

在食物中濫用塑化劑

The Abuse of Plasticisers in Food

今年五月二十三日，台灣食品藥物管理局（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。

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.

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质遷移，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。

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.

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。

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.



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

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、1 1 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。

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 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 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.

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

注意要點：

偶爾食用有關問題產品不會損害健康，市民無

須過分恐慌。

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。

中心會繼續監察事件。

Key Points to Note:

Occasional intake of the concerned products is unlikely to cause any adverse health effects. There is no cause for undue alarm.

Orders have been issued to ban the import into and supply within Hong Kong of the affected products containing high levels of plasticisers.

The CFS will continue monitoring the issue.

給市民的建議

停止進食已知有問題產品。

偶爾食用受影響產品不會危害健康，市民無須

過分恐慌。

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

Do not consume any products known to be affected.

There is no cause for undue alarm. Occasional intake of the affected products is unlikely to cause any significant health risk.

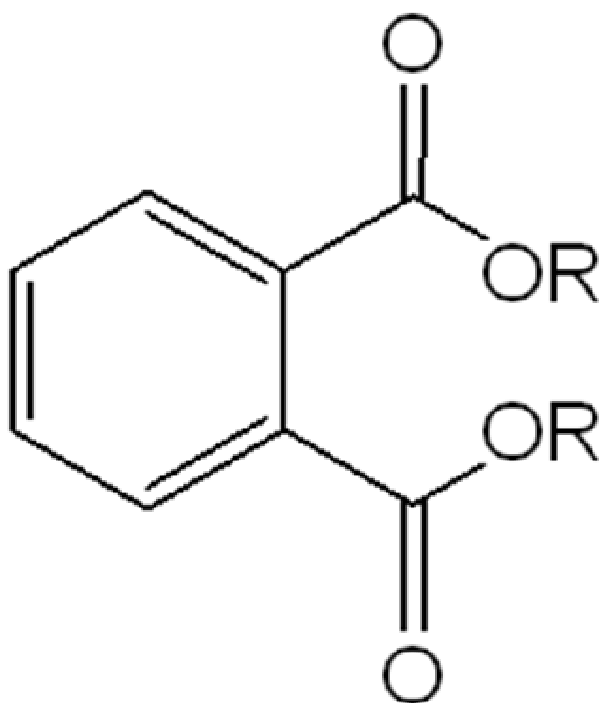
Take a balanced diet so as to avoid excessive exposure to contaminants from a small range of food items.

NOTES:

鄰苯二甲酸二丁酯（Dibutyl phthalate，DBP）是一種常用的增塑劑，也用作膠粘劑和印刷油墨的添加劑。可溶於多種有機溶

劑，如醇、醚和苯。DBP 也用作一種殺體外寄生蟲藥。

Dibutyl phthalate (DBP) is a commonly used plasticizer. It is also used as an additive to adhesives or printing inks. It is soluble in various organic solvents, e.g. in alcohol, ether and benzene. DBP is also used as an ectoparasiticide.



鄰苯二甲酸二(2-乙基己基)酯 (英語: Bis(2-ethylhexyl)phthalate 或 Di(2-ethylhexyl)phthalate, 縮寫分別為 BEHP 与 DEHP) 又稱鄰苯二甲酸二辛酯、酞酸二辛酯 (dioctyl phthalate, 縮寫

DOP)，化學式 $C_6H_4(C_8H_{17}COO)_2$ ，為鄰苯二甲酸與 2-乙基己醇生成的酯類化合物。它是最重要的鄰苯二甲酸酯，也是使用最廣和產量最大的塑化劑。

Bis(2-ethylhexyl)phthalate, commonly abbreviated DEHP, is an organic compound with the formula $C_6H_4(C_8H_{17}COO)_2$. It is sometimes called dioctyl phthalate and abbreviated DOP. It is the most important "phthalate," being the diester of phthalic acid and the branched-chain 2-ethylhexanol. This colourless viscous liquid is soluble in oil, but not in water. It possesses good plasticizing properties. Being produced on a massive scale by many companies, it has acquired many names and acronyms, including BEHP and di-2-ethyl hexyl phthalate.

