# Perbedaan kadar S-PMA urin antara pekerja kilang pengolahan minyak dan instalasi BBM = The different of S-PMA levels in urine among workers refinery with fuel installation

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Abstrak

Benzene merupakan bahan yang bersifat karsinogenik bagi manusia. Crude Oil dan produk-produknya merupakan sumber pajanan benzene yang cukup besar sehingga pekerja di kilang pengolahan minyak dan instalasi BBM memiliki risiko tinggi terpajan benzene. Pajanan benzene dapat diketahui melalui pengukuran metabolit benzene. S-phenylmercapturic acid (S-PMA) merupakan metabolit benzene yang spesifik sebagai biomarker monitoring pekerja yang terpajan benzene. Penelitian ini bertujuan untuk mengetahui perbedaan kadar S-PMA dalam urin antara pekerja Kilang dan Instalasi BBM serta faktor lain yang berhubungan.

Metode: Penelitian ini merupakan penelitian cross sectional comparative yang membandingkan kadar S-PMA urin endshift antara responden kilang dan instalasi BBM. S-PMA diekstraksi dari urin dan dianalisis menggunakan Liquid Chromatography (LC). Sampel dipilih secara stratified proportional random sampling.

Hasil: Jumlah sampel sebanyak 50 orang untuk masing-masing lokasi. Kadar SPMA urin pekerja Kilang berada pada rentang 2,82-489,12 ug/g kreatinin dengan nilai tengah 29,41 ug/g kreatinin, sedangkan di Instalasi BBM berada pada rentang 0,45-58,47 ug/g kreatinin dengan nilai tengah 3,10 ug/g kreatinin. Kadar S-PMA secara signifikan berhubungan dengan lama kerja per hari, jenis pekerjaan (ORc=2,72; CI95% 1,175-6,318), lokasi kerja (ORAd=10,59; CI95% 3,481-32,207), dan sumber pajanan benzene lain diluar pekerjaan (ORAd=3,02; CI95% 1,103-8,253) sedangkan status gizi, merokok dan penggunaan APD masker tidak ada hubungan dengan kadar S-PMA urin.

Kesimpulan: Terdapat perbedaan kadar S-PMA antara pekerja Kilang dengan Instalasi BBM. Pekerja Kilang memiliki risiko sepuluh kali lebih tinggi mendapatkan kadar S-PMA urin diatas nilai BEI (Biological Exposure Index) dibanding pekerja di Instalasi BBM. 62% responden di kilang dan 12% responden di instalasi BBM memiliki kadar S-PMA urin diatas nilai BEI.
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Benzene is a substance that is carcinogenic to humans. Crude Oil and its products are a source of benzene exposure is large enough so that workers at oil refineries and fuel installations have a high risk of exposure to benzene. Exposure to benzene can be determined by measuring benzene metabolites. Sphenylmercapturic acid (S-PMA) is a specific metabolite of benzene as a biomarker monitoring of workers exposed to benzene. This study aims to determine the differences in the levels of S-PMA in urine refinery and fuel instalations respondents and factors associated with higher levels of S-PMA.

Method : This study was a cross-sectional comparative study that compared the levels of S-PMA urine endshift between respondents refineries and fuel installations. Sphenylmercapturic acid (S-PMA) extracted from urine and analyzed using Liquid Chromatography (LC). Samples selected by stratified proportional

random sampling.

Result : The total sample of 50 for each location. Levels of S-PMA refinery respondents were in the range 2.82 to 489.12 ug / g creatinine with a median value 29.41 ug / g creatinine, whereas in the installation of the fuel is in the range from 0.45 to 58.47 ug / g creatinine with a median value of 3.10 ug / g creatinine. Levels of S-PMA was significantly related to length of exposure per day, type of work (ORc=2,72 ;CI95% 1,175-6,318), location of work (ORAd=10,59; CI95% 3,481-32,207) and other sources of exposure outside of work (ORAd=3,02; CI95% 1,103-8,253) while nutritional status, smoking and the use of PPE mask no association with levels of S-PMA urine.

Conclusion : There are differences between the levels of S-PMA with the installation of fuel refinery workers. Refinery workers have ten times higher risk of getting urinary levels of S-PMA on the value of BEI (Biological Exposure Index) compared to workers in the fuel installation. 62% of respondents in the refinery and 12% of respondents in the installation of the fuel had higher levels of urinary S-PMA above the BEI value.