



# Evaluation of Heavy Metals Pollution in Some Marine Organisms in Damietta Governorate

Submitted By

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&

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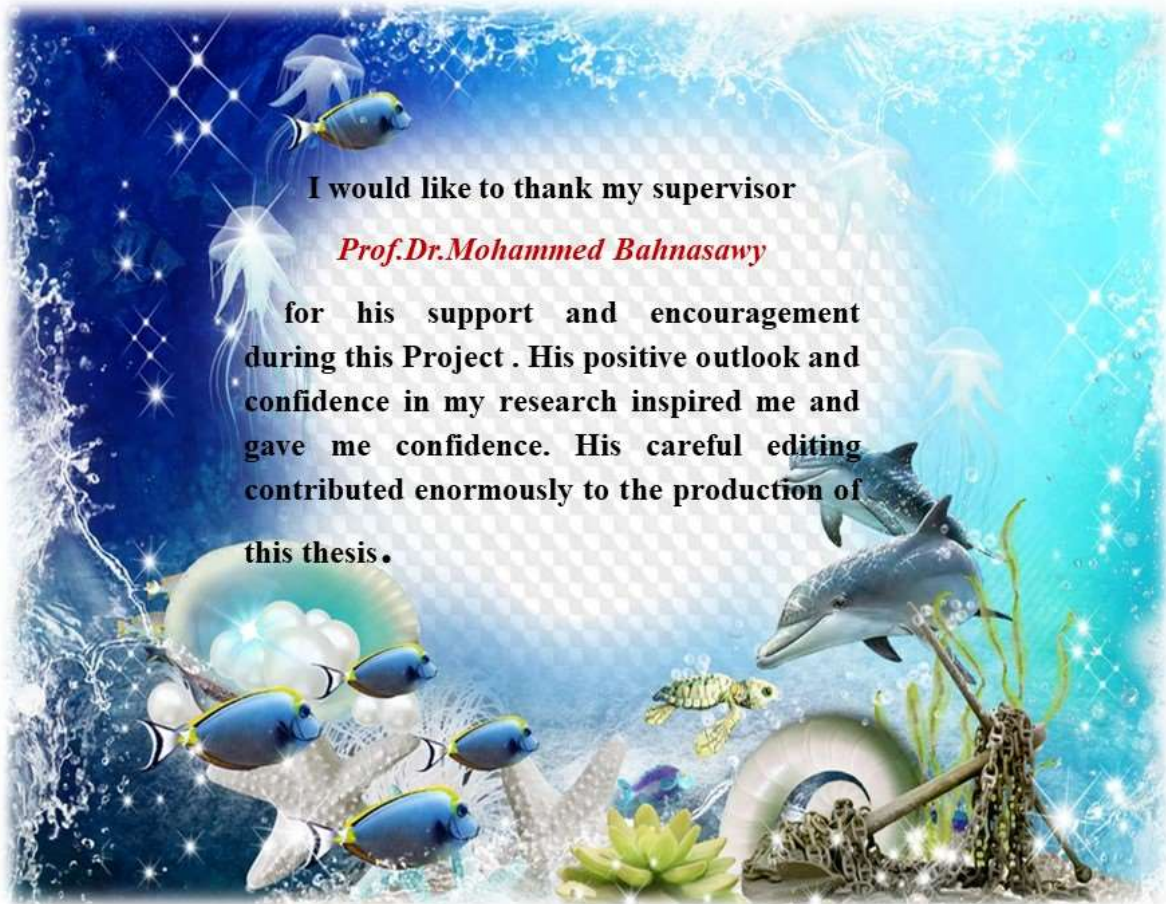
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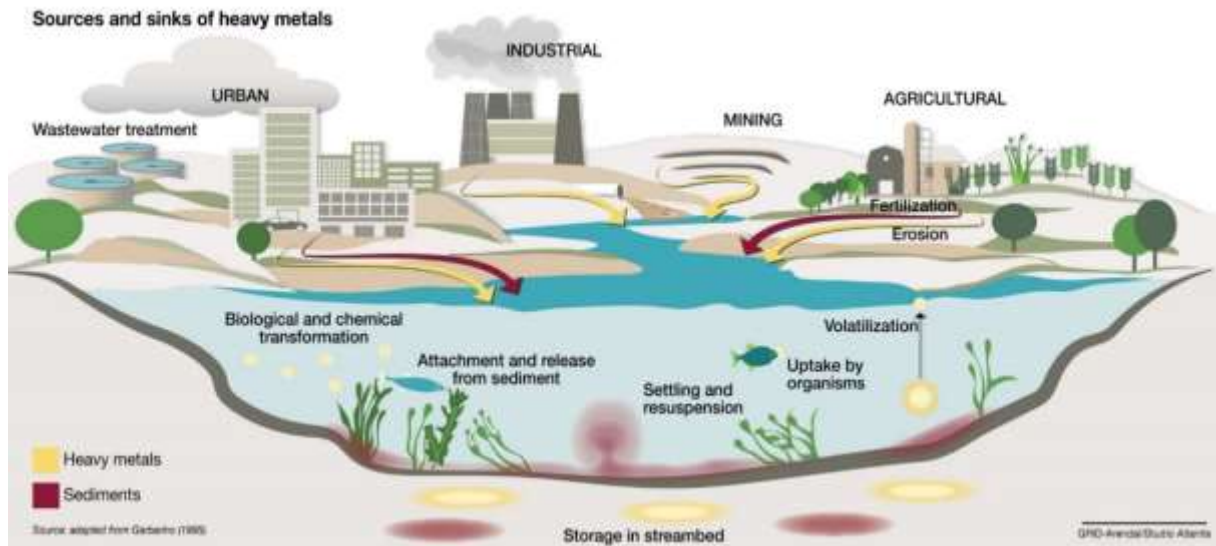
## **Introduction and aim of the work**

Damietta Governorate is located on the coast of the Mediterranean Sea, and the residents of the governorate depend on marine organisms for their food to a large extent, because they contain high-quality protein, polyunsaturated fatty acids, vitamin B and mineral salts. The marine environment in the governorate is exposed to various pollutants that affect these organisms, whether they are chemical, biological, or heavy metals. Pollution of the marine environment with heavy metals has become a serious threat to marine organisms and human health, who depend on these organisms for food and industry.

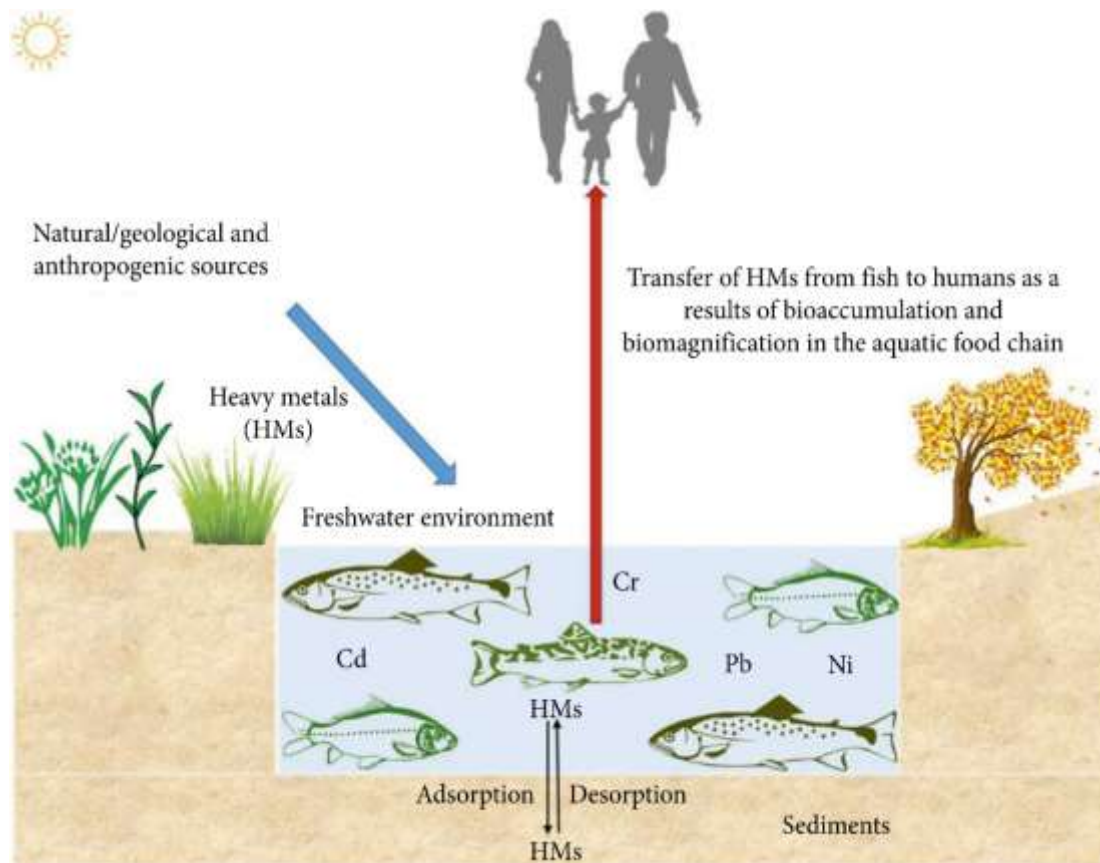
Heavy metals are introduced to marine environment through sewage, industrial effluents, oil pollution and other sources. Heavy metals include zinc, copper and manganese, and these are considered essential as they play an important role in vital processes, whether human or animal, but the presence of these elements in large quantities causes damage as well. It also includes mercury, lead and cadmium, which are unnecessary and toxic and cause serious health damage in the case of their presence in small quantities.

Marine organisms can absorb metals from the surrounding water and sediment as well as through their food, as these pollutants accumulate in their various tissues and lead to health risks due to their toxicity, stability and bioaccumulation characteristics.

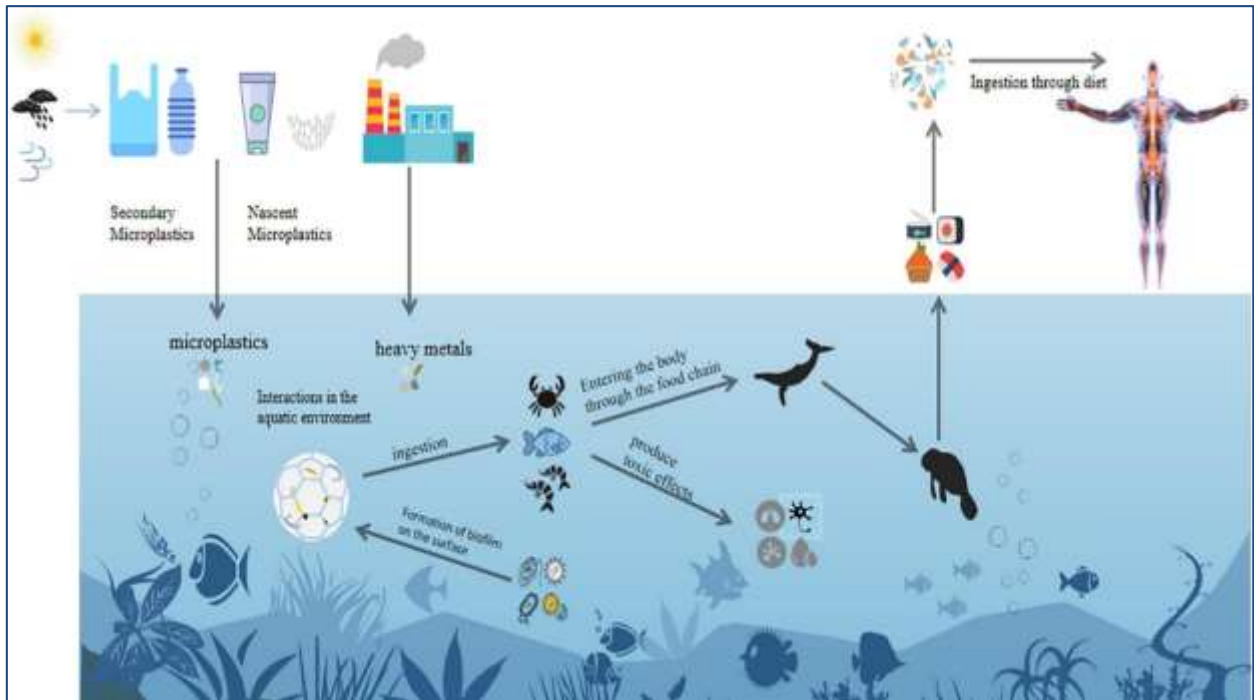
As the consumption of marine organisms contaminated with heavy metals poses a great danger to human health, therefore, the aim of the current study is to estimate some heavy metals level in the edible parts of some marine organisms in Damietta governorate and to ensure the suitability of these organisms for human consumption.



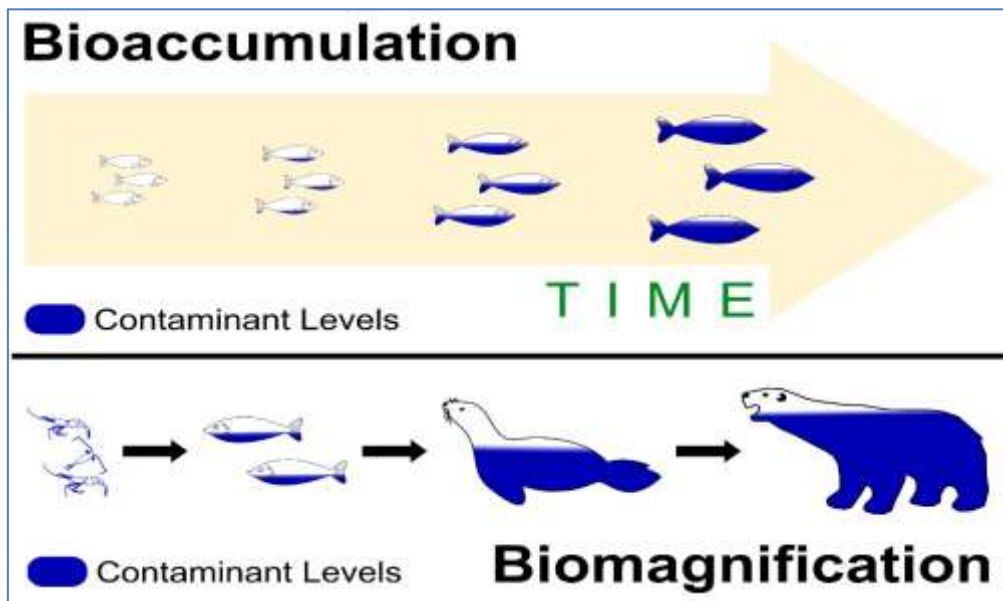
### Source and Fate of Heavy Metal in Aquatic Environment



**Trophic transfer of heavy metals from freshwater fish to humans in food chain.**



**Uptake of heavy metals by aquatic organisms**



**Bioaccumulation and biomagnification.**