

Analisis Kelimpahan dan Karakteristik Mikroplastik pada Aliran Input Sungai Ciliwung = Analysis of Microplastic Abundance and Characteristics in the Ciliwung River Input Stream

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Abstrak

Sungai Ciliwung merupakan sumber air bersih untuk wilayah sekitarnya, akan tetapi, ditemukan mikroplastik yang berbahaya bagi lingkungan dan kesehatan pada air sungai alirannya berasal dari saluran input. Penelitian ini bertujuan untuk menganalisis kelimpahan mikroplastik, karakteristik mikroplastik berdasarkan jenis, material, dan warna, serta pengaruh waktu terhadap kelimpahan partikel mikroplastik di aliran input Sungai Ciliwung. Untuk menganalisis kelimpahan dan karakteristik mikroplastik, digunakan metode metode National Oceanic and Atmosphere Administration (NOAA) dan FTIR. Sedangkan, untuk menguji pengaruh waktu terhadap kelimpahan mikroplastik, dilakukan analisis t-test dependent (paired). Hasil penelitian menunjukkan bahwa kelimpahan mikroplastik di aliran input Sungai Ciliwung bernilai antara 668—1918 partikel/liter dengan rata-rata 1273,64 partikel/liter dan jumlah yang fluktuatif di setiap titik pengambilan sampel. Bentuk yang ditemukan pada partikel mikroplastik adalah 93% fragment, serta fiber, microbeads, film, dan foam dalam jumlah kecil. Warna yang ditemukan adalah 37% transparan, 32% merah, 23% hitam, serta biru, hijau, dan kuning dalam jumlah sedikit. Dari hasil uji material, ditemukan polimer, Polyvinyl formal (PVFM), Poly vinylchloride (PVC), PVC Film (PVC-DR), dan Soft PVC (PVC2). Waktu berpengaruh pada kelimpahan mikroplastik dalam rentang musim serta hari kerja dan akhir pekan.

.....The Ciliwung River is a source of clean water for the surrounding area; however, microplastics that are harmful to the environment and health are found in the river water, which flows from the input channel. This research aims to analyze the abundance of microplastics, the characteristics of microplastics based on type, material, and color, as well as the effect of time on the abundance of microplastic particles in the Ciliwung River input stream. The National Oceanic and Atmosphere Administration (NOAA) and FTIR methods were used to analyze the abundance and characteristics of microplastics. Meanwhile, to test the effect of time on the abundance of microplastics, a t-test-dependent (paired) analysis was performed. The results showed that the abundance of microplastics in the input stream of the Ciliwung River was between 668-1918 particles/liter, with an average of 1273.64 particles/liter and the amount fluctuated at each sampling point. The form found in microplastic particles is 93% fragments and small amounts of fibers, microbeads, films, and foam. The colors were 37% transparent, 32% red, 23% black, and small amounts of blue, green, and yellow. From the results of the material test, Tencel, Polyvinyl formal (PVFM), Polyvinylchloride (PVC), PVC Film (PVC-DR), and Soft PVC (PVC2) were found. Timing influences the abundance of microplastics over a range of seasons, as well as weekdays and weekends.