program penanganan kecelakaan akibat gas beracun.
.....This thesis discusses case studies of work accidents due to toxic gas in PT Freeport Indonesia's underground mine. This research is a descriptive design research and the analysis was carried out using the Human Factor Analysis and Classification System (HFACS) method. The results of the study found that there were 3 cases of accidents due to toxic gas in all PTFI underground mining blocks during the 2019-2022 period with risk factors originating from unsafe actions which were categorized in the Human Factor Analysis and Classification System (HFACS), which was divided into four, namely organizational influences, unsafe leadership, precondition for unsafe acts, and unsafe acts. In the study, the results of the

failure of the defense system on organizational influence in cases of poison gas poisoning were dominated by the category of resource management totaling 7 failures (57%), contributing factors to the failure of the management system including SOP, safety sign, Planned Inspection, PJO, K3 Policy, Database incident management system and communication when submitting work instructions. . The level of Unsafe Supervision in cases of poison gas poisoning amounted to 11 failures (55%) with dominance by the Supervisory Violation category, contributing factors to management system failure including the Neil George Checklist, Bulkhead Ventilation, Re-entry Checklist, Airlock Door, Vent bag, Supervisor Inspection, Personal Protective Equipment, Supervision in the field, feasibility of the ventilation system at the work site, supervisor's observation of workers regarding the operation of portable gas detectors and work instructions. The level of Precondition for Unsafe Acts in cases of poison gas poisoning was dominated by the Personal Readiness category with 8 failures (38%), contributing factors to management system failure including blasting equipment, PDA, understanding of the language of instruction, emission test of heavy equipment, stop vent checklist and ventilation in the blasting area, ignoring the gas detector alarm. The level of Unsafe Acts in cases of poison gas poisoning amounted to 11 failures (46%) from the dominance of the Violation Routine category, contributing factors to management system failure including chemical handling, inadequate procedures, sign threshold values ââin one language, dumper vents blocked by mud and the vent bag is damaged, the fixed gas detector has not been calibrated and is covered in mud, inconsistent training evaluations are carried out, barricaded areas, do not follow the re-entry protocol. Companies are advised to evaluate the program for handling accidents caused by toxic gasses.