

香港成年人从食物摄取 非二恶英样多氯联苯的情况

Dietary Exposure to Non-Dioxin-Like Polychlorinated Biphenyls (PCBs) of Hong Kong Adult Population

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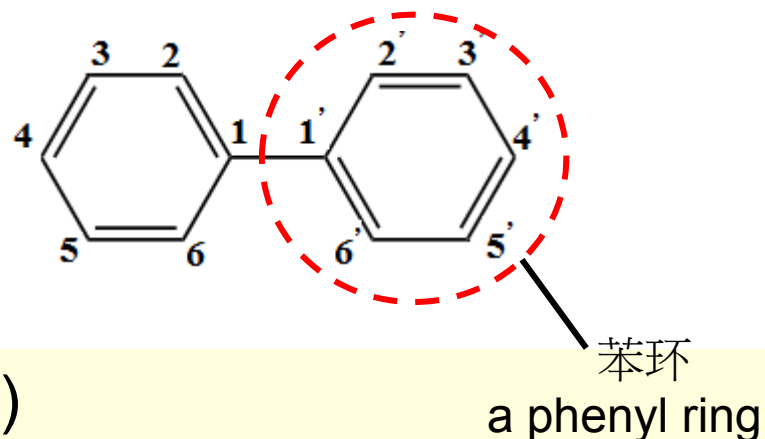
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什么是多氯联苯？

What is polychlorinated biphenyls (PCBs)?

多氯联苯

- 一组具相似基本结构的化合物
(联苯 - 两个苯相连)
- 氯的数目及位置不同
- 共有两百多种化合物



Polychlorinated biphenyls (PCBs)

- a group of chemicals with similar basic structure
(biphenyls - two connected phenyl rings)
- number and position of chlorine attached to biphenyl are different
- a group of more than 200 chemicals

什么是多氯联苯？

What is polychlorinated biphenyls (PCBs)?

- 人造环境污染物
- 自1930年代开始大量生产，并广泛应用于工业上，如电绝缘体
- 非常稳定
- 对环境及人体健康有害
- 从70年代起，禁止使用

- man-made environmental contaminants
- mass production since 1930 and used in a number of industrial applications such as electrical insulators
- very stable
- cause harm to environment and human health
- banned for use since 1970s

什么是多氯联苯？

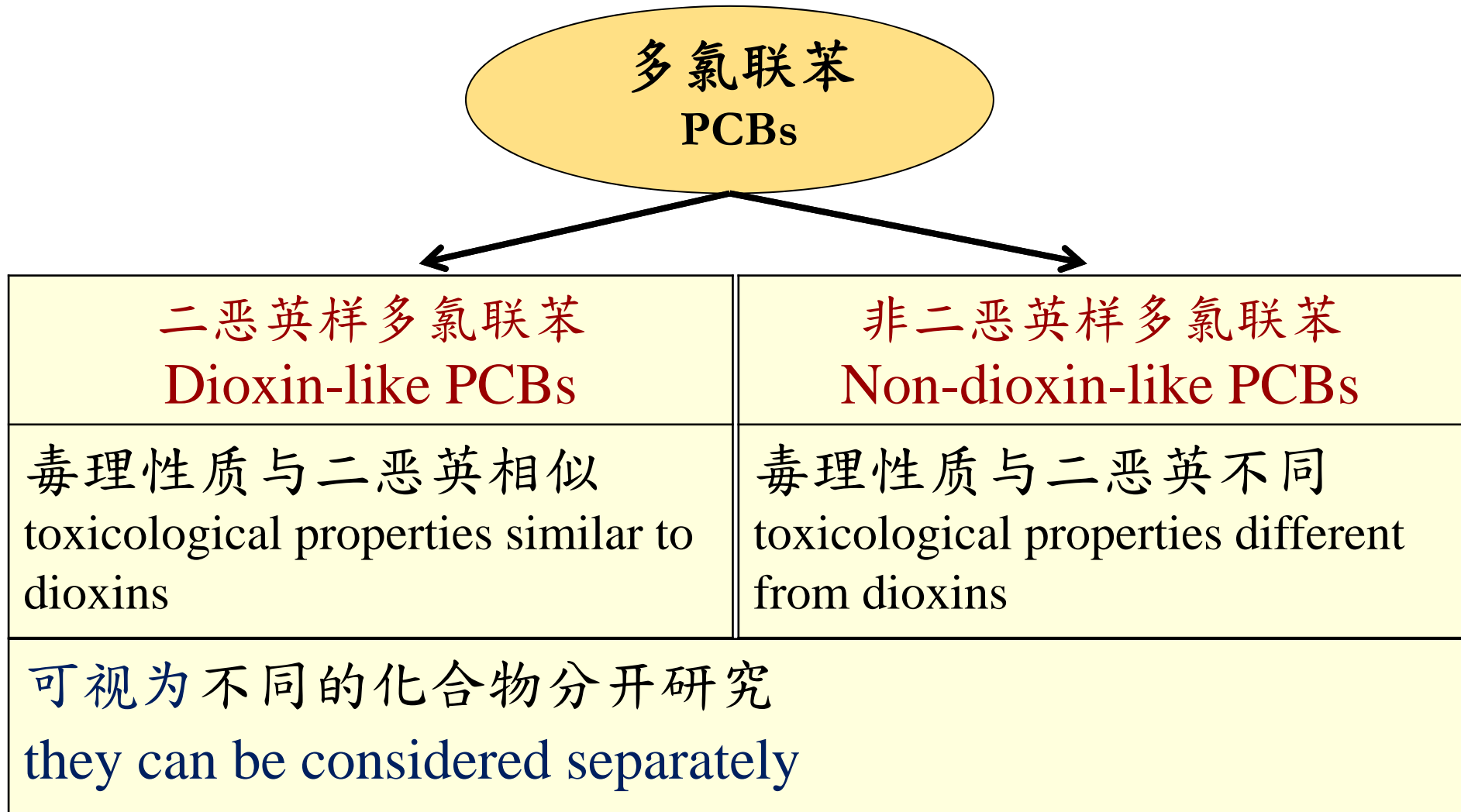
What is polychlorinated biphenyls (PCBs)?

- 会长时间存留在环境，并在食物链中生物累积
- 属脂溶性
- 主要摄入来源
 - 鱼类、肉类、奶类和蛋等动物源性食品

- persist in the environment and bioaccumulate in the food chain
- fat soluble
- main route of exposure
 - foods of animal origin such as fish, meat, dairy products and eggs

什么是非二恶英样多氯联苯?

What are non-dioxin-like polychlorinated biphenyls (PCBs)?



什么是非二恶英样多氯联苯?

What are non-dioxin-like polychlorinated biphenyls (PCBs)?

二恶英样多氯联苯 Dioxin-like PCBs

毒理性质与二恶英相似

toxicological properties similar to dioxins

2011年研究

- 一般市民的健康受到二恶英和二恶英样多氯联苯不良影响的机会不大。

Study in 2011

- the general population was unlikely to experience undesirable health effects of dioxins and dioxin-like PCBs.

什么是非二恶英样多氯联苯?

What are non-dioxin-like polychlorinated biphenyls (PCBs)?

非二恶英样多氯联苯 Non-dioxin-like PCBs

- 毒理性质与二恶英不同
- toxicological properties different from dioxins
- 没有本地数据评估相关的健康风险
- no local data for health risk assessment

非二恶英样多氯联苯对健康的影响

Health effect of non-dioxin-like PCBs

- 对健康的影响
 - 影响内分泌系统
 - 干扰甲状腺素的水平
 - 影响免疫系统
 - 影响改变神经行为的发育

- Health effects
 - affect endocrine system
 - disrupt thyroid hormone levels
 - affect immune systems
 - affect neurobehavioural development

非二恶英样多氯联苯对健康的影响

Health effect of non-dioxin-like PCBs

- 致癌性
 - 国际癌症研究机构(IARC)
 - 多氯联苯
 - 列为第1组物质 (即确定的人类致癌物)

- Carcinogenicity
 - International Agency for Research on Cancer (IARC)
 - PCB
 - Group 1 agent, i.e. carcinogenic to human

目的 Objectives

- 检测食物中非二恶英样多氯联苯的总和
- 估计香港成年人从食物摄取非二恶英样多氯联苯的情况
- 评估相关的健康风险

- to determine the sum of non-dioxin-like PCBs in food
- to estimate the dietary exposure to non-dioxin-like PCBs of the Hong Kong adult population
- to assess the associated health risks

食物抽样和处理

Food sampling and preparation

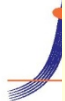
■ 选取71种食物

□ 动物源性食物及其产品、油脂性食物

- 鱼类和海产及其制品
- 肉类、家禽和野味及其制品
- 乳类制品
- 脂肪类
- 蛋及蛋类制品
- 混合食品
- 不含酒精饮品
- 谷物及谷物制品及其他

■ 71 food items selected

- animal origin and their products and oily food
 - Fish and seafood and their products
 - Meat, poultry and game and their products
 - Dairy products
 - Fats and oils
 - Eggs and their products
 - Mixed dishes
 - Beverages, non-alcoholic
 - Cereals and their products and others



食物抽样和处理

Food sampling and preparation

- 12个月内分4次购买样本
- 每次购买
 - 每种食物购买3个样本
 - 把同一种食物的3个样本合并成为混合样本
- 共检测了284个混合样本

- 4 sampling occasions in twelve months
- Each occasion
 - purchase 3 samples for each food items
 - combine the 3 samples of the same item into a composite sample
- analysed 284 composite samples in total

化验分析 Laboratory analysis

- 由食物安全中心的食物研究化验所进行
- conduct by the Food Research Laboratory (FRL) of the CFS



健康參考值

Health-based guidance values (HBGVs)

- 评估健康风险
- 参照一些欧洲国家采用的健康參考值
 - 以六种非二恶英样多氯联苯之总和计算，每日可容忍摄入量为每公斤体重10纳克
- 六种非二恶英样多氯联苯：
 - PCB-28、52、101、138、153及180

- to assess associated health risks
- make reference to HBGV from some European countries
 - 10 ng/kg bw/day for sum of the six non-dioxin-like PCBs
- six non-dioxin-like PCBs:
 - PCB-28, 52, 101, 138, 153 and 180

结果及讨论

Results and discussion

- 284个样本中，只有59(21%)样本检出非二恶英样多氯联苯
 - ◆ 非二恶英样多氯联苯含量属于低
- 这59个样本中，50个属于“鱼类和海产及其制品”
 - ◆ 海外研究结果相若

- only 59 samples (out of 284) with detected non-dioxin-like PCBs (21%)
 - ◆ levels of non-dioxin-like PCBs were low
- among these 59 samples, 50 belonged to “fish and seafood and their products”
 - ◆ similar to overseas studies

结果及讨论

Results and discussion

非二恶英样多氯联苯含量分布 (下限估量-上限估量)

Distribution of non-dioxin-like PCB (Lower bound – Upper bound)

食物组别 Food group	检出非二恶英样多氯联苯样本数目 (检测样本数目) No. samples with detected non-dioxin-like PCBs (no. of samples tested)	平均值(微克/公斤) Mean ($\mu\text{g}/\text{kg}$)
鱼类和海产及其制品 Fish and seafood and their products	50 (76)	0.89 – 0.93
肉类、家禽和野味及其制品 Meat, poultry and game and their products	3 (48)	0.01 – 0.07
乳类制品 Dairy products	1 (20)	0.01 – 0.06
油脂类 Fats and oils	4(8)	0.17 – 0.22
其他 Others	1(16)	0 – 0.07

结果及讨论

Results and discussion

含非二恶英样多氯联苯较高的食物

Food items with higher level of non-dioxin-like PCBs

	平均含量 (微克/公斤) Mean concentration ($\mu\text{g}/\text{kg}$)
鲑鱼 salmon fish	5.7
蚝 oyster	3.4
桂花鱼 mandarin fish	3.1
黄花鱼 yellow croaker fish	1.7
鲳鱼 pomfret fish	1.2

膳食摄入量 Dietary Exposure

每日膳食摄入量 (纳克/每公斤体重)

Dietary exposure (ng/kg bw/day)

	一般人 Average	摄入量高的人 High consumer
本研究 Current study	0.68 – 1.38	3.08 – 3.84
健康参考值的百分比 % HBGV	6.8% – 13.8%	30.8% – 38.4%

- 健康参考值: 每日可容忍摄入为每公斤体重10纳克
- 摄入量均低于相关健康参考值
- 一般市民的健康受到非二恶英样多氯联苯不良影响的机会不大

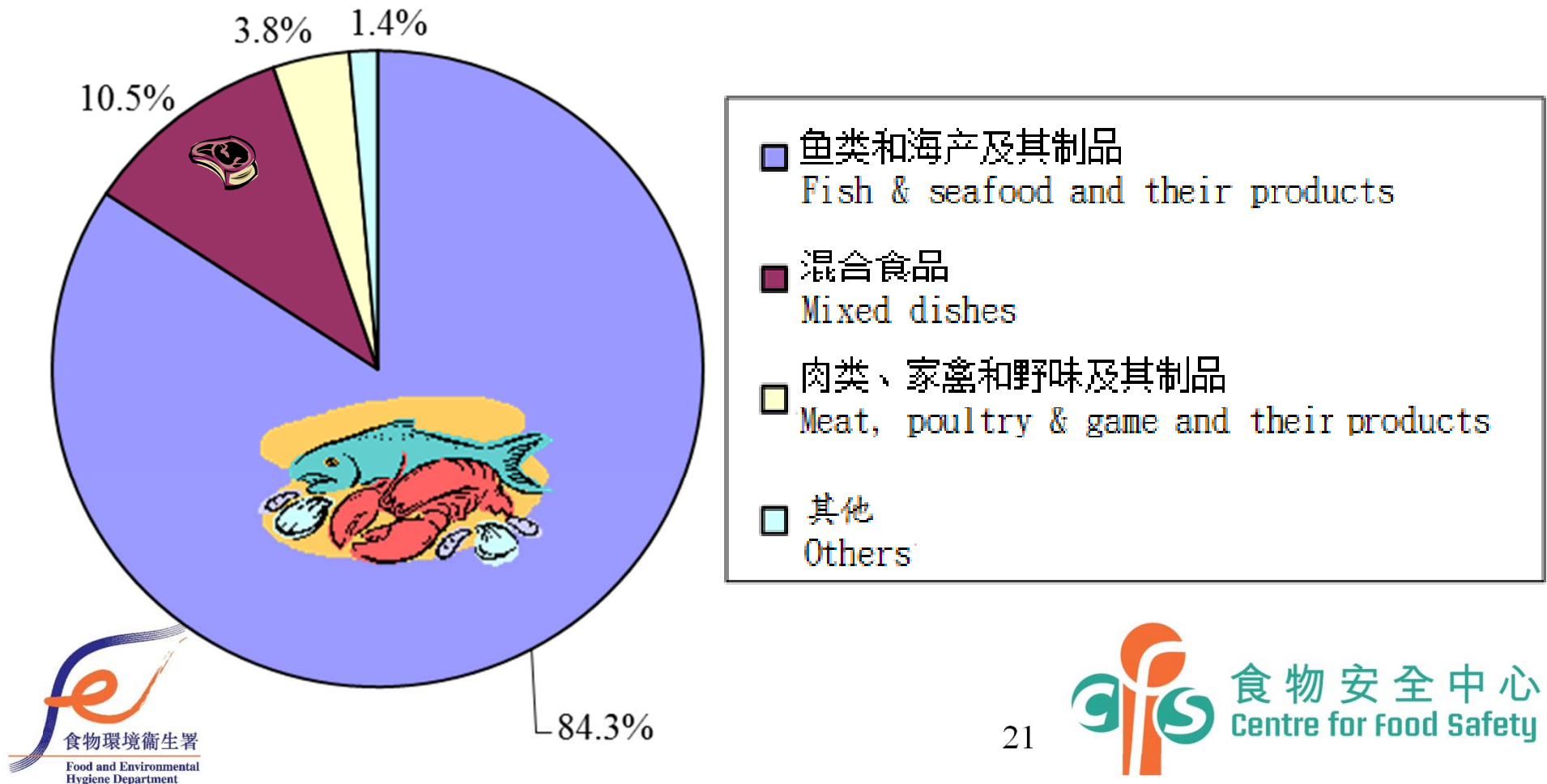
- HBGV: 10 ng/kg bw/day
- exposures were below the HBGV
- general population was unlikely to experience undesirable health effects of non-dioxin-like PCBs

结果及讨论

Results and discussion

主要的膳食来源

Major food contributors



结果及讨论

Results and discussion

最主要的膳食来源

- 鱼类和海产及其制品
 - 占总摄入量的84.3%

Major food contributors

- Fish and seafood and their products
 - 84.3% of total exposure

结果及讨论

Results and discussion

- 一般市民
 - 健康受到非二恶英样多氯联苯不良影响的机会不大
- 主要摄入来源：
 - 动物源性的食物
 - 特别是鱼类

- General population
 - unlikely to experience major undesirable health effect
- Predominant route of exposure:
 - Food of animal origin
 - Particularly fish

结果及讨论

Results and discussion

- 各国已致力减少市民从膳食摄入多氯联苯的分量
- 源头控制措施
 - 从70年代起，已禁止使用多氯联苯
- 不同研究发现，多氯联苯在主要食物类别内的含量有所降低

- international effort has been made to reduce the dietary exposure to PCBs of the population
- source control measures
 - banned for use since 1970s
- different studies have shown that PCB concentrations in major food groups have been decreasing

给市民的建议

Advice to public

- 保持均衡及多元化的饮食
 - 包括进食多种蔬果
 - 避免因偏食某几类食物而摄入过量的污染物

- Have a balanced and varied diet
 - include a wide variety of fruit and vegetables
 - so as to avoid excessive exposure to contaminants from a small range of food items

给市民的建议

Advice to public

- 适量进食多种鱼类
 - 鱼类含有多种人体所需的营养素，例如奥米加-3脂肪酸、优质蛋白质等

- Recommend moderate consumption of a variety of fish
 - Fish contain many essential nutrients such as omega-3 fatty acids, and high quality proteins

谢谢
Thank you

