Pengaruh pajanan toluen dan faktor-faktor risiko lain terhadap kadar asam hipurat urin tenaga kerja di unit pengecatan pabrik PT. X

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Abstrak

Latar belakang: Toluen masih banyak digunakan oleh industri sebagai bahan pelarut dan bahan mentah, walaupun telah diketahui dapat berdampak negatif terhadap kesehatan tenaga kerja. Dampak ini dapat diperkecil dengan melakukan pemantauan lingkungan kerja terpajan toluen dan kesehatan tenaga kerjanya secara teratur.

Penelitian ini bertujuan untuk mengetahui pengaruh pajanan toluen dan faktor-faktor risiko lain terhadap kadar asam hipurat urin tenaga kerja suatu pabrik sepeda motor di Jakarta.

Metode: Penelitian ini menggunakan pendekatan disain eksperimental kuasi, menjaring data melalui wawancara terstruktur , pemeriksaan fisik dan pemeriksaan sampel urin sebanyak 3 kali [sebelum (pagi hari 1) dan sesudah (sore hari I dan II) terpajan toluen] terhadap 78 subyek penelitian (terpajan langsung dan tidak langsung) yang terdiri dari 42 subyek penelitian di unit pengecatan baja dan 36 subyek penelitian di unit pengecatan plastik Parameter yang dipakai pada penelitian ini adalah kadar asam hipurat/kreatinin urin (AH). Kadar uap toluen di lingkungan kerja dianalisis dengan cara kromalografi gas dan kadar asam hipurat urin dianalisis dengan cara high performance liquid chromatography.

Hasil: Kadar uap toluen di unit pengecatan berkisar antara 0,6882-3,4429 bds dan AH seluruh subyek penelitian berkisar antara 0,0006-0,6356 gig. Terdapat peningkatan AH yang bermakna secara slatistik di antara ketiga pemeriksaan urin (p within < 0,05). Faktor risiko yang berpengaruh pada perbedaan rerata AH adalah tempat kerja (p between = 0,051) dan minum alkohol (p between = 0,006). Rerala AH di unit pengecatan plastik lebih tinggi dari pada di unit pengecatan baja. AH kelompok peminum alkohol lebih rendah dibanding dengan kelompok tidak minum alkohol. Dengan membandingkan pads rerata AH sebelum terpajan toluen, rerata AH sesudah terpajan toluen hari II lebih tinggi dibanding hari I (p 0,000).

Kesimpulan: Walaupun terdapat peningkatan AH pada hari I dan II sesudah terpajan toluen, akan tetapi kadar uap toluen dan AH di unit pengecatan masih dibawah nilai ambang batas yang diperkenankan (NAB toluen = 50 bds dan BEI toluen = 2,5 gram asam hipurat/gram kreatinin win).
<hr><i>The influence of Toluene Exposure and other Risk Factors Fowards the Level of Hippuric Acid in Urine of Workers in Painting Unit of the Factory PT. X Background: Toluene as a solvent and raw material, still being used in many industries, although has been recognized of having negative impact towards workers' health. Both exposure area and the workers' health could be prevented from this harmful effect by monitoring regularly. The aim of this study is to search the influence of toluene exposure and other risk factors in the workplace environment towards the level of hippuric acid in urine, at a motorcycle factory in Jakarta.

Methods: This study was using a quasi-experimental design. Data were collected by interview, physical examination, and three times of urine examination (before [l' day of week] and after [1' and 2nd days of week] toluene exposure) of 78 subjects (direct and indirect exposure) consisting of 42 subjects in steel painting unit and 36 subjects in plastic painting unit. The parameter used in this study is hippuric acid level in urine that had corrected by creatinine urine (HA). Using gas chromatography method for examination of toluene vapor and high performance liquid chromatography method for examination of hippuric acid in urine were carried out this study.

Results: Toluene vapor level in painting units were at range 0,6882-3,4429 ppm and HA of all responders were at range 0,0006-0,6356 gig. There had statistically significant increasing of the HA among 3-laboratory of urine analysis (p within < 0.05). Risk factors that influenced the different means of HA were workplaces (p between = 0.051) and drink alcohol (p between = 0.006). The means of HA in plastic painting unit were higher than in steel painting unit. The drinkers had lower HA compare with nondrinkers. Compared with HA before exposure, the means of HA after toluene exposure on god day were higher than 1# day (p = 0.000).

Conclusions: Even though it was noted an increasing of HA at 1' and 2°d days after toluene exposure, however the toluene vapor level and HA in workplace were still below the permissible threshold limit values (TLV toluene = 50 ppm and BEI toluene = 2,5 gram hippuric acid/gram creatinine urin).</i>