

## Ecotoxicological Assessment of Imposex in Marine Invertebrate as Bioindicator of Pollution

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### Abstract

Indonesia, is home to a rich marine ecosystem, offering invaluable ecological services and resources to its coastal communities. However, this precious environment faces threats from various anthropogenic activities, including industrialization and urbanization, particularly in Java, which can result in pollution of coastal waters. Java is the most populous island in the world. Rapid industrialization, urbanization, and economic development have taken a toll on the island's marine ecosystems. Among the various environmental concerns in the region, ecotoxicological studies have gained prominence due to their relevance in preserving and safeguarding marine life. Marine gastropods, specifically the family Muricidae, are valuable bioindicators for monitoring the health of coastal ecosystems. These gastropods, known for their sensitivity to environmental changes and pollutants, exhibit imposex—a phenomenon where females develop male reproductive characteristics. Imposex is strongly associated with exposure to certain pollutants, including organotin compounds, making Muricidae an ideal model species for ecotoxicological investigations in the region. The measurement of imposex is integrated into the European strategy's monitoring programme. AIMI-BiPo project aims at monitoring the health impacts on the Indonesian ecosystem by primarily measuring disturbances in the physiology of the marine gastropods. Aimi-BiPo is a consortium of five different institution from Indonesia and France, including Brawijaya University (UB), Universitas Borneo Tarakan (UBT), Universitas Negeri Gorontalo (UNG), Université Le Havre-Normandie (ULHN) and the private Toxem company. It involve a multidisciplinary approach, integrating field surveys, laboratory experiments, and chemical analysis. Study of the first year show a varied imposex incidence in Java, where in Madura reached 37% imposex index in the marine gastropodes which related to pollution located to the busy port. Imposex is strongly associated with exposure to certain pollutants, including organotin compounds, making Muricidae an ideal model species for ecotoxicological investigations in the region. The measurement of imposex is integrated into the European strategy's monitoring program.