Analisis Risiko Kesehatan Lingkungan Pajanan Mangan (Mn) dan Kromium Heksavalen (Cr6+) Melalui Konsumsi Air Siap Minum pada Mahasiswa Universitas Indonesia = Environmental Health Risk Assessment of Manganese (Mn) and Hexavalent Chromium (Cr6+) Exposure Through Consumption of Ready to Drink Water in Students at the Campus of Universitas Indonesia

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Abstrak

Kampus Universitas Indonesia memiliki fasilitas pelayanan alat penyedia air siap minum yang dapat mengubah air tanah menjadi air siap minum. Penggunaan air tanah masih dominan di Kampus Universitas Indonesia Kota Depok. Kota Depok memiliki karakteristik jenis tanah yang terbentuk dari pelapukan batuan sedimen sehingga air tanah Kota Depok berpeluang mengandung logam berat berupa mangan dan kromium heksavalen. Penelitian ini dilakukan menggunakan pendekatan studi Analisis Risiko Kesehatan Lingkungan (ARKL) yang bertujuan untuk mengestimasi besaran risiko kesehatan akibat pajanan mangan dan kromium heksavalen melalui asupan air siap minum yang dikonsumsi mahasiswa Universitas Indonesia. Total responden yang diwawancarai berjumlah 60 orang dan sampel air siap minum berjumlah 9 sampel yang dikumpulkan dari 8 fakultas. Terdapat 1 sampel air siap minum yang kadar konsentrasi mangannnya melebihi standar baku mutu berdasarkan Permenkes No 2 Tahun 2023. Jumlah estimasi rata-rata intake pajanan mangan dan kromium heksavalen masing-masing sebesar 1.21×10-5 mg/kg/hari dan 7.12×10-7 mg/kg/hari (realtime) serta 8.75×10-5 mg/kg/hari dan 5.15×10- 6 mg/kg/hari (lifespan). Tingkat risiko pajanan mangan dan kromium heksavalen masing-masing sebesar 8.64×10-5 dan 2.37×10-4 (realtime) serta 6.25×10-4 dan 1.72×10-3 (lifespan). Hasil ini menunjukkan bahwa air siap minum tidak berisiko menimbulkan gangguan kesehatan (RQ 1) sehingga air aman untuk diminum.

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The University of Indonesia campus has a ready-to-drink water service facility that can convert groundwater into ready-to-drink water. The use of groundwater is still dominant in the University of Indonesia campus in Depok City. Depok City has the characteristic of soil type which is formed from the weathering of sedimentary rocks so that Depok City's groundwater has the possibility of containing heavy metals in the form of manganese and hexavalent chromium. This research was conducted using the Environmental Health Risk Analysis (ERHA) study approach which aims to estimate the magnitude of the health risk due to exposure to manganese and hexavalent chromium through intake of ready-to-drink water consumed by University of Indonesia students. The total number of respondents interviewed was 60 people and the ready-to-drink water samples were 9 samples that were collected from 8 faculties. There is 1 ready-to-drink water sample whose manganese concentration exceeds the quality standard based on Permenkes No 2 of 2023. The estimated average intake of manganese and hexavalent chromium exposure respectively is 1.21×10-5 mg/kg/day and 7.12×10-7 mg/kg/day (realtime) and 8.75×10-5 mg/kg/day and 5.15×10- 6 mg/kg/day (lifespan). The risk levels of exposure to manganese and hexavalent chromium respectively were 8.64×10-5 and 2.37×10-4 (realtime) and 6.25×10-4 and 1.72×10-3 (lifespan). These results indicate that ready-to-drink water is not at risk of causing health problems (RQ 1) so that the water is classified as safe to drink water.