

Monitoring and managing pollution load in Bohai Sea, PR China

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Abstract

Bohai Sea, China's only inland sea, became seriously polluted because of rapid economic development. The pollution monitoring system of Bohai Sea started in 1978, and has grown to have 215 monitoring stations today. The Chinese government recently increased efforts to improve the environmental quality of Bohai Sea in an effort to achieve the sustainable development of the Wider Bohai Sea Area. This paper presents the current pollution situation and its environmental impacts. It also discusses the existing pollution management mechanisms and pollution abatement programs for Bohai Sea.

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1. Introduction

Bohai Sea has a total area of 77,284 km², with 3784 km of coastline and an average depth of 18 m. It has 268 islands (with land areas greater than 500 m²), three bays (Liaodong, Bohai and Laizhou Bays), and more than 40 rivers flowing into it (including four major rivers, Yellow, Haihe, Liaohe and Luanhe Rivers). Average freshwater runoff is 7.2 billion m³/yr, which translates into more than 1.3 billion t of sand, mud and silt into Bohai Sea annually [1].

As the main water-receiving body, Bohai Sea is greatly impacted by discharge from the surrounding provinces and cities that make up the Wider Bohai Sea Area (WBSA). The WBSA includes Bohai Sea and its adjacent provinces and municipalities—namely, the Liaoning, Hebei and Shandong Provinces and the municipality of Tianjin (Figs. 1–2)—and is home to 21.15% (258 million) of the whole nation's population.

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Fig. 1. Location of Bohai Sea in China.

The WBSA is one of the major economic development centers in China, accounting for roughly 22% of the nation's Gross Domestic Product (GDP) in 1999. The rapid economic and industrial developments in the area in the past few years have generated an enormous amount of land-based pollutants that have drained into Bohai Sea, thus exerting enormous pollution pressures on the ecosystems therein and the living environment of the coastal population as a whole.

2. Monitoring system for pollution

Environment-monitoring measures include extensive and repeated measurements of the physical, chemical, and biological parameters of the bay area over space and time in order

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