PRESS RELEASE

DIOXIN LEVELS IN HUMANS IN HONG KONG

Background

- Dioxins are a group of chlorinated hydrocarbons that are widespread and persistent environmental pollutants which are generally regarded as potentially highly toxic to humans. The most dangerous form of dioxin, 2, 3, 7, 8 tetra-chlorodibenzo-para-dioxin (TCDD), is classified as an established human carcinogen. This conclusion is drawn from information on long term high level occupational and accidental exposures. Because of the low degradation rate of these compounds, virtually every person in the world has some level of dioxins in their bodies. Dioxins can be measured in body tissues and fluids, including breast milk, and their levels reflect the exposure to these compounds over previous years.

*In introducing the findings of this study, Professor Anthony Hedley, Chair Professor of the Department of Community Medicine, the University of Hong Kong said, “this is the first time that breast milk dioxin levels have been measured and documented in a large scale and representative study in Hong Kong and also the first time that Hong Kong has participated in a World Health Organisation co-ordinated dioxin exposure study.”*

Research Findings

- A total of 316 milk samples from mothers who had given birth to their first baby were analysed in thirteen pools by the method of *Gas Chromatography with Mass Spectrometry (GC/MS)*. The analyses measured both dioxins [Polychlorinated dibenzo-para-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs)] and dioxin-like polychlorinated biphenyls (PCBs).

*Professor Hedley said that, “Among the twenty-six countries/regions which participated in the third round WHO-coordinated exposure study (2002-03), on the basis of levels of the middle values of ‘toxic equivalents’ for dioxins and PCBs in human milk pools determined by GC/MS, the Hong Kong SAR was ranked (from the higher to lower order of magnitude) 14th in levels of PCDD/Fs and 17th in levels of PCBs.”*

- A separate bioassay was also carried out on individual mothers’ samples to aid the identification of possible factors associated with dioxin levels in body fluids.
Professor Hedley pointed out that apart from the geographic environmental influences, dioxin levels in individual milk samples estimated in the bioassay suggested that increasing age is the strongest and the most consistent factor associated with higher dioxin levels in humans. This survey also found a weak positive association between dioxin levels and seafood intake in mothers older than 30 years old.

Monitoring of food sources

- The level of dioxins in mothers born in Hong Kong and South China were generally lower than those in Europe, whereas Hong Kong levels were similar to or slightly higher than those in other Asia Pacific countries.

Dr. Rainer Malisch, Head of Dioxin Laboratory for the WHO dioxin exposure study 2002-03, State Institute of Chemical and Veterinary Analysis of Food, Freiburg, Germany, commented that, “The standard protocol of the WHO dioxin exposure study had provided an excellent basis for a reliable worldwide collection of data on dioxin intake including this survey in Hong Kong. However relatively fewer Asia Pacific countries had participated in the WHO survey so far.”

Dr. Malisch said that, “The major source of human background exposure is food (more than 90%), with food of animal origin such as seafood, dairy products and meat being the predominant source. Therefore dioxin levels in humans, foods and feedstuffs are frequently monitored in the European Union and this is important for enforcing controls on dioxin contamination in the region.”

Controls of Emission of Dioxin

- Professor Wong Tze Wai, the Department of Community and Family Medicine, the Chinese University of Hong Kong said, “Environmental regulations and their enforcement were very important in the prevention of human exposures to dioxins. Strategies were needed to control dioxin emissions worldwide.”

- Professor Wong said “The Air Pollution Control Ordinance does not yet provide any set legal standard for dioxin in ambient air. However the Environmental Protection Department does have legislative control over emissions from incineration. Under the Air Pollution Control Ordinance dioxins are subject to “licence control” with a requirement to use the best practical means for reduction of dioxin emissions. He said “Under the Waste Disposal Ordinance there is a regulation: the Waste Disposal (Chemical Waste) Regulation, which makes provision for control of dioxin and furan disposal.”

The Stockholm Convention, signed by the United Nations in 2001, aimed to eliminate twelve priority persistent organic pollutants (POPs), in all countries, including dioxins and dioxin-like compounds. However in the north and east Asian region there were still shortfalls in achieving sustained reductions in dioxin emissions.

In Hong Kong old technology incinerators have already been closed down for several years. However in Mainland China, there are no known laws for controlling dioxin
emissions. Uncontrolled and illegal burning of waste materials, including tyres, asphalt and coated computer components were examples of pyrolysis activities which can lead to dioxin pollutants.

In Japan, which had one of the highest rates of dioxin release in the world, the “Dioxin Special Measures Law” was enforced in 2000 and several regulations are now in place including standards for reducing dioxin releases from incinerators.

Safety of Breastfeeding

- The research team’s report firmly states that no contraindications to breastfeeding arise from the findings of the study.

Professor Tony Nelson, Department of Paediatrics, the Chinese University of Hong Kong, emphasised that breastfeeding was safe and highly beneficial for all infants. He said that “although breast milk contains a certain amount of dioxins, we firmly believe that breastfeeding in Hong Kong is safe and should continue to be strongly supported for the following reasons:

- The WHO consultation in 1998 on the tolerable daily intake of dioxins has led to a firm conclusion that breastfeeding should be promoted and supported.
- This present survey did not find very high levels of dioxins in Hong Kong mothers.
- Any adverse effects of dioxins from mothers are more strongly associated with transfer through the placenta before birth rather than through breast milk after birth.
- Breastfeeding has enormous beneficial effects in infant development and health and most importantly may help protect against possible harm from environmental chemicals.”

The research team emphasised that the most important task was to ensure that dioxin emissions from uncontrolled burning of waste and manufacturing processes was eliminated worldwide.

Continued participation of Hong Kong in future WHO/EURO dioxin exposure studies will be necessary to monitor trends in the body dioxin load in the Hong Kong population. Policy development on the control of persistent organic pollutants, underpinned by scientific research, is needed to provide a healthy environment in Hong Kong and protect the health of the population.

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December 4, 2003