

ABSTRAK

Sungai Serayu sebagai sumber pasokan air di Jawa Tengah dengan berbagai aktivitas manusia di sekitarnya, menjadikan Sungai Serayu rentan terhadap pencemaran *Organochlorine Pesticides* (OCPs). OCPs termasuk kelompok *Persistent Organic Pollutants* (POPs) dapat menyebabkan risiko pada biota dan manusia karena sifatnya persisten, lipofilik, toksik, migrasi jarak jauh, dan biomagnifikatif. OCPs juga bersifat hidrofobik sehingga di perairan cenderung terakumulasi pada sedimen. Penelitian ini bertujuan untuk mengetahui konsentrasi OCPs pada sedimen di Sungai Serayu dan mengetahui potensi risiko ekologisnya berdasarkan *Sediment Quality Guidelines* (SQGs). Pengambilan sampel dilakukan menggunakan metode *survey* dan teknik *purposive sampling*. Lokasi penelitian terdiri dari 3 stasiun dengan 22 titik sampling. Sampel sedimen dianalisis menggunakan *Gas Chromatography-Mass Spectrometer* (GC-MS) dengan metode acuan AOAC2007.01 dan EN15662:2018. Dalam analisis sampel dilakukan validasi metode analisis meliputi linearitas, *Limit of Detection* (LOD) dan *Limit of Quantification* (LOQ). Hasil analisis menunjukkan bahwa OCPs tidak terdeteksi di semua stasiun berdasarkan LOD, namun dapat menunjukkan bahwa konsentrasi OCPs terlalu rendah atau lebih rendah dibanding LOD alat GC-MS. Hal ini diduga karena sedimen Sungai Serayu didominasi oleh *sand* (pasir) hampir di semua stasiun. Tidak terdeteksinya OCPs belum bisa dinyatakan tidak menimbulkan risiko ekologis, karena LOQ GC-MS dari beberapa senyawa hasil analisis OCPs lebih tinggi dibandingkan ambang batas SQGs.

Kata kunci : *Sungai Serayu, Pestisida Organoklorin, Sedimen*



ABSTRACT

The Serayu River is a source of water supply in Central Java, where there is human activity around the river. The Serayu River is vulnerable to Organochlorine pesticide (OCP) pollution. OCPs belong to the Persistent Organic Pollutants (POPs) which can cause risks to biota and humans. OCPs are persistent, lipophilic, toxic, long-distance migratory, and biomagnification. OCPs are also hydrophobic so in waters, they tend to accumulate in sediment. This research aims to determine the concentration of OCPs in sediment in the Serayu River and determine the potential ecological risk based on the Sediment Quality Guidelines (SQGs). Sampling was carried out using survey methods and purposive sampling techniques. The research location consists of 3 stations with 22 sampling points. Sediment samples were analyzed using a Gas Chromatography-Mass Spectrometer (GC-MS) with the AOAC2007.01 and EN15662:2018 reference methods and linearity, Limit of Detection (LOD), and Limit of Quantification (LOQ) were validated. The results of the analysis showed that OCPs were not detected at all stations based on LOD, this indicates that the OCPs concentration was too low or lower than the LOD of the GC-MS tool which is thought to have occurred because the Serayu River sediment was dominated by sand at almost all stations. The non-detection of OCPs is not necessarily said to pose an ecological risk because the GC-MS LOQ of several compounds resulting from OCPs analysis is higher than the SQGs threshold.

Keywords : *Serayu River, Organochlorine Pesticides, Sediment*

