



食物安全中心  
Centre for Food Safety

# 食物安全焦點

## Food Safety Focus

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### 焦點個案 Incident in Focus

## 在食物中濫用塑化劑

## The Abuse of Plasticisers in Food

食物安全中心  
風險評估組  
科學主任馬嘉明女士報告  
Reported by Ms. Janny MA, Scientific Officer,  
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今年五月二十三日，台灣食品藥物管理(局)公布，驗出16款飲品濫用了塑化劑鄰苯二甲酸二(2-乙基己酯)(DEHP)。其後，台灣當局查出更多食物含有DEHP，以及其他塑化劑，包括鄰苯二甲酸二異壬酯(DINP)及鄰苯二甲酸二正丁酯(DBP)。調查工作顯示，有關產品含塑化劑是由於非法使用含塑化劑的起雲劑引致。有關起雲劑是由兩間生產商以塑化劑配製而成，以圖降低生產成本和提高產品的穩定性。管理局認為，起雲劑可能在以下五大類食品中濫用：(1)運動飲料、(2)果汁飲料、(3)茶飲料、(4)果醬／果漿或果凍，以及(5)膠囊錠狀、粉狀食品。台灣當局已因應事件禁售含起雲劑的上述產品，除非業界可就這些產品出示安全文件供核實。本文將會論述食物安全中心(中心)就事件採取的應變行動。

### 塑化劑是什麼？食物為何會有塑化劑？

塑化劑包括DEHP、DINP和DBP，常用於某些塑膠產品，包括食物包裝物料、存血袋及靜脈輸注用品等，令這些產品柔軟和有彈性。

食物在加工處理或包裝過程中因食物接觸物料的物質遷移，又或透過環境污染，可能引致含有小量的塑化劑。不過，業界不可在食物中刻意添加任何分量的塑化劑。

### 對健康造成的不良影響

DEHP、DINP及DBP的急性口服毒性低。長期攝入DEHP會影響實驗動物的肝臟、腎臟及生殖和發育。DEHP已列為“或可能令人類患癌”的物質。至於DINP，其毒性較DEHP為低。長期攝入大劑量的DBP會影響實驗動物的生殖和發育情況，並導致實驗動物胎兒畸形。

### 食物安全中心採取的行動

自台灣當局作出公布後，中心一直跟台灣當局保持聯繫，一旦發現有問題食物已進口香港，隨即通知業界和了解有關產品有否在本港出售，又建議市民不要食用已輸港的懷疑受塑化劑污染產品。此外，中心採取風險為本的策略，加強抽取管理局公布的五類食品進行塑化劑分析，而抽取的樣本不限於台灣產品。中心亦就其他食品可能受塑化劑污染的報告，抽檢相關

On 23 May 2011, the Food and Drug Administration (FDA) in Taiwan announced that a plasticiser di(2-ethylhexyl) phthalate (DEHP) was found to have been abused in 16 drinks. Subsequently, more foods were found to contain DEHP as well as other plasticisers, including di-isononyl phthalate (DINP) and di-butyl phthalate (DBP). Investigations revealed their presence in the concerned products was a result of illicit use of clouding agents containing the incriminated plasticisers. These clouding agents were formulated by two manufacturers using plasticisers in an attempt to reduce cost and increase stability. The FDA considered that the clouding agents might have been abused in five major types of food, namely (1) sports drinks, (2) juice drinks, (3) tea beverages, (4) fruit jam/syrup and fruit jelly and (5) powder and tablet supplement. Due to the incident, the Taiwan authority prohibited the sale of these products if they contained clouding agent unless safety documents could be provided for verification. In this article, we are going to talk about our responses to this incident.

### What are Plasticisers and Why are They Found in Food?

Plasticisers including DEHP, DINP and DBP are commonly used in certain types of plastic products including food packing materials, blood storage bags and intravenous delivery systems to produce flexibility.

Food may contain low levels of these plasticisers due to their migration from food contact materials during processing or packing as well as from environmental contamination. However, they should not be added intentionally to food in any quantity.

### Adverse Health Effects

The acute oral toxicities of DEHP, DINP and DBP are low. Long-term exposure to DEHP is found to affect the liver and kidney as well as the reproduction and development of experimental animals. DEHP is classified as possibly carcinogenic to humans. Compared with DEHP, DINP has lower toxicity. Chronic large-dose exposure to DBP was found to affect the reproduction and development and cause birth defect in experimental animals.

### Actions Taken by the CFS

Following the Taiwanese announcement, the CFS has maintained contact with the Taiwan authority and promptly alerted the trade and implemented sales check for local availability when any affected products were found to have entered Hong Kong. The CFS also advised the public not to consume products that are suspected to be contaminated and have been exported to Hong Kong. In addition, the CFS has adopted a risk-based strategy and strengthened the collection and testing of five food categories announced

焦點個案  
Incident in Focus

百宗業界及公眾查詢。

截至二零一一年六月十四日，中心共檢測了205個樣本，所有樣本的DINP含量沒有超出有關從食物接觸物料遷移至食品的行動水平，即百萬分之九。不過，有33個樣本（包括7個運動飲料、1個果凍、1個沖劑飲品、11個濃糖果漿/果汁、1個玉露飲品、1個沙冰、1個茶飲料、8個方塊酥、1個即食麵麻油包

和1個雪花冰）驗出的DEHP或DBP含量超逾有關食物中的DEHP和DBP含量的行動水平（分別為百萬分之一點五及百萬分之零點三），詳見表一。為保障市民健康，食物環境衛生署署長根據《公眾衛生及市政條例》（第132章）第78C(3)條，多次發出第78B條命令，禁止上述受塑化劑污染而風險評估顯示長期食用可能對人體健康構成風險的食品輸入及在香港境內供應。此外，中心將會把塑化劑納入恆常監察計劃內。

食品樣本化驗，並因應台灣發出的通知及中心檢驗結果發出食物警報。另外，中心亦於過去兩星期處理約二

by the Taiwan FDA for plasticisers analyses. The food samples collected are not limited to products from Taiwan. The CFS has also given due regard to reports of possible plasticizer contamination in other food products and

表一：檢測結果摘要（截至二零一一年六月十四日）

Table 1: Summary of the testing results (as of 14 June 2011)

檢測結果 Test Results			
食品類別 Food type	不合格 Unsatisfactory	合格 Satisfactory	總數 Total
運動飲料 Sports drinks	7	9	16
果汁飲料 Juice drinks	2	39	41
茶飲料 Tea beverages	1	35	36
果醬/果漿或果凍 Fruit jam/syrup and fruit jelly	12	39	51
膠囊錠狀、粉狀食品 Powder and tablet supplement	1	2	3
其他 Others	10	48	58
總數 Total	33	172	205

took relevant food samples for testing. In addition, the CFS issues Food Alert as relevant in accordance with the notifications from Taiwan and our test results. Over the past two weeks, the CFS handled some 200 enquires from the trade and the public.

As of 14 June 2011, a total of 205 samples were collected. No samples contained DINP exceeding its action level of 9 ppm for migration from food contact materials to foodstuff. However, as listed in Table 1, 33 samples (including seven sports drinks, one jelly, one drink premix, eleven fruit syrups/concentrates, one juice drink, one icy drink,

one tea drink, eight cookies, one sesame oil sachet for instant noodle and one iceflake) were found to contain DEHP or DBP exceeding the action levels of 1.5 ppm and 0.3 ppm in food respectively. To protect public health, the Director of Food and Environmental Hygiene, pursuant to Section 78C(3) of the Public Health and Municipal Services Ordinance (Cap 132), issued several Section 78B Orders to prohibit from importing into and supplying within Hong Kong the tainted foods for which risk assessment showed that long-term consumption of such products may pose a health risk. The CFS will also include plasticisers in its routine surveillance programme.



曾在本地市面有售的部分含塑化劑的產品  
Some products containing plasticisers once available in Hong Kong

注意要點：

1. 偶爾食用有關問題產品不會損害健康，市民無須過分恐慌。
2. 食物環境衛生署署長已發出多次命令，禁止輸入和在香港供應塑化劑含量高的問題食品。
3. 中心會繼續監察事件。

Key Points to Note:

1. Occasional intake of the concerned products is unlikely to cause any adverse health effects. There is no cause for undue alarm.
2. Orders have been issued to ban the import into and supply within Hong Kong of the affected products containing high levels of plasticisers.
3. The CFS will continue monitoring the issue.

給消費者的建議

1. 停止進食已知有問題產品。
2. 偶爾食用受影響產品不會危害健康，市民無須過分恐慌。
3. 保持均衡飲食，以免因偏食某幾類食物而攝入過量污染物。

Advice to Consumers

1. Do not consume any products known to be affected.
2. There is no cause for undue alarm. Occasional intake of the affected products is unlikely to cause any significant health risk.
3. Take a balanced diet so as to avoid excessive exposure to contaminants from a small range of food items.

給業界的建議

1. 切勿出售和輸入問題產品。
2. 確保所有出售的食物均符合法例規定。
3. 向可靠供應商採購食物和食物配料，並實行良好的記錄制度，以便在有需要時可追查來源。

Advice to Trade

1. Do not sell and import the affected products.
2. Ensure all food for sale should comply with the legal requirements.
3. Source food and food ingredients from reliable suppliers and maintain a good recording system to allow source tracing if needed.

更多資料

- 中心特設的“食物中含塑化劑”網頁

Further information

- The CFS designated webpage on “Plasticisers in food”



# 除害劑及有害生物

## Pesticides and Pests

食物安全中心  
風險評估組  
科學主任邱頌韻女士報告  
Reported by Ms. Joan YAU, Scientific Officer,  
Risk Assessment Section,  
Centre for Food Safety



### 除害劑是什麼？

簡單來說，除害劑是用來殺死有害生物的化學物。一般而言，除害劑指任何用於防治、殺滅、驅趕或減少有害生物的物质或混合物。

**除害劑**指任何用於防治、殺滅、吸引、驅趕或控制有害生物，包括食品、農產品或飼料生產、貯存、運輸、銷售及加工過程中出現的有害植物或動物的物質，或用於控制動物體外寄生蟲的物質。本詞包括作為植物生長調節劑、落葉劑、乾燥劑、疏果劑或發芽抑制劑的物質，以及在作物收割前後用來防止貯存和運輸過程中產品腐敗的物質。本詞通常不包括肥料、植物和動物營養素、食物添加劑及獸藥。

~ 食品法典委員會

### What are Pesticides?

In simple term, pesticides are chemicals used for killing pests. Generally speaking, pesticide has been considered as any substance or mixture of substances intended for preventing, destroying, repelling or mitigating pests.

**Pesticide** means any substance intended for preventing, destroying, attracting, repelling, or controlling any pest including unwanted species of plants or animals during the production, storage, transport, distribution and processing of food, agricultural commodities, or animal feeds or which may be administered to animals for the control of ectoparasites. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant, fruit thinning agent, or sprouting inhibitor and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport. The term normally excludes fertilizers, plant and animal nutrients, food additives and animal drugs.

~ Codex Alimentarius Commission

上述詳盡的定義清楚表明，除害劑並非只是單單用來殺死有害生物的物质。不過，施用這些除害劑的最終目的卻大致相同，即提高產量。舉例來說，除害劑可作為天然或合成的植物生長調節劑，用於控制或調節植物生長過程，例如細胞分裂素（一組天然的植物生長調節劑，可促進細胞分裂和葉片伸展，並抑制葉片老化）可用來促進蘋果和開心果的果實生長。農民有時會使用疏果劑，減少幼果的數目，以令果實增大和增加開花次數，例如在蘋果中使用甲萘威。

除害劑可根據其用途劃分為表一所示的不同類別。就下述有害生物而言，除草劑及除蟲劑據稱依次為美國最常用的兩種除害劑。

It is clear from the above comprehensive definition that pesticides are substances used for more than killing pests. However, the ultimate goal of applying these pesticides is similar i.e. increase yields. For example, they can be used as plant growth regulators that are natural or synthetic substances for controlling or modifying plant growth processes, e.g. cytokinins (a group of naturally-occurring plant growth regulators that promote cell division, leaf expansion and retard leaf aging) can be used for promoting fruit growth in apple and pistachio. Sometimes farmers may use fruit thinning agents to reduce the number of young fruits so as to increase fruit size and enhance repeat bloom, e.g. the use of carbaryl in apple.

With reference to their usage, pesticides can be grouped under classes as listed in Table 1. Among these pest organisms, it has been reported that herbicide, followed by insecticide, are the most commonly used pesticides in the USA.

表一：除害劑的類別及其針對的有害生物或用途  
Table 1: Classes of pesticides and their target pests or usage

類別 Class	有害生物/用途 Pest organism / Usage	類別 Class	有害生物/用途 Pest organism / Usage
殺蟎劑 acaricide	蟎、蜱 mites, ticks	除蟲劑 insecticide	昆蟲 insects
落葉劑 defoliant	不需要的植物雜葉 unwanted plant foliage	軟體動物殺滅劑 molluscicide	螺、蛞蝓 snails, slugs
乾燥劑 desiccant	不需要的農作物雜葉 unwanted crop foliage	殺線蟲劑 nematocide	線蟲(蛔蟲) Nematodes (roundworms)
除真菌劑 fungicide	真菌 fungi	驅蟲劑 repellent	昆蟲、雀鳥 insects, birds
生長調節劑 growth regulator	昆蟲或植物生長 insect or plant growth	滅鼠劑 rodenticide	老鼠 mice, rats
除草劑 herbicide	雜草 weeds	殺病毒劑 virucide	病毒 viruses

參考書目 Reference: G. R. Stephenson et al. Glossary of terms relating to pesticides (IUPAC Recommendations 2006). Pure Appl. Chem., Vol. 78, No. 11, pp. 2075-2154, 2006.

### 什麼才算是有害生物？

有害生物通常指包括多種植物及動物的有害生物。

### What are Considered as pests?

Pests are usually referred to unwanted organisms that may cover a wide range of plants and animals.



多種生物都是有害生物，當中惹人討厭的有害生物有(a) 吊絲蟲；(b) 黃曲條跳甲；(c) 福壽螺；(d) 辣椒白粉病

A range of organisms are considered as pests. Some of the non-inviting ones are: (a) Larva of diamond black moth; (b) Flea beetle; (c) Apple snail; (d) Powdery mildew  
[相片由漁農自然護理署提供 Illustrations by courtesy of the Agriculture, Fisheries and Conservation Department]

除害劑可來自不同來源，並按其性質劃分為生物除害劑和化學除害劑兩大類。生物除害劑是來自動物、植物及細菌等的天然物質，在農作物生產過程中常用的例子包括微生物除害劑和生化除害劑。至於化學除害劑，則屬於合成化學物，當中一些(主要是有機氯除害劑及有機磷酸鹽除害劑)曾令不少人聞之色變。

Pesticides can be derived from different sources and grouped according to their natures: biopesticides and chemical pesticides. Biopesticides are derived from natural materials such as animals, plants and bacteria. Biopesticides commonly used in crop production include microbial pesticides and biochemical pesticides. Chemical pesticides are synthetic chemicals. Some of them, mainly organochlorine (OC) pesticides and organophosphate (OP) pesticides, once have raised many eyebrows.

食物事故點滴  
Food Incident  
Highlight

可樂罐的雙酚A

傳媒報道，可樂罐內塗層含微量雙酚A，引起市民關注雙酚A的安全問題。

金屬罐內的保護塗層以雙酚A製成，可防止金屬罐腐蝕，以及食物和飲料遭溶解出的金屬污染。

雖然傳媒指雙酚A可引致癌症，但不同食物當局的結論均認為，人們(包括初生嬰兒和嬰兒)從食物中攝入的雙酚A分量極低，相信不會對健康構成風險。一些國家已採取預防措施禁止含雙酚A的嬰兒奶瓶，以減少國民(特別是嬰兒)攝入雙酚A的機會。另一些則鼓勵業界自願取締用雙酚A製造的嬰兒奶瓶。目前並沒有任何國家禁止食物罐頭含雙酚A。食物安全中心(中心)支持業界更換含雙酚A的嬰兒奶瓶，並盡量減低食物罐內層的雙酚A含量。不過，市民應遵從中心建議，例如把食物從罐頭取出來後才加熱，以盡量減低與雙酚A有關的風險。

Bisphenol A (BPA) in Coca-cola Cans

Safety concern of Bisphenol A (BPA) was raised when media reported that trace amount of BPA was found in the coating of the Coca-cola cans.

A protective coating made with BPA in metal-based cans is used for preventing corrosion of the can and contamination of food and beverages with dissolved metals.

Although the media suggested that BPA may cause cancers, various food authorities have concluded that BPA absorbed from food by individuals, including newborns and infants, is very low and not expected to pose a health risk. Some countries have taken precautionary measures to reduce BPA exposure, particularly in infants, by banning BPA in baby bottles. Some have encouraged voluntary phase out of baby bottles made with BPA. No country has prohibited the use of BPA in food cans. The Centre for Food Safety supports the efforts of the trade to replace BPA-containing baby bottles and minimise BPA levels in food can lining. Nevertheless, the public should follow the advice, such as removing food from the can before heating, to minimise the risk related to BPA.

核事故與海產安全

受損的日本福島第一核電廠排放輻射污水後，有關的監察工作發現附近水域部分海產的放射性銫和放射性碘含量超逾日本及食品法典委員會的標準，引起市民關注太平洋的海產安全問題。

世界衛生組織指出，由於輻射污染物會在海水中消散和稀釋，因此在日本附近水域以外捕獲的海產輻射量仍然遠低於可影響公眾健康的水平。

本港已禁止進口和供應於三月十一日或之後在日本受影響的五個縣出產的多種食物，包括活生、冷凍或冷藏水產品。食物安全中心自三月十二日起加強監察日本進口的鮮食食物，至今(六月十四日)已對1 608個水產品樣本進行輻射水平測試，結果全部合格。

Nuclear Incident and Seafood Safety

Following the discharge of radioactive contaminated water from the incapacitated Fukushima Daiichi Nuclear Power Plant in Japan, monitoring of seafood in waters nearby found that some of them contained radioactive caesium and iodine exceeding Japanese and Codex standards. The findings raised concerns on the safety of seafood in the Pacific Ocean.

According to the World Health Organization, levels of radioactivity in seafood collected away from the waters surrounding Japan are expected to remain significantly below levels of any public health concern since any contamination will be dispersed and diluted.

In Hong Kong, imports and supply of Japanese food including live, chilled or frozen aquatic products from the five affected prefectures in Japan on or after 11 March are prohibited. With the stepped-up food surveillance for Japanese fresh produce since 12 March, the Centre for Food Safety has tested 1 608 samples of aquatic products for radioactivity to date (14 June) and all results were satisfactory.

風險傳達  
工作一覽  
Summary of  
Risk Communication Work

風險傳達工作一覽 (二零一一年五月) Summary of Risk Communication Work (May 2011)	數目 Number
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