

本期內容 IN THIS ISSUE

焦點個案

牛肝菌菇類可安全食用嗎?

食物安全平台

食物中的金屬污染物－認識標準
制訂

食物事故點滴

亞洲風味湯粉類：半數鈉來自湯底
食物中的鄰苯二甲酸酯

風險傳達工作一覽

Incident in Focus

Are Bolete Mushrooms Safe to Eat?

Food Safety Platform

Metallic Contaminants in Food
- Understanding Standard Setting

Food Incident Highlight

Asian-style Soup Noodles:
Half Sodium Came From Soup
Phthalates in Food

Summary of Risk Communication Work

編輯委員會 EDITORIAL BOARD

總編輯

楊子橋醫生
顧問醫生(社會醫學)(風險評估及傳達)
行政編輯
吳志翔醫生
首席醫生(風險評估及傳達)

委員

梁靜勳醫生 首席醫生(風險管理)
陳詩寧獸醫 高級獸醫師(獸醫公共衛生)
張瑞珍女士 高級總監(食物安全中心)
嚴家義先生 高級總監(食物安全中心)
劉昌志醫生 高級醫生(風險評估)
鍾偉祥博士 高級化驗師(食物研究化驗所)

Editor-in-chief

Dr. Samuel YEUNG
Consultant (Community Medicine)
(Risk Assessment and Communication)

Executive Editor

Dr. Henry NG
Principal Medical Officer
(Risk Assessment and Communication)

Members

Dr. Jackie LEUNG
Principal Medical Officer (Risk Management)

Dr. Allen CHAN

Senior Veterinary Officer
(Veterinary Public Health)

Ms. Syndia CHEUNG

Senior Superintendent (Centre for Food Safety)

Mr. K Y YIM

Senior Superintendent (Centre for Food Safety)

Dr. Andrew LAU

Senior Medical Officer (Risk Assessment)

Dr. Stephen CHUNG

Senior Chemist (Food Research Laboratory)

焦點個案

Incident in Focus

牛肝菌菇類可安全食用嗎?

Are Bolete Mushrooms Safe to Eat?

食物安全中心風險評估組
科學主任朱源強先生報告

Reported by Mr. Johnny CHU, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

二零一八年一月，衛生署衛生防護中心公布兩宗懷疑食物中毒個案，共涉及四人。他們在進食「美味牛肝菌」後出現嘔吐及噁心的症狀。美味牛肝菌(*porcini*)的拉丁學名為 *Boletus edulis* (其他英文名稱包括king bolete、penny bun及ceps)。調查顯示，個案中的患者分別在二零一七年十二月至二零一八年一月期間舉行的兩個本地展覽(即香港冬日美食節及第52屆工展會)購買涉事的美味牛肝菌。在該兩宗個案中，患者所提供的未經烹煮菇樣本懷疑混合了其他食用菌及不可食用/帶毒性的菇類品種。本文將介紹這種名為「美味牛肝菌」菇類之特點及其可能摻雜毒菇的情況，並為業界及市民提供預防進食菇類引致食物中毒的建議。

美味牛肝菌

美味牛肝菌是屬於牛肝菌科(Boletaceae)的一種牛肝菌菇類。牛肝菌菇類一般是肥大肉厚，有不同顏色，菌柄較粗或呈球狀，菌傘底部通常有菌孔(圖1)。

最受歡迎及廣泛買賣的可食用牛肝菌菇類是「美味牛肝菌」，主要是以新鮮、冷藏、乾製及罐頭的方式售賣(圖2)。其他可食用的牛肝菌菇類還包括銅色牛肝菌(*B. aereus*)、褐紅蓋牛肝菌(*B. pinophilus*)及美網柄牛肝菌(*B. reticulatus*)等。美味牛肝菌在北美及北歐是常見的菇類。在內地，美味牛肝菌廣泛分布在雲南、四川、貴州、河南、黑龍江、西藏及福建等地。美味牛肝菌具嚼勁，有濃郁的堅果味，並與大部分菇類不一樣，經乾製及烹煮後，香味仍可保留下來。因此，美味牛肝菌是受歡迎的配料，用於不同的燉煮菜肴及醬汁，亦是撒在薄餅面的美味餡料。

在天然棲息地生長的美味牛肝菌，其長於地下的菌部與樹木的根部存在互惠共生的共生關係。這說明為何人工培養美味牛肝菌往往難以成功，以及市場上的美味牛肝菌基本上都是野生採摘。

根據文獻所載，牛肝菌菇類共有數百種，部

菌褶
Gills

菌傘
Caps

菌孔
Pores

菌柄
Stalks

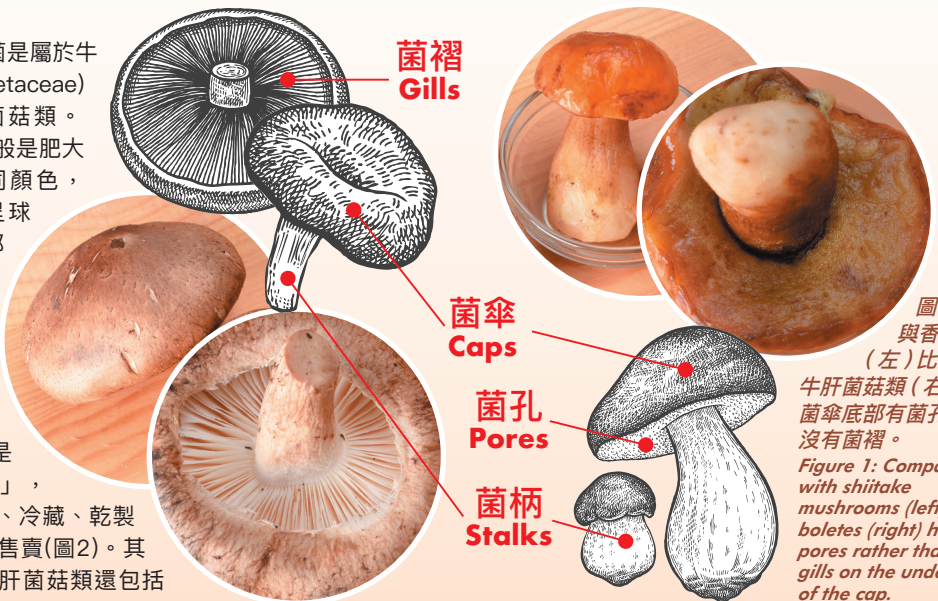


圖1：
與香菇
(左)比較，
牛肝菌菇類(右)的
菌傘底部有菌孔而
沒有菌褶。
Figure 1: Compare
with shiitake
mushrooms (left),
boletes (right) have
pores rather than
gills on the underside
of the cap.

Porcini Mushrooms

Porcini are a member of bolete mushrooms which belong to the family Boletaceae. Boletes usually are large fleshy mushrooms. They have a variety of colours with a thick or bulbous stalk and typically have pores on the underside of the cap (Figure 1).

The most popular, widely traded edible bolete is "porcini" which are mainly traded as fresh, canned, frozen, and dried (Figure 2). Other edible boletes include *B. aereus*, *B. pinophilus*, *B. reticulatus*, etc. Porcini are common in North America and Northern Europe. In the Mainland, they are widely distributed in Yunnan, Sichuan, Guizhou, Henan, Heilongjiang, Tibet, and Fujian. Porcini have a chewy texture and a strong nutty taste and unlike most mushrooms they maintain the flavour after drying and cooking. Consequently, they are a popular ingredient in a variety of stews and sauces as well as a delicious topping for pizza.

焦點個案
Incident in Focus

分帶毒性，例如黑孢牛肝菌 (*Tylopilus nigerrimus*)、黃粉末牛肝菌 (*Pulveroboletus ravenelii*) 及網孢海氏牛肝菌 (*Heimioporus retisporus*) 均是帶毒性的牛肝菌菇類。在歐洲，歐洲聯盟委員會食品和飼料快速預警系統自二零零一年起錄得數宗乾製美味牛肝菌含毒菇的事故，顯示在採摘野生美味牛肝菌時，有可能把毒菇（例如帶毒性的牛肝菌菇類）摻雜在美味牛肝菌中。事實上，內地及香港亦曾錄得進食從市場購買的美味牛肝菌因含不可食用/毒菇而導致食物中毒事故。



圖 2: 除了新鮮出售外，美味牛肝菌亦可以罐頭、冷藏（左）及乾製（右）的方式售賣。
Figure 2: Besides fresh, porcini may be traded as canned, frozen (left), and dried (right).

對公眾健康的影響

進食菇類引致的食物中毒一般為急性。病徵通常包括進食後短時間內出現噁心、嘔吐及腹痛等腸道徵狀。因應不同類型的毒菇，患者亦可能出現其他徵狀，例如極度口渴、大量流汗、昏迷、產生幻覺及狂喜、異常興奮、肝臟受損等。

所採取的行動

在接獲食物中毒個案通報後，食物安全中心(中心)立即進行調查，追蹤涉事菇類的供應來源，並要求涉事商戶停售產品。中心於二零一八年一月二十九日發出新聞公報，呼籲市民不要食用從上述展覽購得的美味牛肝菌。

預防措施

由於一些毒菇可能看似美味牛肝菌，故在採摘美味牛肝菌時必須小心謹慎，只採摘可食用的牛肝菌品種。此外，食物業界應遵循食品法典委員會制訂的《食用菌及其製品標準》及《乾食用菌法典標準》，防止產品在加工過程中受污染及變壞。

注意事項:

1. 牛肝菌菇類品種甚多：有可食用的(例如美味牛肝菌)，也有帶毒性的。
2. 在採摘野生菇類時，有可能把帶毒性的菇類摻雜在美味牛肝菌中。
3. 作出售用途的野生美味牛肝菌應由經過訓練及經驗豐富的人員負責採摘。市民切勿採摘及進食野生菇類。

給業界的建議

- ★ 確保所出售的美味牛肝菌(不論是鮮菌與否)適宜供人食用。
- ★ 從信譽良好及可靠的供應商採購美味牛肝菌，並確保供應商已採取措施，防止美味牛肝菌摻雜了帶毒性的菇類。
- ★ 嚴格遵守《食物安全條例》的規定，保存記錄。

給市民的建議

- ★ 不要購買懷疑摻雜了不明菇類品種的菇類產品。
- ★ 不要購買有不衛生或變壞迹象的美味牛肝菌，亦避免購買粉塵或碎塊太多的包裝美味牛肝菌。
- ★ 如懷疑進食菇類引致食物中毒，患者應立即求醫，並帶同未經烹煮的菇類或菇類殘餘物讓醫生察看。

毒菇經煮熟後，是否可安全食用？

鮮毒菇和煮熟的毒菇均不可安全食用，因為毒菇含有毒素。烹煮不能將這些毒素破壞。

為甚麼食用菇要在徹底煮熟後，方可安全食用？

至於可食用的菇類，在未經烹煮前或不可食用，因為許多食用菇含有刺激性/有毒物質，但徹底煮熟可破壞這些物質。

In their natural habitats, the underground part of porcini forms a beneficial, symbiotic relationship with the roots of trees. This explains why many attempts to cultivate porcini have been unsuccessful and why commercial porcini are basically harvested wild.

According to literature, there are hundreds of boletes and some are poisonous; for example, *Tylopilus nigerrimus*, *Pulveroboletus ravenelii*, and *Heimioporus retisporus* are poisonous boletes. In Europe, the Rapid Alert System for Food and Feed of the European Commission has recorded several incidents of dried porcini containing poisonous mushrooms since 2001, indicating that mixing porcini with poisonous mushrooms (such as poisonous boletes) may be possible during wild mushroom harvesting. In fact, food poisonings due to consumption of commercial porcini containing inedible/poisonous mushrooms were reported in the Mainland and in Hong Kong.

Public Health Significance

Mushroom poisoning is generally acute. Common presentations include gastrointestinal symptoms such as nausea, vomiting, and abdominal pain appearing shortly after ingestion. Depending on the types of poisonous mushrooms, the affected persons may have other symptoms such as extreme thirst, profuse sweating, coma, hallucination, euphoria, and liver damage.

Actions Taken

Upon receiving notification of the food poisoning cases, the Centre for Food Safety immediately conducted investigation to trace the source of supply of the concerned mushrooms and requested the business involved to stop sale. A press release was issued on 29 January 2018 to appeal to members of the public who had purchased porcini from the above-mentioned exhibitions not to consume them.

Preventive Measures

Since there may be poisonous mushrooms that resemble porcini, care should be taken to ensure, when porcini are being harvested, that only edible species are collected. Further, the food industry should also follow Codex [Standard for Edible Fungi and Fungus Products](#) and [Standard for Dried Edible Fungi](#) to prevent contamination and spoilage during processing.

Key Points to Note:

1. There are many boletes: some are edible (such as porcini) and some are poisonous.
2. Mixing of porcini with poisonous mushrooms is possible during wild mushroom harvesting.
3. Wild porcini destined for sale should be harvested by trained, experienced workers. The public should not pick wild mushrooms for consumption.

Advice to the Trade

- ★ Ensure porcini sold, whether fresh or not, are fit for human consumption.
- ★ Source porcini from reputable and reliable suppliers; and ensure that suppliers have measures to prevent porcini from mixing with poisonous mushrooms.
- ★ Adhere strictly to the Food Safety Ordinance in record keeping.

Advice to the Public

- ★ Do not buy mushroom products which are doubted to be mixed with unknown species.
- ★ Do not buy porcini which look unhygienic or show signs of spoilage, and avoid packages made up of too much dust or crumbled pieces.
- ★ If mushroom poisoning is suspected, the patient should seek immediate medical attention and bring the uncooked mushrooms or the remnants of mushrooms to the doctor.

Are cooked poisonous mushrooms safe to eat?

Raw or cooked poisonous mushrooms are not safe to eat because they contain toxins that cannot be destroyed by cooking.

Edible mushrooms should be thoroughly cooked prior to consumption. Why?

For mushrooms that are edible, they may not be safe when consumed raw. Many edible mushrooms contain irritating/toxic substances. Thorough cooking can destroy these substances.

食物中的金屬污染物 — 認識標準制訂

Metallic Contaminants in Food - Understanding Standard Setting

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,
Risk Assessment Section, Centre for Food Safety

金屬是在環境中無處不在的化學物質。金屬可天然存在於食物中，及 / 或因受工業以及其他人類活動的污染而存在於食物中。從膳食中攝入過量金屬污染物，例如砷、鎘、鉛及汞，可對健康構成不同的不良影響。

為保障公眾健康，大部分地區(包括香港)的有關當局已就食物中的金屬污染物制訂標準，作為其中一項風險管理措施。

怎樣制訂食物中的金屬污染物標準才是適當？

世界貿易組織(世貿)於一九九五年成立，是唯一處理各地政府之間的貿易規則的國際組織。世貿的《實施動植物衛生檢疫措施的協議》(《協議》)列明多項規則，當中包括各地政府在制訂食物安全措施時可依據的基本規則。有關措施包括食物中金屬污染物的標準。

根據《協議》，政府可建基於科學來制訂本身的食物安全標準。《協議》同時亦鼓勵政府使用國際標準，即食品法典委員會所訂定的標準。

食品法典委員會是聯合國糧食及農業組織(糧農組織)與世界衛生組織(世衛)於六十年代成立，以科學為本的組織。食品法典委員會依據由糧農組織及世衛設立的獨立國際風險評估機構所提供的科學意見，訂定和通過國際食物標準，以保障消費者的健康，並確保食品貿易手法公平。食品法典委員會標準在國際貿易中(特別是發生貿易糾紛時)一直作為重要的參考準則。

一如《協議》所載，若有科學理據，例如科學證據證明當地市民因膳食模式 / 習慣而有較大的健康風險，政府可制訂較國際標準嚴格的標準。此外，政府在制訂食物安全標準(見圖3)時，亦會考慮持份者所關注的問題以及其他合理因素。

制訂食物中的金屬污染物標準的誤解與真相

誤解1：所有食物須訂有相應的最高含量。

真相1：根據食品法典委員會，並非所有含有金屬污染物的食物均有需要訂定最高含量。如對金屬污染物的總攝入量影響很小的食物制訂標準，會導致對公眾健康影響不大的情況下仍必須採取執法行動。食品法典委員會認為應就個別對消費者的總攝入量有顯著影響的食物/食物組別訂定金屬污染物的最高含量。這有助當局按食物的已知風險，以更集中、適切和相稱的方式規管有關食物中的金屬污染物。

誤解2：最高含量須訂定在最嚴格的水平。

真相2：在現代工業世界中，金屬污染物無處不在，食物無可避免地含有少量金屬污染物。因此，最高含量制訂時，應按風險評估，令消費者受足夠保障。此外，最高含量應訂於可合理做到的盡可能低水平(根據食品法典委員會的做法，基於食物中污染物含量的分布情況，一般的劃分水平是不合格率少於 / 相等於5%)，以便在保障公眾健康與維持食物供應穩定兩方面取得平衡。

Metals are chemical compounds which seem to be everywhere in the environment. They can be present in our food naturally and/ or as a result of contamination from industrial as well as other human activities. Excessive dietary exposures to [metallic contaminants](#), such as [arsenic](#), [cadmium](#), [lead](#) and [mercury](#), may lead to various [adverse health effects](#).

To protect public health, most authorities, including Hong Kong, have set standards for metallic contaminants in food as one of the risk management measures.

How Standards for Metallic Contaminants in Food to be Set are Considered Appropriate?

The World Trade Organization (WTO), established in 1995, is the only international organisation dealing with the rules of trade between governments. The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) sets out basic rules for governments, among other things, in setting food safety measures. These measures include standards for metallic contaminants in food.

According to the SPS Agreement, governments are allowed to set their own food safety standards based on science. It also encourages them to use international standards, i.e. standards developed by Codex Alimentarius (Codex).

Codex Alimentarius Commission is a science-based organisation established by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) in 1960s. It develops and endorses international food standards, aim at protecting consumers' health and ensuring fair practices in the food trade, based on scientific advice provided by independent international risk assessment bodies organised by FAO and WHO. Codex standards have also been used as an important reference point for international trade, particularly when there is a trade dispute.

As set out in the SPS Agreement, governments are also allowed to set standards higher than international ones if there is scientific justification e.g. scientific evidence showing that the local population is of higher health risk due to their dietary pattern/habit. In addition, stakeholders' concern as well as other legitimate factors would also be considered when setting food safety standards (see Figure 3).

Myths and Facts on Standard Setting for Metallic Contaminants in Food

Myth 1: All food should have a corresponding maximum level (ML).

Fact 1: According to Codex, MLs do not need to be set for all foods that contain a metallic contaminant. Setting standards for foods that contribute little to dietary exposure would mandate enforcement activities that do not contribute significantly to health outcomes. Setting specific MLs targeting individual food/ food groups, which are of significance to the consumer, will be conducive to a more focused, tailor-made and proportionate regulation over metallic contamination in food, calibrated in accordance with the known risks associated with the food item concerned.

Myth 2: MLs should be set at the most stringent level.

Fact 2: Low levels of metallic contaminants in foods may be unavoidable as they are present everywhere in the modern industrial world. Therefore MLs should be set in a way, based on risk assessment, that the consumer is adequately protected. They should also be set at levels as low as reasonably achievable (ALARA; according to Codex practice, the usual cut-off level is less than/equal to a 5% violation rate, based on the distribution of contaminant level in the food) so as to strike a balance between protecting public health and maintaining a stable food supply.



圖3：制訂食物中的金屬污染物標準時所考慮的因素。

Figure 3: Factors to be considered in standard setting for metallic contaminants in food.

本地情況

香港是世貿的創始會員，並在一九九七年回歸中國後，以“中國香港”的名義，繼續以單獨成員身分參加世貿。我們亦是一個自由港，本地市場十分依賴進口食物(>95%)。

為保障公眾健康和促進國際食品貿易，我們一直遵守《協議》的規定，並建議盡可能在制訂本港的食物中的金屬污染物標準時與食品法典委員會標準保持一致。在有需要的情况下，我們會以科學理據支持，建議制訂較食品法典委員會標準更嚴格的標準，以期加強保障本地市民的健康。

Local Situation

Hong Kong is a founding member of the WTO and has continued its separate membership after return to China in 1997 using the name "Hong Kong, China". We are also a free port which rely heavily on food (>95%) imported into the local market.

To protect public health and facilitate the international trade of food, we have observed the SPS Agreement and proposed to align [our standards for metallic contaminants in food](#) with the Codex standards as far as possible. On occasions where necessary, we have also proposed more stringent standards than Codex, supported by scientific justifications, in order to achieve better health protection to the local population.

食物事故點滴

Food Incident Highlight

亞洲風味湯粉麵：半數鈉來自湯底 Asian-style Soup Noodles: Half Sodium Came From Soup

食物安全中心最近就本港市面上出售的亞洲風味湯粉麵的鈉含量(例如喇沙、河粉、拉麵)作出報告。在10種(100個樣本)非預先包裝湯粉麵的每食用分量(粉麵、其他配料及湯)中，半數鈉來自湯底。逾三分二樣本的鈉含量超過世界衛生組織建議的每日鈉攝取限量(2 000毫克鈉)，而全部樣本均超過每日攝取限量的三分之一(即大約一餐的鈉攝取限量)。此外，10個預先包裝杯麵/碗麵樣本在營養標籤上所列載的每食用分量的平均鈉含量(1 900毫克)亦接近每日攝取限量。

為降低湯粉麵的鈉攝取量/鈉含量，消費者可以：i) 盡量不喝湯；ii) 減少添加醬料/佐料/調味粉的分量或在試味後才適量添加；iii) 盡快吃掉粉麵，以免粉麵吸收太多湯；以及iv) 利用營養標籤選擇預先包裝粉麵；業界可以：i) 參考《[降低食物中鈉含量的業界指引](#)》以改良食譜；ii) 提供較少分量的湯粉麵；以及iii) 把預先包裝粉麵中的調味料作獨立包裝。

The Centre for Food Safety recently reported the [sodium content of Asian-style noodles-in-soup dishes commonly available in Hong Kong](#) (e.g. laksa, pho, ramen). In each portion (noodles, other ingredients, and soup) of the 10 types (100 samples) of non-prepackaged dishes, half of the sodium came from soup. Over two-thirds of them contained sodium exceeding the World Health Organization's recommended daily limit (2000mg sodium), while all samples exceeded one-third of that daily limit (i.e. an approximate limit for one meal). Furthermore, the nutrition label of 10 prepackaged cup/bowl samples revealed that the average sodium content of each portion (1900mg) was approaching the daily limit.

To reduce sodium intake/ content, consumers could: i) try not to consume the soup; ii) limit the amount of sauce/condiments/seasoning powder added or taste before adding; iii) consume the noodles as soon as possible to avoid them soaking too much soup; and iv) use the nutrition labels to choose prepackaged noodles; traders could: i) make reference to the ["Trade Guidelines for Reducing Sodium in Foods"](#) to reform recipe; ii) offer smaller portion dishes; and iii) separate seasoning powder in prepackaged noodles.

食物中的鄰苯二甲酸酯 Phthalates in Food

食物安全中心(中心)最近進行一項有關食物中鄰苯二甲酸酯的風險評估研究。鄰苯二甲酸酯是一種塑化劑，廣泛應用於多種以塑膠製造的工業產品及消費品。由於鄰苯二甲酸酯是常見的環境污染物或可從食物接觸物料遷移，故食物中或會含有微量鄰苯二甲酸酯。是項研究檢測了三百多個食物樣本，發現大部分樣本(98%)均含有微量鄰苯二甲酸酯化合物。風險評估的結論認為，從食物樣本中檢出的鄰苯二甲酸酯含量極低，在一般食用情況下，不會對健康造成不良影響。有關結果與其他地區所作的同類研究的情況相若。

由於以往曾出現刻意在食物中添加鄰苯二甲酸酯，而異常高劑量的鄰苯二甲酸酯對實驗動物可產生毒性作用，故備受公眾關注。中心提醒業界選用合適的食物包裝及接觸物料，以盡量減少塑化劑轉移至食物的機會。

Recently, the Centre for Food Safety (CFS) conducted a risk assessment study on phthalates in food. Phthalates are plasticisers widely used in many industrial and consumer plastic products. Low levels of phthalates present in food may be due to their widespread presence as environmental contaminants or migration from food contact materials. The study tested some 300 food samples and found that most food samples (98%) contained low level of phthalate. The risk assessment concluded that the very low levels of phthalates in food samples overall would not cause adverse health effects under usual consumption. The results are in line with similar studies in other places.

Phthalates draw public concerns because of a history of deliberate abuses and their toxicity effects in experimental animals at unusual high doses. The CFS reminds the trade to choose the right food packaging and contact materials in order to minimise the transfer of plasticisers to food.



風險傳達工作一覽 (二零一八年二月) Summary of Risk Communication Work (February 2018)

事故 / 食物安全個案
Incidents/ Food Safety Cases:
129

公眾查詢
Public Enquiries:
58

業界查詢
Trade Enquiries:
166

食物投訴
Food Complaints:
515

給業界的快速警報
Rapid Alerts to Trade:
5

給消費者的食物警報
Food Alerts to Consumers:
3

教育研討會 / 演講 / 講座 / 輔導
Educational Seminars/ Lectures/
Talks/ Counselling:
26

上傳到食物安全中心網頁的新訊息
New Messages Put on the
CFS Website:
49