

## ABSTRAK

Plawangan Timur merupakan kawasan pesisir yang berpeluang menjadi sumber pencemaran *Polycyclic Aromatic Hydrocarbons* (PAHs). Penelitian ini bertujuan untuk mengetahui komposisi, distribusi, dan sumber serta tingkat kontaminasi PAHs di Plawangan Timur. Komposisi PAHs berkisar antara 3-12% dengan proporsi terendah yaitu *naphthalene* (3%) dan tertinggi *Benzo(a)Pyrene* (12%). Secara umum pola distribusi PAHs menunjukkan bahwa proporsi PAHs dengan *High Molecular Weight* (HMW) lebih besar dari *Low Molecular Weight* (LMW), serta didominasi oleh jenis PAHs yang memiliki 3 dan 4 cincin benzena. Sumber asal PAHs dianalisis dengan menggunakan rasio diagnostik yang menunjukkan PAHs berasal dari petrogenik, pirogenik, campuran petrogenik dan pirogenik, dan pirolitik. Kandungan total PAHs (LMW+HMW) berkisar antara 185-1289,9 mg/kg (dw) dengan rata-rata sebesar 1016,97 mg/kg (dw), sehingga tingkat kontaminasi di Plawangan Timur termasuk dalam kategori tercemar sangat tinggi. Nilai konsentrasi rata-rata individu PAHs lebih besar dari nilai *Effect range-low* (ERL) dan *Effect range-median* (ERM) berdasarkan standar kriteria pencemaran *Canadian Council of Ministers of the Environment* (CCME, 2001), menunjukkan terdapat risiko ekologis yang tinggi dan dapat menimbulkan efek yang berbahaya bagi kehidupan biota laut dan lingkungan sekitar. Secara keseluruhan kandungan PAHs dalam sedimen di Plawangan Timur relatif tinggi sehingga perlu adanya penanganan terhadap pencemaran PAHs diantaranya yaitu meningkatkan pengelolaan instalasi pengolahan air limbah (IPAL) bagi industri, optimalisasi peran hutan mangrove dalam mereduksi pencemaran di perairan, serta membangun dan meningkatkan kerjasama antara instansi terkait dalam penanggulangan tumpahan minyak di perairan.

Kata kunci : Plawangan Timur, *Polycyclic Aromatic Hydrocarbons* (PAHs), *crude oil*, tumpahan minyak, bioremediasi

## ABSTRACT

Plawangan Timur is a coastal area that has the potential to be a source of pollution of Polycyclic Aromatic Hydrocarbons (PAHs). This study aimed to determine the composition, distribution, source and level of contamination of PAHs in Plawangan Timur. The composition of PAHs ranged from 3-12% with the lowest proportion being Naphthalene (3%) and the highest being Benzo(a)Pyrene (12%). In general, the distribution pattern of PAHs shows that the proportion of PAHs with High Molecular Weight (HMW) is greater than Low Molecular Weight (LMW), and is dominated by PAHs with 3 and 4 benzene rings. The source of origin of PAHs was analyzed using a diagnostic ratio which indicated that the PAHs were of petrogenic, pyrogenic, mixed petrogenic and pyrogenic, and pyrolytic origin. The total content of PAHs (LMW+HMW) ranged from 185-1289,9 mg/kg (dw) with an average of 1016,97 mg/kg (dw), so that the level of contamination in Plawangan Timur was included in the very high polluted category. The average concentration value of individual PAHs is greater than the Range Low Effect (ERL) and Range Median Effect (ERM) values based on the Canadian Council of Ministers of the Environment pollution criteria standard (CCME, 2001), indicating that there is a high ecological risk and can cause harmful effects on marine life and the surrounding environment. Overall, the content of PAHs in sediments in Plawangan Timur is relatively high, so there is a need for handling PAHs pollution, including improving the management of wastewater treatment plants (WWTPs) for industry, optimizing the role of mangrove forests in reducing pollution in the waters, as well as building and increasing collaboration between related agencies. in the prevention of oil spills in the waters.

Keywords : Plawangan Timur, Polycyclic Aromatic Hydrocarbons (PAHs), crude oil, oil spills, bioremediation