

Kromium, timbal, dan merkuri dalam air sumur masyarakat di sekitar tempat pembuangan akhir sampah

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Abstrak

Tempat pembuangan akhir (TPA) sampah domestik dengan sistem penampungan terbuka sangat berisiko mencemari air tanah milik warga yang bermukim di sekitarnya melalui proses perkolasi. Untuk mengetahui kandungan logam berat dalam air tanah di sekitar TPA, sebanyak 68 sampel air sumur gali (45 sumur Dusun I dan 23 sumur Dusun IV) dari Desa Namobintang Kecamatan Pancurbatu Kabupaten Deli Serdang, Sumatera Utara, telah dianalisis dengan inductively couple plasma atomic emission spectroscopy. Hubungan jarak sumur dengan konsentrasi kromium, merkuri, dan timbal diuji dengan Mann-Whitney, Spearman's Correlation dan analisis regresi linier sederhana. Hasil penelitian menunjukkan konsentrasi kromium, timbal, dan merkuri (rerata \pm deviasi standar, mg/L) masing-masing $0,036 \pm 0,0096$; $0,0003 \pm 0,00018$; dan $0,005 \pm 0,0041$ (Dusun I); $0,0370 \pm 0,0115$; $0,00026 \pm 0,00013$; dan $0,0070 \pm 0,0069$ (Dusun IV). Dari 68 sumur yang dianalisis, hanya ada 8 sumur yang konsentrasi timbalnya melebihi batas menurut Peraturan Kementerian Kesehatan Republik Indonesia Nomor 492/Per/IV/2010. Sementara itu, tidak ada korelasi jarak sumur gali ke TPA dengan konsentrasi kromium,

merkuri, dan timbal dalam air sumur gali tersebut. Disimpulkan bahwa

perlindian sampah di Namobintang tidak mencemari air sumur-sumur gali

yang berjarak 84 meter atau lebih dari TPA.

Dumping site of domestic wastes has potential risk to contaminate ground-water of the surrounding population through leaching process. To determine

heavy metals (chromium, lead, and mercury) in groundwater at surrounding dumping site, a total of 68 dig well water samples (45 from Hamlet I and

23 from Hamlet IV) of Namobintang Village, Pancurbatu Sub-District of Deli

Serdang Regency, North Sumatra, were analyzed using Inductively Couple

Plasma Atomic Emission Spectroscopy. The relationship between the dig

well distance and chromium, mercury, and lead content was tested by

Mann-Whitney, Spearman's Correlation and Simple Linier Regression. The

result of this study showed that chromium, lead, and mercury concentrations (mean \pm SD, mg/L) were 0.036 ± 0.0096 ; 0.0003 ± 0.00018 ; and

0.005 ± 0.0041 (Hamlet I); 0.0370 ± 0.0115 ; 0.00026 ± 0.00013 ; and

0.0070 ± 0.0069 (Hamlet IV). Of 68 dig well water samples analyzed, there

were only 8 water samples that had lead concentrations exceeding the

drinking water limit of Peraturan Kementerian Kesehatan Republik

Indonesia Nomor 492/Per/IV/2010. Meanwhile, there was no correlation of

dig well distance to dumping site and heavy metal concentrations in dig well

water. The study concluded that solid waste leachate in Namobintang did

not contaminate the dig wells water located at 84 meters or more from the

dumping site.