

食物安全焦點

Food Safety Focus



食物安全中心
Centre for Food Safety

二零一六年四月·第一百一十七期
April 2016 · 117th Issue
ISSN 2224-6908



食物環境衛生署
Food and Environmental
Hygiene Department

由食物環境衛生署食物安全中心於每月第三個星期三出版
Published by the Centre for Food Safety, Food and Environmental Hygiene Department on every third Wednesday of the month

本期內容 IN THIS ISSUE

焦點個案

蔬菜中的除害劑殘餘

風險傳達工作一覽

食物安全平台

“食物安全重點控制”(HACCP)
— 行之有效的食物安全系統

食物事故點滴

河豚花膠含致命河豚毒素
蛋黃真本色

Incident in Focus

Pesticide Residues in Vegetables

Summary of Risk Communication Work

Food Safety Platform

HACCP – An Effective System to
Improve Food Safety

Food Incident Highlight

Puffer Fish Maws Contain Deadly
Tetrodotoxin
The True Colour of Egg Yolk

編輯委員會 EDITORIAL BOARD

總編輯

何玉賢醫生

顧問醫生(社會醫學)(風險評估及傳達)

行政編輯

楊子橋醫生

首席醫生(風險評估及傳達)

委員

黃宏醫生 首席醫生(風險管理)

白諾文獸醫 高級獸醫師(風險評估)

陳詩寧獸醫 高級獸醫師(獸醫公共衛生)

張麗娟女士 高級總監(食物安全中心)

何樸成先生 高級總監(食物安全中心)

董立仁醫生 高級醫生(風險傳達)

曾志堅先生 高級化驗師(食物化驗)

Editor-in-chief

Dr. Y Y HO

Consultant (Community Medicine)
(Risk Assessment and Communication)

Executive Editor

Dr. Samuel YEUNG

Principal Medical Officer
(Risk Assessment and Communication)

Members

Dr. Christine WONG

Principal Medical Officer (Risk Management)

Dr. Christopher BRACKMAN

Senior Veterinary Officer (Risk Assessment)

Dr. Allen CHAN

Senior Veterinary Officer
(Veterinary Public Health)

Ms. L K CHEUNG

Senior Superintendent (Centre for Food Safety)

Mr. L S HO

Senior Superintendent (Centre for Food Safety)

Dr. Duncan TUNG

Senior Medical Officer (Risk Communication)

Mr. C K TSANG

Senior Chemist (Food Chemistry)

焦點個案 Incident in Focus

蔬菜中的除害劑殘餘

Pesticide Residues in Vegetables

食物安全中心

風險評估組

科學主任周淑敏女士報告

Reported by Ms Shuk-man CHOW, Scientific Officer,
Risk Assessment Section,
Centre for Food Safety

二零一六年三月，某消費者團體發表本港部分蔬菜的除害劑殘餘(俗稱農藥)和金屬污染物測試報告。報告指雖然全部樣本的金屬污染物含量都沒有超標，但有兩個蔬菜樣本(分別是番薯和玉豆)的除害劑殘餘量超標。事件引發市民在社交媒體上討論食用番薯是否安全。

In March 2016, a consumer group reported the levels of pesticide residues and metallic contaminants present in some locally available vegetables. While no samples were detected with excessive metallic contaminants, two vegetable samples (one sweet potato and one bean) were found to contain pesticide residues at levels exceeding the Hong Kong limits. The issue has sparked discussions in social media on whether sweet potato is safe to eat.

在監督下按照優良務農規範進行的田間試驗 Supervised field trial according to GAP



殘餘物數據
Residue data

食物消費模式 Food consumption pattern



食物消費量數據
Consumption data

膳食攝入量風險評估
Dietary exposure risk assessment

安全?
SAFE?
最高殘餘限量
MRL

只有被證實為安全的最高殘餘
限量才會獲採用
Only MRLs proven to be safe
will be adopted

最高殘餘限量在正式採用前會進行膳食攝入量風險評估，以確保殘留在農作物的除害劑不會危害消費者健康。

Dietary exposure risk assessment will be conducted to ensure that any pesticide residues remaining in the crop will not be harmful to consumers before an MRL is adopted.

使用除害劑是否安全？

除害劑是用來防治、殺滅、驅趕或減少有害生物的單種或混合物質。使用除害劑為農業上常見的做法，作用是增加和穩定農產量；保存食物的營養；使食物容易貯存以供全年所需；以及使食品外觀更為吸引和受歡迎。

除害劑本身對生物(包括人類)具有潛在毒性。殘留的除害劑會隨著時間逐漸分解而愈來愈少。但是，即使在適當時間施用適當分量的除害劑，農作物仍不免會留有少量除害劑。農民如遵照標籤指示及優良務農規範適當地使用除害劑，在收割時殘留在農作物的除害劑分量一般不會超過當地的最高殘餘限量，對健康的影響微乎其微。

Are Pesticides Safe to Use?

Pesticides are substances or mixtures of substances intended for preventing, destroying, repelling or mitigating pests. They are commonly used in agriculture to enhance and stabilise crop yield, protect the nutritional integrity of food, facilitate storage to assure year-round supplies, and provide attractive and appealing food products.

By their nature, pesticides are potentially toxic to organisms including humans. Pesticide residue levels tend to decline as the pesticide breaks down over time. Nevertheless, small amounts of pesticides may still remain in or on food even when pesticides are applied in the right amount and at the right time. When farmers use a pesticide according to label instructions and Good Agricultural Practice (GAP), the residues in crop at harvest do not normally exceed the maximum residue limits (MRLs) established in the place of use and are very unlikely to pose a health risk.



什麼是最高殘餘限量？

最高殘餘限量是指在正確使用除害劑的前提下，食物中除害劑殘餘的最高法定准許含量。

不同“除害劑－食物”組合的最高殘餘限量主要是根據受監督的田間試驗所得的數據而制定。田間試驗的目的是找出按照優良務農規範施用的除害劑會有多少殘留在食品或農作物。最高殘餘限量在正式採用前，還會按照該殘餘限量和有關食物的消費量進行膳食攝入量風險評估，以確保人們所攝取的除害劑殘餘不會影響健康(見圖)。由於最高殘餘限量遠低於對健康構成影響的分量，即使除害劑殘餘高於限量，並不表示公眾健康會有即時危險，而是反映業界沒有嚴格遵守優良務農規範。

如何規管食物內的除害劑殘餘？

《食物內除害劑殘餘規例》(《規例》)列明某些“除害劑－食物”組合的最高殘餘限量/最高再殘餘限量，超過即屬違法。

如食物含有《規例》沒有指明最高殘餘限量/最高再殘餘限量的除害劑殘餘，則除獲豁免除害劑外，只有在食用有關食物不會危害或損害健康的情況下，才可進口或售賣。當局會進行風險評估，研究該食物對人體的急性或慢性影響，以確定食用有關食物會否損害健康。

由《規例》開始實施至二零一六年四月十五日，食物安全中心(中心)檢測了58 500個食物樣本，其中141個蔬果樣本的除害劑殘餘量超標，整體不合格率不足0.3%，與加拿大、歐盟、新西蘭和美國等其他地區相比，屬於偏低。此外，中心進行的總膳食研究結果顯示，按照本港市民從膳食攝入85種常見除害劑和部分有機氯類除害劑的分量，不大可能對健康帶來不可接受的風險。

跟進行動

針對文首所述兩個除害劑殘餘超標的樣本，中心已跟進抽取樣本化驗，結果全部令人滿意。在過去三年，中心檢測了約600個番薯樣本，其中有三個樣本的除害劑殘餘量超標。

注意要點：

1. 適當使用除害劑可同時改善食物的質與量。
2. 只要嚴格遵守優良務農規範，使用除害劑是安全的。
3. 偶爾吃下除害劑殘餘超過最高殘餘限量的食物不會危害健康。

給業界的意見

- 農民應遵從優良務農規範，只使用本港註冊的除害劑。
- 菜販應向供應商了解及確保所售食物符合本港法例的規定。

給市民的意見

- 注意均衡飲食，以免因只進食某幾類食物而攝入過量除害劑。
- 要減少蔬菜的除害劑殘餘量，可先用流動的清水沖洗蔬菜數遍，然後用清水浸泡蔬菜一小時或放進沸水中焯一分鐘，並把水棄掉。
- 希望進一步減少蔬菜中除害劑含量的人士，可去掉蔬菜的外葉或削去外皮。

What are MRLs?

MRLs are the maximum levels of a pesticide residue that are legally permitted in or on food when pesticides are applied correctly. MRLs for individual pesticide-food pair are established on the basis of appropriate data, obtained mainly from supervised field trials designed to estimate the level of pesticide residues likely to occur in a commodity or crop when a pesticide is used according to GAP. Dietary exposure risk assessment is conducted with the established residue levels and consumption pattern to ensure the amount of residues consumed will not be a concern to human health before an MRL is adopted (Figure). Since MRLs are set at levels well below the amount that could pose a health concern, a residue level above the limit may indicate non-compliance of GAP but does not necessarily imply immediate risk to consumers' health.

How are Pesticide Residues in Food being Regulated?

In Hong Kong, the Pesticide Residues in Food Regulation (the Regulation) specifies a list of MRLs/extraneous maximum residue limits (EMRLs) for certain pesticide-food pairs. The presence of any of these pesticide residues in food at levels exceeding the MRLs/EMRLs is not permitted.

If a food contains pesticide residues for which no MRLs/EMRLs have been specified in the Regulation, except for exempted pesticides, the import or sale of the concerned food is only allowed if consumption of the food is not dangerous or prejudicial to health. To decide if consumption of the food concerned is harmful, risk assessment will be conducted to evaluate both the acute and chronic effects on human health.

Since the enactment of the Regulation till 15 April 2016, 141 vegetable and fruit samples out of 58 500 food samples collected by the Centre for Food Safety (CFS) were detected with excessive pesticide residues. The overall unsatisfactory rate of less than 0.3% compares favourably with places such as Canada, the European Union, New Zealand, and the United States. In addition, previous CFS's Total Diet Studies showed that dietary exposures to the residues of 85 commonly encountered pesticides and some organochlorine pesticides would be unlikely to pose unacceptable health risks to consumers.

Follow-up Action

In response to the detection of two unsatisfactory samples, the CFS had taken follow-up samples for testing and all pesticide residues results were satisfactory. In the past three years, three out of about 600 tested sweet potato samples contained excessive pesticide residues.

Key Points to Note:

1. The proper use of pesticides in food production improves both the quantity and the quality of food.
2. Pesticides can be safely used in accordance with GAP.
3. Occasional intake of food with pesticide residues exceeding the MRLs does not generally pose a health risk to the general public.

Advice to the Trade

- Local farmers should only use Hong Kong registered pesticides in accordance with GAP.
- Vegetable traders should seek clarification from suppliers to ensure the food sold complies with the Hong Kong food law.

Advice to the Public

- Take a balanced diet to avoid excessive exposure to pesticides from a small range of food items.
- To reduce pesticide residues in vegetables, rinse vegetables several times under running water, then soak them in water for one hour, or blanch them in boiling water for one minute and discard the water.
- For those who would like to further reduce pesticide residues in vegetables, remove the outer leaves or peel of the vegetables as appropriate.

風險傳達
工作一覽
Summary of
Risk Communication Work

| 風險傳達工作一覽 (二零一六年三月) Summary of Risk Communication Work (March 2016) | 數目 Number |
|---|--------------|
| 事故/食物安全個案 Incidents / Food Safety Cases | 137 |
| 公眾查詢 Public Enquiries | 72 |
| 業界查詢 Trade Enquiries | 220 |
| 食物投訴 Food Complaints | 489 |
| 給業界的快速警報 Rapid Alerts to Trade | 8 |
| 給消費者的食物警報 Food Alerts to Consumers | 2 |
| 教育研討會/演講/講座/輔導 Educational Seminars / Lectures / Talks / Counselling | 37 |
| 上載到食物安全中心網頁的新訊息 New Messages Put on the CFS Website | 51 |

“食物安全重點控制” (HACCP) — 行之有效的食物安全系統

HACCP – An Effective System to Improve Food Safety

食物安全中心
風險傳達組
科學主任鄧紹平博士報告

Reported by Dr. Anna S.P. TANG, Scientific Officer,
Risk Communication Section,
Centre for Food Safety

香港近年因本地製造的食物品質欠佳或處理不當而發生的食物事故屢見不鮮，例如壽司被檢出李斯特菌；預先包裝中式湯品含蠟樣芽胞桿菌；午餐飯盒懷疑受產氣莢膜梭狀芽孢桿菌和蠟樣芽胞桿菌污染而引致食物中毒等事件不勝枚舉。這些食物事故能夠避免嗎？實施“食物安全重點控制”(HACCP)系統能夠減少這些事故發生嗎？本文將介紹HACCP如何為食物安全把關。

什麼是HACCP？

“食物安全重點控制”是一套針對食物製造過程的安全管理系統，英文簡稱為HACCP。HACCP的起源可追溯至1960年代，最初是為了美國

太空發展計劃而研發的，控制重點的概念在當時首次被提出並應用於生產安全和零污染的太空食品。自1970年代起，多個規模較大的食物製造商相繼把HACCP應用於生產普羅大眾的食物。1990年代，世界衛生組織和食品法典委員會等國際機構一致認為HACCP系統是預防食物中出現物理、化學和微生物危害的最有效系統。過去數十年，某些已發展國家已強制要求一些食品的生

產過程實施HACCP。目前美國法例規定肉類和家禽、水產和果汁產品製造商須強制實施HACCP，加拿大也規定聯邦註冊的肉類和家禽加工廠須實施HACCP，而澳洲則要求一些高風險食物業者執行以HACCP為基礎的食物安全計劃。

HACCP系統 – 符合成本效益的方法

HACCP系統通過科學和有系統的方法，識別、評估及控制食物製造過程中(由選購、收貨、運輸、貯存、配製、處理、烹煮以至食用)各種可能產生的危害。HACCP系統把食物安全管制融合在食物製造過程的每個環節中，著重積極預防，而不是單靠對製成品的檢測來保證食物安全。因此，HACCP系統在保證食物安全方面極具成本效益，長遠可節省不少成本。業界可能因推行HACCP系統的資金問題而卻步，其實只要優先在高風險食物的生產過程實施，其餘則逐步分段量力施行，便可分攤成本，循序漸進地完善系統。

HACCP系統的原理

HACCP系統的原理是找出可能產生的具體危害，並訂立相應的控制方法，從而確保食物達至安全標準。由生產以至消費者

In Hong Kong, irregularities and sub-standard practices in foods manufactured locally have caused food incidents from time to time over the past years. Bacteria implicated in food incidents include *Listeria monocytogenes* in sushi, *Bacillus cereus* in prepackaged Chinese-style soup, and *Clostridium perfringens* and *Bacillus cereus* as suspected organisms in lunch box causing food poisoning, just to name a few. Could these food incidents be prevented at all? Can implementation of HACCP system in these food businesses lower their occurrence? In this article, let us look at how HACCP positively impacts food safety.

What is HACCP?

HACCP stands for Hazard Analysis Critical Control Point. It is a safe

food production system originated and developed for U.S. Space Programme in 1960s when the idea of Critical Control Point (CCP) was first introduced to produce safe and uncontaminated foods for astronauts. Since the 1970s, HACCP was adopted by a number of large food manufacturers to produce foods for the general public. In the 1990s, HACCP system has been recognised by international bodies including the World Health Organization and the Codex Alimentarius Commission as an

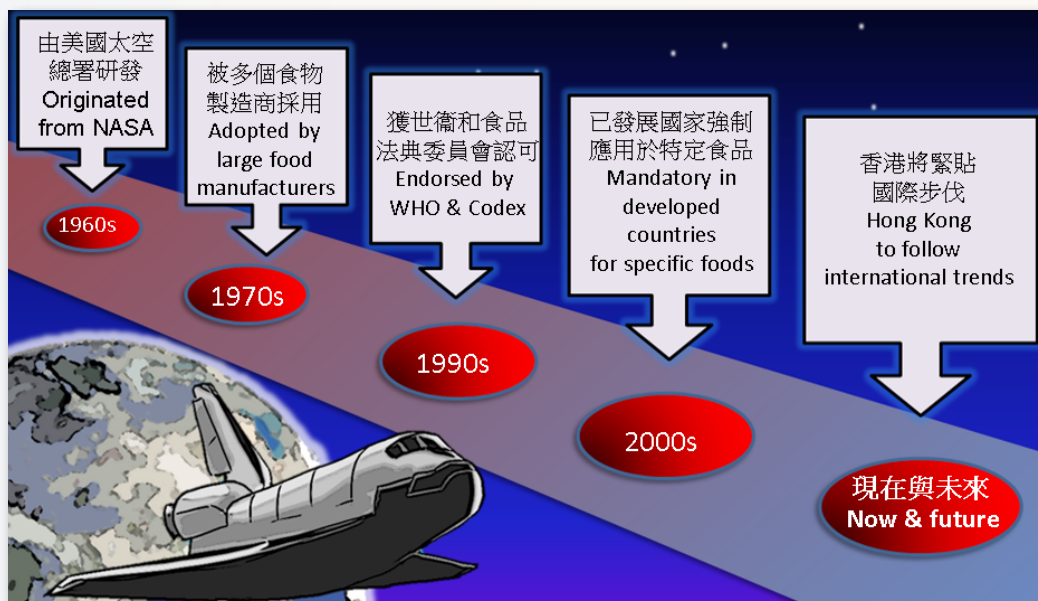
effective way to prevent physical, chemical and microbiological hazards in foods. Over the past decades, HACCP has become mandatory in the production of certain food products in some developed countries. HACCP is now mandatory by law for manufacturers of meat and poultry, seafood, and juice products in the United States, and for federally-registered meat and poultry establishments in Canada. In Australia, certain high risk food businesses are required to have HACCP-based food safety programmes.

HACCP System – A Cost-effective Approach

The HACCP system is a scientific and systematic approach to identify, assess and control hazards in the food production process, from purchasing, receiving, transportation, storage, preparation, handling, cooking to serving. Food safety control is integrated into the design of the process focusing on active prevention rather than relying mainly on end-product testing. It is therefore a cost-effective approach to food safety with considerable long term savings. To circumvent economic constraints which may be a practical barrier to implementing HACCP system for the industry, the cost of implementation can be reduced by spreading the costs over time so that businesses can deal with manageable incremental steps, targeting sectors producing high-risk foods first.

The HACCP Approach - How Does It Work?

The HACCP system identifies specific hazards and measures for their control to ensure food safety and can be applied throughout the



HACCP的發展歷程
Timeline of HACCP

食用整個食物鏈中，各個環節都可應用HACCP系統。HACCP公認有七項原則：

1. 分析危害：找出所有潛在的生物、化學或物理危害，以便擬定控制措施；
2. 確定控制重點：確定食物製造過程中可以控制的關鍵環節，以便採取有效的糾正措施，預防、消除危害或把危害降低到可接受的水平；
3. 訂定每個控制重點的監控標準：以危害的程度為可接受而不至於影響食物安全為標準；
4. 設立控制重點的監察程序：通過觀察及量度工作，以及存備準確的紀錄來評估控制重點是否受到控制；
5. 制定矯正程序：當控制重點的監控結果顯示未能達標或失控時，便須立刻採取矯正行動；
6. 制定確認程序：採用各種方法、程序、測試、採樣及其他評估方式，以確定HACCP系統運作良好；
7. 設立紀錄系統：作為有效執行HACCP系統的證明。紀錄應包括監察及確認工作的結果，以及控制重點出問題時的矯正行動等。

推行HACCP系統對食物業的好處

推行HACCP系統對消費者、食物業和政府三方均有好處。患食源性疾病的風險減低，公眾的健康更有保障。食品品質穩定可增強消費者對產品的信心。HACCP系統可以減少回收和浪費食物，亦可提高進入市場的機會，故省卻不少成本，利潤得以提高。由於營運風險降低，法律和保險費用亦隨之減少。食物業要推行HACCP系統，推行的人員(廠方人員或借助HACCP認證機構等外界人員)必須對產品有深入的認識和具備有關的專業知識，才能建立一套行之有效的HACCP系統。下期我們會再深入探討如何推行HACCP系統。

food chain from primary production to final consumption. A HACCP system follows seven principles that are universally accepted:-

1. Conduct Hazard Analysis to identify all possible biological, chemical or physical hazards so as to devise control measures;
2. Determine Critical Control Points (CCPs) in the production process where an action can be taken to prevent, eliminate, or reduce a food safety hazard to an acceptable level;
3. Establish limits for each CCP at which a hazard is acceptable without compromising food safety;
4. Establish monitoring procedures for CCPs by observations, measurements and keeping accurate records to assess whether a CCP is under control;
5. Establish corrective actions to bring the production process back into control when monitoring picks up deviations from critical limits or detects a loss of control;
6. Establish verification procedures by applying methods, procedures, tests, sampling and other evaluations to ensure that the HACCP system is working effectively;
7. Establish a record system to demonstrate the effective application of the HACCP and to document the monitoring and verification results and corrective actions taken when deviations occur.

Benefits of Implementing HACCP System in Food Businesses

Implementing HACCP system brings benefits for consumers, food industry and government. It improves public health by reducing the risks of foodborne diseases. The improved product consistency increases consumer confidence in the product. Business returns are enhanced by lowered production costs with reduced recall and wastage of food and the increased market access. With the decreased business risk, the legal and insurance costs are also lowered. To apply HACCP in food businesses, the food operation should ensure that the appropriate product specific knowledge and expertise is available for the development of an effective HACCP plan, either from within the establishment or from other sources such as HACCP certification bodies. In the next issue, we will talk more on how to implement the HACCP system.



河豚花膠含致命河豚毒素

食物安全中心上月驗出兩款預先包裝的河豚花膠含有河豚毒素，呼籲市民停止食用，並指令業界停止出售有關產品以及安排回收。

河豚毒素是一種毒性強烈的海洋生物神經毒素，主要分布在河豚的魚卵、魚肝和魚皮，但其他部分也有可能在清洗和切割的過程中被毒素交叉污染。河豚毒素可影響人類的中樞神經系統；情況嚴重者，更可導致死亡。這種毒素不能通過烹煮清除，而且目前並無解毒劑。市民應對進食河豚的風險有所警惕。

業界在進口與銷售魚類及魚製品時應加倍小心，確保這些產品可供安全食用。

Puffer Fish Maws Contain Deadly Tetrodotoxin

Last month, the Centre for Food Safety (CFS) called on the public to stop consuming two kinds of prepackaged puffer fish maw as surveillance showed that they contained tetrodotoxin. The CFS has instructed the trade to stop their sale and recall the affected products.

Tetrodotoxin is a potent marine neurotoxin mainly found in the eggs, liver and skin of puffer fish. However, other parts of the fish can also be cross-contaminated by the toxin during cleaning and cutting of the fish. Tetrodotoxin can affect a person's central nervous system, and in extreme cases, death can occur. The toxin cannot be destroyed by cooking and has no antidote. The public should be aware of the risk of eating puffer fish.

The trade should pay particular attention to the import and sale of fish and fish products to ensure they are safe for consumption.

蛋黃真本色

最近有報道指有澳洲蛋農在蛋雞飼料中加入含類胡蘿蔔素的添加劑，令蛋黃的色澤更鮮艷。很多市民因此對這些蛋黃的安全性及其真實顏色產生疑慮。

類胡蘿蔔素是一種由植物生成的色素，天然存在於很多食物中，包括蔬果(例如甜椒、甘筍、木瓜、菠菜、番茄和西瓜)和海產(例如蝦和三文魚)等。禽蛋也可能天然含有這種色素。蛋黃的顏色或會受產蛋家禽飼料內的類胡蘿蔔素影響，由淺黃色至橙紅色不等。根據《食物內染色料規例》(第132H章)，食用水果或蔬菜的天然染色料，或從該等天然色素分離出來或人工合成的純色素可用於食物內。

The True Colour of Egg Yolk

Recent news about some Australian egg producers using carotenoid containing additives in feed for laying hens to brighten yolk colour has puzzled many people over the safety and the true colour of those yolks.

Carotenoids are pigments formed by plants and are naturally present in a wide range of our foods. These include fruits and vegetables (e.g. capsicum, carrot, papaya, spinach, tomato and watermelon) as well as seafoods (e.g. shrimp and salmon). These pigments can be naturally present in poultry eggs. The presence of carotenoids in the diet of the laying poultry may vary their egg yolk colours ranging from pale yellow to reddish orange. Under the Colouring Matter in Food Regulations (Cap 132H), pigments natural to edible fruits or vegetables or their pure colouring principles, whether isolated from such natural colours or produced synthetically, are permitted.