

Abstract

A substantial use of chemicals is essential to meet the social and economic goals of the world community and today's best practice demonstrates that they can be used widely in a cost-effective manner and with a high degree of safety. However, a great deal remains to be done to ensure the environmentally sound management of toxic chemicals, within the principles of sustainable development and improved quality of life for humankind. Two of the major problems, particularly in developing countries, are (a) lack of sufficient scientific information for the assessment of risks entailed by the use of a great number of chemicals, and (b) lack of resources for assessment of chemicals for which data are at hand (Agenda 21, Chapter 19; 19.1).

Gross chemical contamination, with grave damage to human health, genetic structures and reproductive outcomes, and the environment, has in recent times been continuing within some of the world's most important industrial areas. Restoration will require major investment and development of new techniques. The long-range effects of pollution, extending even to the fundamental chemical and physical processes of the Earth's atmosphere and climate, are becoming understood only recently and the importance of those effects is becoming recognized only recently as well (Agenda 21, Chapter 19; 19.2).

Heavy metals also strongly affect the aquatic ecosystem. In seawater a part of the metal pollution enters marine organisms via the

food chain, while the another part can adsorb on the surfaces of clay and organic particulates and settle down at the bottom sediments. Understanding heavy metal accumulation through the food chain is important for human life, because they can pose a threat to human health via consumption of contaminated fish or other marine organisms.

This study aims at contributing to the understanding of heavy metal accumulation in fishes and the human body as well as in marine sediments. A major part of this thesis is focuses on the investigation and assessment of the distribution of mercury in sediments and it's accumulation in fish and human hair around the Persian Gulf in the south of Iran. Another concern is given to series of heavy metals in different fish species from the Persian Gulf. For a better interpretation and understanding of the accumulation of mercury and other heavy metals in fish and human hair as well as for the pollution levels in sediments, advanced statistical tests were used.