Kajian risiko kesehatan lingkungan akibat pencemaran udara: studi kasus hidrogen sulfida pada semburan lumpur panas Sidoarjo

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Abstrak

Dampak penting dari semburan Lumpur panas adalah pencemaran lingkungan salah satunya adalah kenaikan intensitas bau. Tujuan dari penelitian adalah untuk mengetahui konsentrasi H2S, persepsi masyarakat tentang gangguan kesehatan dari H2S, menghitung perkiraan risiko dan pencegahannya. Variabel penelitian adalah konsentrasi H2S, persepsi tentang gangguan kesehatan (iritasi mata, sakit kepala, dizzines, hyperpnoea, apnoea, asphyxia).

Pengumpulan data dilakukan dengan pengukuran langsung dan kuesioner. Pemilihan lokasi adalah purposive dan responden dengan simple random. Hasil dan pembahasan dari penelitian ini adalah konsentrasi H2S diatas bakumutu Kep-50/MENLH/11/1996. Uji Pearson Chi Square adalah Ҳ<0,05 antara konsentrasi H2S dengan iritasi mata, sakit kepala, dizzines dan hyperpnoea (Ҳ<0,05). Pajanan risiko tinggi sebesar 0?0,91 mgkg-1hari-1 (HQ 0- 1825,3) dan risiko rendah 0-0,0011 mgkg-1hari-1 (HQ 0-3,29). Pencegahan risiko dengan meningkatkan kondisi, nutrisi dan penggunaan APD.

Kesimpulan dan saran penelitian ini rata-rata konsentrasi H2S di atas 0,2 ppm. Karakterisasi risiko pajanan sebagaian besar adalah diatas dosis harian yang aman, untuk itu disarankan meningkatkan kondisi dan tidak sering kontak langsung pada sumber.
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The major impacts of the Torrent of Hot Mud which happened in May 2006 in Sidoarjo are the changes in environment, social and economy. Another impact which has been identified is the increase of odor intensity which is suspected to be originated from an air pollutan H2S. A smelling disorder happened in which the intensity of odor is predicted to have caused the air pollution in areas surrounding the spewing of hot mud in Sidoarjo.

Based on the result of the test conducted by Ministry of Environmental (KLH), it is discovered there are a number pollutants the concentration which are above the standard quality of odor and H2S is one of them. H2S gas is a colorless gas with a strong odor similar to the smell of a rotten egg. A high concentration of H2S can react with tears and sweat resulting sulfuric acid and bring about impacts such as eyes and skin irritation. In addition, exposure to H2S with the concentration 0f 0,025?25 ppm in human requires human to use breathing aid. Problem this research is there isn?t environmental pollution for study of health risk mon environment.

Based on evaluation result of the acquired data, the topics of the destination in this research are 1) to find out about the concentration of H2S in the affected areas and to find out about the difference of H2S concentration in the areas with a high risk and the areas with a low risk, 2) to find out about perception of

community about odor intensity 3) to find out about perception of community about health problems or not and whether there is a difference between concentration of H2S with the distribution 6 health problems and the duration of stay, age, education, income and job, 4) to calculation about the level of exposure from the pollutan indicator H2S, 5) to calculation about the level characterization of risk from the pollutan indicator H2S,6) to choice about alternative prevention and control. The variables of this research are H2S, distance from the center of torrent of the mud to the points of sampling location, the data on the 6 health problems (eyes irritation, headache, dizziness, asphyxia, apnea and hyperpnoea) which the community suffer and the data consisting of duration of stay, age, sex, education, job and income.

The data collection is conducted by direct measurement, and interview with a xii questionnaire. The calculation of exposure and risk characterization (hazard quotient (HQ)) is to determine the exposure level of the pollutan H2S. The selection of location for the research is based on the areas affected by purposive sampling. The size of sample is determined by the size of the population and 10% of trust level, and the selection of respondents is based on the simple random.

The data analysis is conducted to find out about the significant difference on the fourth problems. Result for this research is concentration of H2S in that location is above the standard quality as established by the decree of Kep-50/MENLH/11/1996 especially for Siring District, perception of community about health problems gotten there is different significant between concentration of H2S with eye irritation, headache, dizziness and hyperpnoea (Ҳ<0,05). Pollution of H2S not influence with losing of job, education and income. Risk assessment with a high risk had intake 0-0,91 mgkg-1day-1(HQ=0-1825,3) and area with a low risk had intake 0,0011 mgkg-1day-1. Average HQ score above from reference concentration. To control effort with wear self protection equipment, masks, glasses and avoiding frequent, direct contacts with the source.

Conclusion from this research are 1) The result of the analysis in the location with a low risk shows that the concentration of H2S in that location is above the standard quality as established by the decree of Kep-50/MENLH/11/1996, 2) perception of community in high risk area about smell of odor is seldom (57%) smell (57%) and in the low risk area is often (63%) strong of smell (76%), 3) Pearson Chi square test show there is significant difference in concentration of H2S with 4 health problems are eye irritation, headache, dizziness and hyperpnoea (Ҳ<0,05), 4) The calculation of the exposure score in the area with the highest risk is 0-0,91 mgkg- 1day-1 and in an area with a low risk it is 0, 0011 mgkg-1day-1, 5) the HQ score in a high risk is 0-1825,3 and in a low risk it is 0-3,29. In a high risk environment, it shows that the HQ score is much bigger than the HQ score in a low risk environment, 6) HQ score > 1 shows that there is a risk of health problems in the affected community. For the reason, it is necessary to carry out the alternative control effort both in areas with a high risk and in areas with a low risk with to wear self protection equipment, masks, glasses and avoiding frequent, direct contacts with the source and decides desease vector are to correct environment , quality of drinking and to correct immune of host. From the result and the discussion, the recommendation is: Regulatory of H2S had intake above reference concentration, avoid recommending re-investigate and necessary to integrated study of environment risk assessment.