

CFS announces risk assessment study results on organotin compounds in aquatic products available in local markets

The Centre for Food Safety (CFS) of the Food and Environmental Hygiene Department announced today (April 10) the results of a recently completed risk assessment study on organotin compounds (OTC) in aquatic products in local markets. About 340 samples of aquatic products were taken at retail level for testing of levels of four OTC with the aim of estimating the exposure of the local adult population to these chemicals through consumption of aquatic products, and to assess the associated health risks. The study results showed that adverse health effects due to dietary exposure to OTC from aquatic products is unlikely.

A spokesman for the CFS said, "OTC are a large class of compounds composed of tin (Sn) directly bound to different organic groups. For the four OTC covered in the study, tributyltin (TBT) and triphenyltin (TPT) are widely used as biocides in wood preservatives, algicides and molluscicides in antifouling products on ships, while dibutyltin (DBT) and di-n-octyltin (DOT) are generally used as polyvinyl chlorides (PVC) stabilisers. OTC are relatively persistent in the environment and have a tendency to bioaccumulate in the food chain. The general public is exposed to OTC mostly through intake of fish and seafood."

The CFS collected a total of 341 samples of aquatic products of three food groups from local markets, i.e. fish (e.g. grass carp, salmon, bigeye and mangrove snapper); crustaceans (e.g. crabs, shrimp and lobsters); and molluscs (e.g. cuttlefish, squid and clams), for testing of the levels of the four OTC. The study results showed that 205 samples (60 per cent) were found to contain at least one OTC, with TPT as the most predominant compound, followed by TBT, DBT and DOT.

As regards the mean total OTC levels in the three aquatic product groups, fish contained the highest level (24 mcg/kg as Sn), followed by molluscs (15 mcg/kg as Sn) and crustaceans (14 mcg/kg as Sn). This study found that even for the same type of aquatic product, OTC levels varied quite widely among samples.

For dietary exposure, the study found that the food group "fish" was the major contributor to OTC dietary exposure. The total OTC exposure of average and high consumers of the adult population were 0.02 mcg per kg of body weight (bw) per day as Sn and 0.057 mcg/kg bw per day as Sn respectively. Both levels are below the health-based guidance value (HBGV) for the group of TBT, TPT, DBT and DOT compounds set by the European Food Safety Authority (equivalent to 0.1 mcg/kg bw per day when expressed as Sn) and accounting for about 20 per cent and 57 per cent of the HBGV. It showed that adverse health

effects due to OTC exposure in the local adult population from aquatic products available in the local market is unlikely.

The spokesman noted that although OTC had been found to affect the immune system, cause endocrine disruption and reproductive and developmental effects in animal studies, there is currently not sufficient data to prove that OTC will cause health concerns in humans. The Codex Alimentarius Commission (Codex) has not established any standard for OTC in food.

He advised the public to maintain a balanced and varied diet which includes a wide variety of meat, vegetables and fruits so as to avoid excessive exposure to any contaminants from a small range of food items. As fish contain many essential nutrients, such as omega-3 fatty acids and high quality proteins, moderate consumption of a variety of fish is recommended.

The CFS will continue to keep in view the relevant scientific research, risk assessments, regulatory controls and latest development in other countries. The study report is available on the CFS website at www.cfs.gov.hk.