食物安全焦點
Food Safety Focus

食物安全中心 Centre for Food Safety

食物環境衞生署 Food and Environmental Hygiene Department

二零一一年四月 · 第五十七期 April 2011 · 57th Issue

食物環境衞生署食物安全中心出版 Published by the Centre for Food Safety, Food and Environmental Hygiene Department

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Food Safety Responses to Nuclear Power Plant Incident in Japan

食物安全中心
風險評估組
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Reported by Ms. Shuk-man CHOW, Scientific Officer,
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二零一一年三月十一日，日本東北沿岸發生黎克特制九級地震。地震和隨後的海嘯損壞福島第一核電廠四個反應堆的冷卻系統，導致放射性物質外泄至空氣和附近環境。本文將會介紹食物安全中心(中心)因應日本核事故所採取的應變措施。

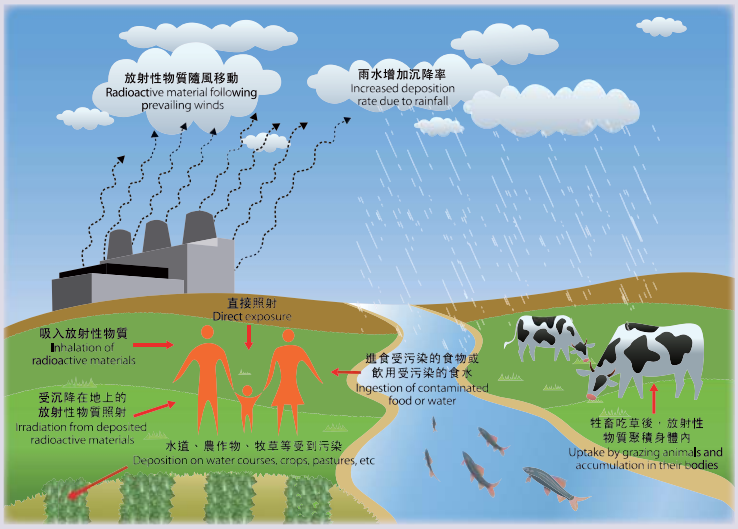
加強監察

當核事故發生時，食物鏈可能受放射性微塵污染的途徑可見圖一。鑑於福島核電廠輻射泄漏事故，中心已由二零一一年三月十二日起在進口層面加強監察來自日本的新鮮食物，例如蔬菜、水果、奶類、肉類及水產，進行輻射水平測試。此外，又在零售層面抽取日本食物樣本進行相關檢測。現時，中心對食物進行輻射水平測試時，會採用食品法典委員會有關突發性核事故或輻射事故後受污染食物中放射性核素的指引限值，而有關限值屬於國際標準。如某批進口食物在測試中驗出放射性核素含量超出指引限值，中心會立即封存該批食物，並安排銷毀。食品法典委員會認為，食物中的放射性核素含量如沒有超出相應的指引限值，有關食物應屬於可供人安全食用。

On 11 March 2011, an earthquake registering 9.0 on the Richter scale struck off the northeast coast of Japan. The earthquake and subsequent tsunami have damaged the cooling system of the four reactors at the Fukushima Daiichi Nuclear Power Plant resulting in a release of radioactive substances into the atmosphere and surrounding environment. In this article, we are going to introduce our responses to the nuclear incident in Japan.

Stepped-up Surveillance

The possible contamination of food chain by radiation fallout is shown in figure 1. In view of the incident of radiation leak at the Fukushima nuclear plant, the Centre for Food Safety (CFS) has stepped up surveillance at import level on fresh produce imported from Japan such as vegetables, fruits, milk, meat, and aquatic products, for radiological testing since 12 March 2011. Samples of Japanese food were also taken at retail level for testing of radiation level. The CFS currently adopts the guideline levels, which are international standards, laid down by the Codex Alimentarius Commission's Guideline Levels for Radionuclides in Foods Contaminated following a Nuclear or Radiological Emergency in testing the radiation levels of food. If a consignment of food is tested to have exceeded the guideline levels, the CFS will immediately mark and seal that consignment and arrange for disposal. According to Codex, when radionuclide levels in food do not exceed the corresponding guideline levels, the food should be considered as safe for human consumption.



圖一：在核事故中，放射性物質可能會釋放到外部。這些看不見的放射性物質會像煙霧般擴散到空氣中，並在空氣中或隨雨水沉降，令水果和蔬菜等食物或動物飼料的表面受到污染。放射性物質其後會由土壤轉移至農作物中，又或透過吸入或進食受污染動物飼料的途徑進入動物體內。此外，魚類和貝類亦會從水中攝入放射性物質。放射性會隨時間在食物中不斷累積。

Figure 1. In a nuclear emergency, radioactive substances may be released into the surrounding area. The invisible radioactive materials will behave in a way similar to a cloud of smoke dispersing into the atmosphere. Foods like fruits and vegetables or animal feed can become surface contaminated by deposit of radioactive materials falling from the air or carried by rain water. These radioactive substances will then be transferred into crops through soil or taken up by animals through inhalation or ingestion of the contaminated animal feed. Fish and shellfish can also take up the radioactive materials from the surrounding water. Over time, radioactivity can build up within food.

焦點個案
Incident in Focus

二零一一年三月二十三日，中心在本港發現兩批由日本千葉縣進口的食物中有三個樣本(包括一個菠菜樣本、一個白蘿蔔樣本及一個蘿蔔樣本)的輻射量超出食品法典委員會的指引限值。雖然食用這些食物不會對健康造成即時風險，中心決定實施入口限制以保障公眾健康及食物安全。該批食物已被銷毀並無流入香港市場。

禁止進口和供應來自日本五個縣的食物

自事故發生後，中心一直與食物商、日本有關當局和聯合國糧食及農業組織轄下的國際食品安全當局網絡保持緊密聯繫，以掌握最新資料。在上述兩批進口食物驗出過量輻射量後，食物環境衞生署(食環署)署長頒布命令，由二零一一年三月二十四日中午起禁止進口和供應多種日本食物，包括於二零一一年三月十一日或之後在日本五個縣收穫、製造、加工或包裝的所有蔬菜及水果、奶類、奶類飲品及奶粉。此外，有關命令亦禁止進口和供應冷凍或冷藏野味、肉類和家禽、禽蛋，以及活生、冷凍或冷藏水產品，除非這些食品附有日本主管當局簽發的證明書，證明輻射量沒有超出食品法典委員會所訂的指引限值。該五個縣包括日本政府已禁止其生奶、菠菜及カキナ(一種日本蔬菜)出口的四個縣(即福島、茨城、櫪木及群馬)，以及有三個食物樣本在中心的輻射水平測試中取得不合格結果的千葉縣。

截至二零一一年四月二十日，中心已對2 666個食物樣本進行輻射水平測試，除上述兩批進口食物外，測試結果全部合格。有關監察結果已上載至中心網頁，供市民參考。

二零一一年四月六日，食物安全專家委員會召開特別會議商討有關日本核事故的食物安全事宜。食物安全專家委員會認為，中心的風險管理模式和緊急頒布禁制令的做法恰當，亦與國際共識吻合。中心將會繼續在進口和零售層面加強監察來自日本的食物，並密切留意有關情況。

注意要點：

1. 如食物中的放射性核素含量沒有超出食品法典委員會所訂的相應指引限值，有關食物應屬於可供人安全食用。
2. 為確保市民健康和食物安全，食環署署長已頒布命令，禁止在日本福島、茨城、櫪木、群馬及千葉五縣收穫、製造、加工或包裝的多種食品進口本港和在本港境內供應。
3. 中心會繼續加強監察日本進口食物中的放射性。

給市民的建議

1. 適當的食物配製程序，例如清洗、擦抹、大力拭擦或去皮／摘去外葉，可減少食物表面上可能殘留的放射性污染。
2. 消費者如對日本進口食物的來源有懷疑，可向供應商查詢。

給業界的建議

業界可向日本受影響地區以外的其他來源採購食材。

In Hong Kong, three food samples belonging to two consignments of food (including a spinach, a white radish and a turnip sample) imported from Chiba prefecture, Japan were found to have radioactivity exceeded the Codex guideline levels on 23 March 2011. Although consumption of the food will not impose immediate health risk, the CFS made the decision to safeguard public health and food safety through imposing restriction. The consignments had been disposed of and did not enter the Hong Kong market.

Prohibit Import and Supply of Food from Five Prefectures in Japan

From the beginning of the incident, the CFS has kept close communication with the food traders, Japan authorities and International Food Safety Authorities Network (INFOSAN) for the most updated information. Subsequent to the detection of excessive radiation in two consignments of food mentioned earlier, the Director of Food and Environmental Hygiene issued an Order, with effect from noon on 24 March 2011, to prohibit import and supply of a variety of Japanese food, including all fruits and vegetables, milk, milk beverages and dried milk, harvested, manufactured, processed or packed on or after 11 March 2011 from five prefectures in Japan. The order also prohibits import and supply of chilled or frozen game, meat and poultry, poultry eggs, and live, chilled or frozen aquatic products, unless they are accompanied by a certificate issued by the competent authority of Japan stating that the radiation levels do not exceed the guideline levels laid down by Codex. The prefectures affected include the four prefectures (Fukushima, Ibaraki, Tochigi, Gunma) which Japan government has prohibited export of raw milk, spinach and kakina (a kind of Japanese vegetable), and the Chiba prefecture from which the three food samples were found by the CFS to have unsatisfactory radioactivity results.

As of 20 April 2011, a total of 2 666 samples have been tested. All have satisfactory results except the two consignments mentioned above. The surveillance results were uploaded onto the CFS website for public information.

On 6 April 2011, the Expert Committee on Food Safety held a special meeting to discuss food safety issues related to the nuclear incident in Japan. The Expert Committee on Food Safety considered that the CFS's risk management approach and the prompt issuance of a prohibition order were appropriate and in line with the international consensus. The CFS will continue to strengthen food surveillance at both import and retail levels for food imported from Japan and will closely monitor the situation.

Key Points to Note:

1. When radionuclide levels in food do not exceed the corresponding Codex guideline levels, the food should be considered as safe for human consumption.
2. To safeguard public health and food safety, an Order has been issued to ban importing into and supplying within Hong Kong of a variety of produce harvested, manufactured, processed or packed from Fukushima, Ibaraki, Tochigi, Gunma and Chiba Prefectures of Japan.
3. CFS will continue stepped-up surveillance to monitor radioactivity in food imported from Japan.

Advice to Public

1. Possible residual surface radioactive contamination on food may be reduced by suitable food preparation, such as washing, brushing, scrubbing, or peeling.
2. Concerned consumers may consult their suppliers if they have doubt about the origin of food imported from Japan.

Advice to Trade

Traders may source ingredients from alternative sources outside the affected areas in Japan.

食物安全平台
Food Safety Platform

濫用個別化學物作為食物添加劑
Abuse of Certain Chemicals as Food Additives

食物安全中心
風險評估組
科學主任陳蓉蓉女士報告

Reported by Ms. Melva CHEN, Scientific Officer,
Risk Assessment Section,
Centre for Food Safety

隨意自由搭配服飾可能會帶來意外驚喜，但如果是食物的話，胡亂搭配則可能會叫人吃一驚。事實上，有些化學物基於安全原因絕對不得混入食物中。

食物添加劑是什麼？

食物添加劑是指在食物加工處理、包裝、運送或貯存過程中，為達到某種技術用途(例如抑制微生物生長、延長食物保質期和令食物更香和更可口)而在食物內刻意添加的任何天然或人造物質。常見的食物添加劑有防腐劑、抗氧化劑、甜味劑、染色料、增味劑、增稠劑和乳化劑。食物添加劑不包括用作增強食物養分的營養素(例如維他命和礦物質)或用以調味的香料及香草。

食物安全至上

有些化學物曾濫用作食物添加劑，例如用作染色料有咖喱粉中的蘇丹紅、臘腸中的紅2G、叉燒中的橙黃II及醃橄欖中的若丹明B，用作防腐劑及口感改良劑則有蝦中的硼砂、魚蛋中的水楊酸及白飯魚中的甲醛。化學物並非單憑可達到某些技術用途這一點就能在食物中使用，因為化學物必須通過國際食物安全當局的全面安全評估，才可獲准用作食物添加劑。公眾健康是至關重要的。如化學物在食物中的特定用途可能會損害消費者健康，例如對胃、肝臟、腎臟等器官有害，令人患癌或破壞脫氧核糖核酸(DNA)，又或沒有充分數據進行安全評估，該化學物不會獲准用作食物添加劑。

捷徑但非正途

上述化學物普遍都有一些共通特點，就是價格廉宜、方便使用和效果顯著。部分無良的食物生產商可能會視濫用這些化學物為生產捷徑，可惜捷徑往往並非正途。舉例來說，有數種方法可生產出消費者喜愛的爽口魚蛋(所謂“彈牙魚蛋”)。有些生產商會依照傳統方法，選用上乘鮮魚，盡量少用結合劑(例如澱粉)，以人手打製魚蛋；有些則會採用先進科技，自行研製出最佳的配料製法和加工處理條件(例如固化(凝膠)和擠壓的時間和溫度)生產魚蛋。不過，非法捷徑是在魚糊中加入硼酸或水楊酸。這兩種化學物在魚蛋中除了濫用作為防腐劑外，還可提高魚糊的凝膠強度，用作口感改良劑。不過，硼酸和水楊酸均會引致胃部不適，長期過量攝入可能會損害腎臟，故不宜用作食物添加劑。

另一種不當做法是濫用非准許染色料。舉例來說，為了令調味粉帶有天然辣椒一樣的紅色，生產商可使用胭脂樹橙提取物或辣椒油樹脂兩種准許染色料。不過，這些染色料較昂貴和較易揮發，因此在使用時需採用一些食物加工處理方法。為保持色澤一致及令處理過程更安全和容易，胭脂樹橙提取物和辣椒油樹脂通常須準確量度分量和混入食鹽，然後才可加入調味料中。另一方面，蘇丹紅則無需經過特別處理即可使用。不過，蘇丹紅具有潛在致癌性，故不應用於食物中。

Mix and match clothing at one's pleasure may bring us surprises. But when talking about food, wrong matching may give you a scare. In fact, some chemicals and foods should never be mixed together for safety reasons.

What is a Food Additive?

A food additive is any natural or synthetic substance intentionally added to food in the processing, packing, transport or storage of food for a technological purpose (e.g. inhibition of microbial growth, extension of the shelf-life, enhancement of flavour and odour). Common food additives include preservatives, antioxidants, sweeteners, colouring matters, flavour enhancers, thickeners and emulsifiers. Food additives do not include nutrients such as vitamins and minerals used for enriching food, or herbs and spices when used as seasonings.

Food Safety Always Come First

Some chemicals have been abused as food additives. Examples are the use of Sudan dyes in curry power, red 2G in Chinese sausage , orange II in BBQ pork and Rhodamine B in preserved olive as colouring matters and boric acid in shrimp, salicylic acid in fish balls and formaldehyde in noodlefish as preservatives and texture modifiers. The technical functions of these chemicals alone cannot justify their use in foods because a chemical has to undergo thorough safety evaluation by international food safety authorities before it can be approved for use as a food additive. Public health is of the utmost importance. Chemicals that have potential to cause adverse health effects to consumers (e.g. toxic to organs such as stomach, liver, kidney; causing cancer or inducing DNA damage) for their intended use in food or have inadequate data for safety evaluation will not be permitted for use as food additives.

A Short Cut But A Wrong Path

The above mentioned chemicals in general share some common characteristics, namely inexpensive, user-friendly and effective. The abuse of these chemicals may be considered as a short-cut method to food production by some irresponsible manufacturers. Unfortunately, a short cut often leads to a wrong path. For example, there are several ways to produce fish balls with desirable elastic mouth-feel (so called "springy fish balls"). Some may follow the traditional method by selecting high quality fish with the minimal use of binders such as starch and make fish balls by hand-kneading. Others may apply modern technology and develop optimal recipes and processing conditions (such as time and temperature for curing (gel-forming) and extrusion) for their fish balls. An illegal short cut, however, is by adding boric acid or salicylic acid into the fish paste. These chemicals are not only abused as preservatives in fish balls but also as texture modifiers by increasing the gel strength of the fish paste. However, both boric and salicylic acid can cause gastric irritation and long-term, excessive intake may result in kidney damage so they are unsuitable as food additives.

Another malpractice is the abuse of non-permitted colouring matters. For example, to give a natural chili-like red colour to a seasoning mix, one can use permitted colouring matters annatto extract or paprika oleoresin. However, these colouring matters are relatively expensive and volatile, therefore some food processing techniques need to be followed in using these additives. Usually they have to be precisely measured and be blended with salt before adding to the seasoning for consistency in colour intensity and for safe and easy handling. On the other hand, if Sudan dyes are used, no special handling would be needed. However, Sudan dyes should not be used in food because of their cancer causing potential.

打擊非准許食物添加劑的濫用情況

中心在本港推行恒常食物監察計劃和專項食品調查，以監控非准許食物添加劑的濫用情況。為確保食物安全和減少濫用非准許食物添加劑，食物業在確保旗下產品安全方面擔當十分重要的角色。他們應遵守規例，謹慎向供應商採購配料和食物添加劑。

Combat the Abuse of Non-permitted Food Additives

In Hong Kong, we have routine and targeted food surveillance programmes in place to control the abuse of non-permitted food additives. To ensure food safety and reduce the abuse of non-permitted food additives, food trade plays a paramount role in ensuring food safety of their products. Food trade should conform to the regulations and be cautious when sourcing food ingredients and additives from suppliers.

食物事故點滴
Food Incident Highlight

豬肉中的瘦肉精

上月，傳媒報道內地養豬戶為令豬隻增加瘦肉而濫用瘦肉精，事件引起市民關注。瘦肉精通常指一組名為“乙類促效劑”的合成物，如在食用動物中不當使用會令動物體內留有殘餘，含量足以引致食用者出現急性中毒，症狀包括心跳加速、暈眩、頭痛、神經過敏、顫抖和血壓改變。

根據《食物內有害物質規例》(第132AF章)，本港禁止出售含乙類促效劑(包括鹽酸克崙特羅和沙丁胺醇)的肉類或內臟。過去三年，食物監察計劃驗出六個豬肉及豬肉製品樣本含有鹽酸克崙特羅和沙丁胺醇。食物安全中心立即採取執法行動，例如發出警告信要求有關商戶停售、把問題食物銷毀。

業界應向可靠供應商採購豬肉及豬肉製品，並確保在本港出售的所有食物符合法例標準和適宜供人食用。

Leanness-enhancing Agents in Pork

Last month, the media reported the abuse of leanness-enhancing agents used in raising pigs in the Mainland to produce lean pork which raised public concerns. Leanness-enhancing agents, commonly refer to a group of compounds called β-agonists, when used inappropriately in food animals, can leave residues at levels causing acute poisoning in humans who consume them. Symptoms include rapid heart beats, dizziness, headache, nervousness, tremor and blood pressure changes.

In Hong Kong, the sale of meat or offal tainted with β-agonists including clenbuterol and salbutamol is prohibited under the Harmful Substances in Food Regulations (Cap 132AF). In the past three years, six samples of pork and pork products were tested positive for clenbuterol and salbutamol under the food surveillance programme. The Centre for Food Safety immediately took enforcement actions such as issuance of warning letters to stop sales and destroy the affected products.

The trade should source pork and pork products from reliable suppliers. They should ensure that all foods for sale in Hong Kong comply with the legal standards and are fit for human consumption.

芥花籽油與食物安全

近月，有人在互聯網上或透過電郵散播失實的信息，指芥花籽油與芥子氣、牛海綿體病或器官產生脂肪變性的健康問題有關。食物安全中心亦收到市民對此事的查詢。

有關芥花籽油安全性的失實資訊，可能源於誤信芥花籽油就是菜籽油的謬誤所引起。事實上，芥花籽油來自透過傳統雜交方式培植而除去不良特性的菜籽植物。因此，芥花籽油的芥酸含量極低(佔總脂肪酸低於2%)，有別於菜籽油，後者可能含有大量的芥酸(含量可佔總脂肪酸60%)。食物中的芥酸對健康的影響備受關注，是因為一些動物研究顯示，攝入過量芥酸可能與心臟組織受損有關。

芥花籽油含低飽和脂肪及豐富不飽和脂肪，可作為均衡飲食的一部分供人安全食用。

Canola Oil and Food Safety

Recently, there are unfounded messages circulating on the Internet and via e-mail about the health concerns of canola oil associated with mustard gas, bovine spongiform encephalopathy and fatty degeneration in organs. The Centre for Food Safety also received public enquiries regarding this issue.

Misinformation about the safety of canola oil may arise from the erroneous belief that it is the same as rapeseed oil. In fact, canola is developed from traditional cross breeding of the rapeseed plant with unwanted traits removed. Hence, canola oil has only low levels of erucic acid (below 2% total fatty acids), contrary to rapeseed oil which may contain high levels of erucic acid (up to 60% total fatty acids). Health concern on excessive intake of erucic acid is related to its potential to cause heart tissue damage in animal studies.

Canola oil is low in saturated fat and has high proportion of unsaturated fat. It is safe for consumption as part of a balanced diet.

風險傳達工作一覽
Summary of Risk Communication Work

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