Prevalensi peningkatan kadar timah hitam darah dan urin serta koproporfirin urin pada petugas gerbang tol laki-laki di Jakarta serta pengaruh masa kerja = The prevalences of increased blood and urine lead and urine coproporphyrine concentrations in male toll gate employees in Jakarta and the influence of length of employement

Sjarif Hidajat, author

Abstrak

ABSTRAK
Kemajuan pembangunan menyebabkan meningkatnya kegiatan industri termasuk industri . yang menggunakan timah hitam sebagai bahan baku, atau hasil produksinya. Salah satu industri yang menggunakan persenyawaan timah hitam untuk produksinya adalah industri refinery yang memakai " tetra etil lead" sebagai anti nok yang berkhasiat menambah bilangan oktan bahan bakar.

Dengan banyaknya kendaraan bermotor yang menggunakan. jalan dan bensin dipakai sebagai bahan bakar, timah hitam yang dilepaskan dari proses pembakaran dapat meaimbulkan pencemaran di udara. Udara yang mengandung timah hitam di lingkungan kerja dapat memajani tenaga kerja yang bekerja di tempat tersebut dan dapat menaikkan kadar timah hitam dalam tubuhnya.

Telah diteliti 83 orang petugas gerbang tol dengan kelompok masa kerja < 1 tahun, 5-6 tahun dan 10-11 tahun; mereka diperiksa kadar timah hitam darah dan urin. Nilai rata-rata kadar timah hitam darah menurut kelompok masa kerja tersebut berturut- turut adalah 265,5; 288,9 dan 302,0 µg/l . Nilai rata-rata kadar timah hitam urin menurut kelompok rnasa kerja tersebut berturut-turut adalah 199,1; 213,8 dan 225,1 µg/l. Walaupun memperlihatkan adanya kecenderungan peningkatan, kadar timah hitam darah maupun urin tidak menunjukkan peningkatan yang secara statistik bermakna (p > 0,05).

Nilai rata-rata kadar koporporfirin urin ketiga kelompok masa kerja tersebut berturut-turut 135,9; 149,6 dan 148,8 µg/l dan perbedaan ini tidak menunjukkan perbedaan yang bermakna (p>0,05).

Prevalensi kadar timah hitam darah yang melebihi 240 µg/1 berturut - turut menurut kelompok masa kerja adalah 38,5 %; 57,7 % dan 64,5 % namun perbedaannya tidak bermakna.

Prevalensi kadar timah hitam urin yang melebihi 270 µg/l berturut - turut menurut kelompok masa kerja adalah 23,1 %; 30,8 % dan 32,3 % namun perbedaannya tidak bermakna.

Prevalensi kadar koproporfirin urin yang melebihi 200 µg/l berturut - turut menurut kelompok masa kerja adalah 11,5 %; 19,2 % clan 22,6 % namun perbedaannya tidak bermakna.

Gerbang tol adalah tempat kerja yang tiap harinya melintas berbagai jenis kendaraan bermotor dengan bahan bakar bensin, solar maupun gas. Kadar timah hitam di lingkungan kerja tergantung pada banyaknya

kendaraan bermotor yang melintas, curah hujan dan aliran angin. Penelitian kadar timah hitam di udara lingkungan gerbang tol pada 6 gardu tol adalah berturut - turut sebagai berikut 2,5; 4,6; 5,5; 4,9; 5,2 dan 6,2 µg/m3.

Antara kadar timah hitam darah dan kadar timah hitam urin tidak didapatkan adanya korelasi (r = 0,05). Begitu juga antara kadar timah hitam darah dengan kadar koproprorfirin urin tidak terdapat korelasi yang berarti (r = 0,02).
<hr>ABSTRACT
National development results in increased industrial activities of which there are industries using lead containing materials in the final product. Gasoline industries utilize lead compound additive, tetra ethyl lead to increase octane number of gasoline.

Most vehicles passing through the roads use gasoline for their fuel that contains lead and therefore cause air pollution. Lead in the air from this pollution may influence the health conditions of employees who work there by the increased lead contents in their bodies.

This research studied 83 persons who were toll gate employees divided into three working duration groups, namely less than 1 year, 5 to 6 years and 10 to 11 years. They were examined for lead contents in blood and urine and coproporphyirine concentrations in urine. The average values of lead contents in blood by working duration groups were 265.4, 288.9 and 3010 µg11. And the average values of lead contents in urine were 199.1, 213.8 and 225.1 µg/l. Although the figures showed increases in both lead in blood and urine but they were of no significant differences (p > 0.05).

The average values of coproporphyrine concentrations in urine of the three working duration groups were 135.9, 149.6 and 148.8 µg/l and the differences were not significant (p > 0.05).

The prevalence?s of lead contents in blood of more than 240 µg/l by working duration groups were 38.5 %, 57.7 % and 64.5 % but no significant differences were found.

The prevalence?s of lead contents in urine of more than 270 µg/l by working duration groups were 23.1 %, 30.8 % and 32.3 % but no significant differences were found.

The prevalence?s of coproporphyrine concentrations in urine of more than 200 µg11 by working duration groups were 11.5 %. 19.2 % and 22.6 % but no significant differences were found.

The toll gates were the places where the employees worked. Many kinds of vehicles used gasoline, diesel fuel and gases as fuel for sources of energy. The contents of lead in the air depended on how many vehicles passed through as well as the quantity of rain and wind direction. The contents of lead in the air of six toll gates were 2.5, 4.5, 5.5, 4.9,5.2 and 6.2 µg/m3.

The lead contents in blood and those in urine had no correlation (r = 0.05). Similarly lead contents in blood and coproporphyrine concentrations in urine also had no correlation (r=0.02).