

Analisis risiko pajanan benzena terhadap kesehatan pekerja bahan kimia di perusahaan minyak dan gas bumi PT. XYZ = Risk assessment of benzene exposure to the health of chemical worker at the oil and gas company PT. XYZ

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Abstrak

Pekerja kontraktor bahan kimia di perusahaan minyak dan gas bumi PT. XYZ merupakan populasi berisiko terhadap pajanan Benzena disebabkan oleh aktifitas dan kondisi lingkungan kerja yang memungkinkan terpajan oleh uap Benzena. Penelitian ini bertujuan untuk memperkirakan tingkat risiko nonkarsinogenik dan karsinogenik disertai dengan analisis kemungkinan ketidaknormalan kadar darah akibat pajanan Benzena, untuk kemudian ditentukan manajemen risiko yang harus dilakukan. Penelitian merupakan studi potong lintang dilakukan terhadap seluruh pekerja kontraktor bahan kimia di PT. XYZ yang berjumlah 22 orang ditambah dengan 22 orang sebagai pembanding dipilih dari karyawan perusahaan PT. XYZ pada lokasi yang sama.

Hasil penelitian menunjukkan bahwa populasi pekerja bahan kimia di PT. XYZ berisiko terhadap pajanan Benzena nonkarsinogenik ($RQ = 1,7442$) dan karsinogenik ($ECR = 1,76 \times 10^{-4}$) pada durasi pajanan lifetime. Diketahui hubungan yang bermakna antara pajanan Benzena terhadap normalitas kadar hemoglobin ($p = 0,015$) dan eritrosit ($p = 0,000$). Risiko ketidaknormalan kadar hemoglobin dan eritrosit berturut-turut pada populasi terpajan adalah 6,92 kali (95% CI: 1,28-37,29) dan 21,53 kali (95% CI: 4,46-103,90) dibandingkan populasi tidak terpajan. Selain itu juga diketahui hubungan yang signifikan antara kenaikan jumlah asupan Benzena terhadap penurunan kadar haemoglobin ($rs = -0,433$; $p = 0,044$) dan eritrosit ($rs = -0,474$; $p = 0,026$).

Disimpulkan bahwa risiko kesehatan nonkarsinogenik dan karsinogenik akibat pajanan Benzena pada populasi pekerja bahan kimia di perusahaan minyak dan gas PT. XYZ akan terjadi pada durasi pajanan lifetime. Terdapat hubungan antara pajanan Benzena dengan ketidaknormalan hemoglobin dan eritrosit.

Chemical contractor worker at the oil and gas company PT. XYZ is a population at risk to Benzene exposure due to its activities and work environment condition that possibly exposed by Benzene vapour. This research is aimed to estimate noncarcinogenic and carcinogenic risk level, complemented with blood counts abnormality analysis due to Benzene exposure, then determining risk management shall be done. The research is cross sectional study was done to all chemical contractor worker at PT. XYZ, consist of 22 person, and additional 22 person as a control was selected from employee of PT. XYZ working at the same location. The research yield that chemical worker population at PT. XYZ is at risk to the noncarcinogenic ($RQ = 1.7442$) and carcinogenic ($ECR = 1.76 \times 10^{-4}$) Benzene exposure at the lifetime exposure duration.

Its known that there is a correlation between Benzene exposure with normality of haemoglobin ($p = 0.015$) and erythrocytes ($p = 0.000$). The risk of abnormality haemoglobin and erythrocytes counts is 6.92 times

(95% CI:1.28-37.29) dan 21.53 times (95% CI:4.46-103.90) respectively compare to the non exposed population. In addition, its identified that there is a significant correlation between increased Benzene intake to the haemoglobin ($r_s = -0.433$; $p = 0.044$) and erythrocytes ($r_s = -0.474$; $p = 0.026$) counts reduction.

In summary noncarcinogenic and carcinogenic health risk due to Benzene exposure in the population of chemical worker at the oil and gas company PT. XYZ will occur at the lifetime exposure duration. There is a correlation between Benzene exposure with abnormality of haemoglobin and erythrocytes.