Accepted Manuscript

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PII: S2352-1864(16)30177-8
DOI: http://dx.doi.org/10.1016/j.eti.2016.12.004
Reference: ETI 103

To appear in: *Environmental Technology & Innovation*

Received date: 14 March 2016
Revised date: 4 October 2016
Accepted date: 14 December 2016

Please cite this article as: Wong, M.-H., Chemical pollution and seafood safety, with a focus on mercury: The case of Pearl River Delta, South China. *Environmental Technology & Innovation* (2016), http://dx.doi.org/10.1016/j.eti.2016.12.004

CHEMICAL POLLUTION AND SEAFOOD SAFETY, WITH A FOCUS ON MERCURY: THE CASE OF PEARL RIVER DELTA, SOUTH CHINA

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ABSTRACT

Most of the fish consumed in Hong Kong are farmed fish, including freshwater and marine fish, which are highly susceptible to various chemicals discharged from industrial sites nearby. It is recognized that emissions from coal-power plants are major sources of Hg in the environment worldwide. The situation is serious in the Pearl River Delta, South China, with a high demand of electricity, to support rapid development of various industries. In addition, the area has become the world's manufacturer for electrical/electric equipment, textiles, footwear, furniture, etc., emitting a wide range of toxic chemicals into the environment. In fact, "chemical food contaminants" is one of the 3 key global food safety concerns. Food safety is any action and policy which ensure food is safe, in the entire food chain, i.e. from production to consumption (WHO, 2013). This article attempts to review environmental health issues related to persistent toxic substances (PTS), with a focus on Hg; from biogeochemistry, ecology, epidemiology, to policy and management, citing examples related to South China.

Key Words: Emerging chemicals of concern; Fish contamination and human health; Mercury; Pearl River Delta; Persistent toxic substances

1. INTRODUCTION

The present article focuses on human health risks due to consumption of fish contaminated by persistent toxic substances (PTS), focusing on mercury (Hg). Minamata disease reported in 1950s and 1960s was in fact acute Hg poisoning of residents of Minamata Bay (a fishing village), Japan, who had consumed contaminated finfish and shellfish from the bay, resulted in several hundred deaths. This was due to the discharge of Hg from an industrial source, and under anaerobic condition, sulfide reduction bacteria were able to transform inorganic Hg to methyl Hg (MeHg), the most toxic form of organic Hg, which was subsequently taken up by these seafood,a nd hence the problem. It was apparent that the neurotoxicological effects on fetal development from pregnant women consuming Hg laden seafood could be serious (Harada, 1995).

Food safety is in fact one of the current major public health issues in the world, especially in the developing countries. Repeating the episodes happened in the 18^{th}, 19^{th} and 20^{th} centuries in developed countries, much damage has done to the environment in developing countries, at a