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福島核事故——食物安全中心的應變措施 Fukushima Nuclear Incident - Updated Response Actions of the Centre for Food Safety

食物安全中心
風險管理組
李育奇醫生報告
Reported by Dr. Yu-chi LI, Medical & Health Officer,
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近月不斷有報道指福島核電廠還在漏出核污水，日本原子能規制委員會已把東京電力公司福島第一核電廠核污水洩漏事故列為國際核事件分級表第三級“嚴重事故”。事件令人擔心食物鏈(特別是海產)受放射性物質污染，長遠而言會增加消費者致癌的風險。

本文將概括介紹食物安全中心(中心)現正採取的措施，以及對目前情況的一些看法。

禁令

二零一一年三月二十四日，食物環境衛生署署長因應日本福島核電站發生事故後的情況發出命令，禁止進口和供應日本五個縣(包括福島、茨城、栃木、千葉及群馬)的所有蔬果、奶類、奶類飲品和奶粉。此外，有關命令亦禁止進口和供應冷凍或冷藏野味、肉類、家禽和禽蛋，以及活生、冷凍或冷藏水產品，除非這些食品附有日本有關當局簽發的證明書，證明其輻射水平低於食品法典委員會有關意外核污染後食物內放射性核素含量的指引限值(指引限值)。命令至今仍然生效。

加強監察

為保障食物安全，中心自二零一一年三月起開始加強監察日本食物，檢測放射性銫和碘這兩種危害身體健康的主要放射性核素在日本進口食物中的含量。

中心以風險評估為基礎，從每批日本進口食物中抽取樣本，進行輻射

In recent months, there have been continuous reports that radioactive water are leaking from the Fukushima Nuclear Power Station. Japan's Nuclear Regulation Authority has rated the leaks of radioactive water at Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station as level 3 "serious incident" on the International Nuclear Event Scale. There are worries about contamination of food chain by radioactive substances, especially fishery products. The main health concern for consumers in the long term is development of cancer.

This article summarises the existing measures adopted by the Centre for Food Safety (CFS) and the CFS's response to the current situation.

Prohibition Order

On 24 March 2011, in response to the situation in Japan right after the Fukushima incident, the Director of Food and Environmental Hygiene issued an order to prohibit import and supply of all fruits, vegetables, milk, milk beverages and dried milk from five prefectures of Japan, i.e. Fukushima, Ibaraki, Tochigi, Gunma and Chiba. Chilled and frozen game, meat, poultry and poultry eggs, and live, chilled and frozen aquatic products from the above prefectures were also prohibited unless accompanied by radiation certificates issued by the Japanese authority attesting that the radiation levels did not exceed the Guideline Levels for Radionuclides in Foods following Accidental Nuclear Contamination developed by the Codex Alimentarius Commission (Codex Guideline Levels). The order remains in force today.

Enhanced Surveillance Programme

To ensure food safety, an enhanced surveillance programme was introduced in March 2011. The main radionuclides representing health risk are radioactive caesium and radioactive iodine which are being tested in the programme.

Samples were collected from every consignment of food imported from Japan for examination of radiation level according



(a) 利用手提裝置檢測輻射水平。(b)至(d) 準備食物樣本並利用污染監測系統檢測樣本中各種放射性核素的含量。
(a) Detection of radioactivity level by hand-held device. (b) - (d) Sample preparation and detection of activity of different radionuclides in foodstuffs with Contamination Monitoring System.

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Incident in Focus

水平檢測。此外，中心亦以指引限值為標準，從批發和零售層面抽取日本食品作檢測，以確保本港出售的食品可作安全食用。

直至二零一三年九月十八日，中心已檢測了逾15萬個樣本。二零一一年三月二十三日有三個來自千葉縣的蔬菜樣本不合格。逾19 000個水產品樣本(包括魚類、甲殼類及軟體動物)全部合格。另外，共有48個樣本(包括2個蔬菜、19個茶包、18個茶葉、7個茶粉、1個燕麥和1個乾菇)檢出含微量輻射，但水平低於指引限值。

中心一直根據本港和日本的抽驗結果，視乎需要調整各縣進口的不同食物組別的抽驗樣本比例。

目前情況

中心在加強監察後，檢出含輻射的樣本數目至今沒有不尋常的上升。日本方面的食物監察計劃顯示，福島水產的不合格比率已從二零一三年一月的9%漸降至二零一三年八月的2%。

考慮到現有的資料以及日本和本港的監察結果，目前的禁令和加強監察措施已足以保障市民的健康。

中心會保持警覺，繼續與國際和日本當局保持聯繫，密切監察事態發展，以及採取適當跟進行動。

注意要點：

- 本港已針對日本食品發出禁令及制定加強監察措施。
- 本港和日本兩地檢出含輻射的水產樣本數目均沒有上升。
- 中心會繼續密切監察事態發展。

給市民的意見

1. 中心已加強監察日本進口食物，確保這些食物適宜供人食用，消費者毋須擔心。
2. 消費者應從可靠的來源購買食物。

給業界的意見

1. 食物商應遵從香港對日本食物的禁令。
2. 從日本受禁制的五個縣出口到香港的野味、肉類和家禽、禽蛋，以及水產品等食物，必須附有日本有關當局簽發的證明書。

to a risk-based approach. Besides, Japanese food produce taken from wholesale and retail levels are also tested to ensure that food on sale in Hong Kong is safe for consumption, making reference to Codex Guideline Levels as safety criteria.

As at 18 September 2013, over 150 000 samples had been tested by the CFS. Three samples of vegetables from Chiba taken on 23 March 2011 were found unsatisfactory. Over 19 000 fishery products, including fish, crustacean and mollusca, tested were satisfactory. A total of 48 samples (including 2 vegetables, 19 tea bags, 18 tea leaves, 7 tea powders, 1 oatmeal and 1 dried mushroom) detected with low radioactivity levels but not exceeding the Codex Guideline Levels were reported.

Based on the surveillance results in Hong Kong and surveillance by the Japanese authorities, the CFS has been adjusting the sampling ratio of different food groups from different prefectures as necessary.

Current Situation

So far there is no abnormal upsurge in the number of samples with radiation levels detected in the enhanced surveillance programme. Japanese food surveillance programme shows that the rate of unsatisfactory fishery samples from Fukushima was decreasing gradually from 9% in January 2013 to 2% in August 2013.

Given the available information and surveillance results from Japan and local programmes, the current prohibition order and enhanced surveillance plan serve their purposes of protecting public health.

The CFS will remain vigilant and continue to monitor the latest development from international and Japanese authorities, and will take appropriate actions when necessary.

Key Points to Note:

- Prohibition order and enhanced food surveillance on Japanese food are in place to safeguard food safety in Hong Kong.
- There is no abnormal upsurge in the number of Japanese fishery samples with radiation levels detected in Hong Kong and Japan.
- The CFS will continue monitoring the latest development of the incident.

Advice to the Public

1. Consumers are reassured that enhanced food control measures are in place for food imported from Japan to ensure that they are fit for human consumption.
2. Consumers should buy food from reliable sources.

Advice to the Trade

1. Food traders should observe the prohibition order on Japanese food.
2. Radiation certificates issued by the Japanese authority are required for food such as game, meat, poultry and poultry eggs, and aquatic products imported from the five prohibited prefectures.

風險傳達
工作一覽
Summary of
Risk Communication Work

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霉菌一定是十惡不赦的嗎？

Must Moulds be Heinous?

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

一說到霉菌，大家的腦海裡可能不其然地浮現出那些灰濛濛的霉斑、綠慘慘的霉點和白毛。眼看著心愛的美食被這些東西蠶食已經令人氣憤，更何況聽說霉菌還會產生有害的毒素。這些微生物是否十惡不赦？大家姑且先放下有色眼鏡，看完本文後自有分曉。

霉菌是甚麼？

霉菌屬於真菌類，在周圍的環境中無處不在。霉菌在香港很常見，因為本地氣候溫暖而潮濕，適宜霉菌的生長。不過，霉菌其實在冷藏的溫度下也可以生長。大部分食物都是這些微生物的溫牀，當你一旦發現食物裡長有霉菌，通常已是變質的徵兆。

霉菌的繁殖方式是通過肉眼看不見的微小孢子，以空氣、水或食物處理等其他方式散播。當遇到合適的地方，例如食物，孢子便萌發生長。當菌落夠大時，我們肉眼也可以察覺出來。不過，有時我們未必會留意到食物已經發霉，尤其是當霉菌的顏色與食物的顏色相若時。比如說，白麵包上有灰斑當然一目了然，但如果灰斑長在黑巧克力蛋糕上說不定就逃過我們的眼睛了。所以，我們可能有時吃了受霉菌污染的食物而不自知。

霉菌都是危險的嗎？

大部分霉菌都是無害的，有些甚至是有用的，一般因吃下發霉食物而引致急性中毒的機會不大。不過，某些霉菌是有危險的。有些霉菌可造成感染，對免疫力弱的人士，例如愛滋病患者或長期病(例如癌症)患者尤其危險；有些霉菌則可產生霉菌毒素(由真菌產生的毒素)。霉菌毒素可對人體造成急性和/或長期的健康影響，例如黃曲霉毒素可引致急性肝臟受損，最廣為人知的是有可能引致肝癌。

霉菌也有益處？

有些霉菌是有益處的，一些芝士獨特的味道和質感便是拜霉菌所賜。例如羅克福芝士(Roquefort)等藍紋芝士在製作過程中加入了羅克福爾青霉菌(*Penicillium roqueforti*)，令芝士呈藍色紋理；而布里芝士(Brie)和卡門貝爾芝士(Camembert)的白色面層其實也是一種霉菌。這些用來製造芝士的霉菌一般可以安全食用。

此外，一些沙樂美腸，如意大利沙樂美腸表面一層特有薄薄的白色霉菌也是可以食用的。

發霉的食物怎樣處理？吃還是不吃？

雖然霉菌並非全部都是有害的，但霉菌一般會令食物變質和影響食物整體的品質。然而，發霉食物最令人關注的還是關霉菌會否產生霉菌毒素。一般來說，產生霉菌毒素的霉菌主要存在於穀物和堅果

Talking about moulds, their disgusting appearances such as grey patches, fuzzy green dots and white dust may instantly come up to your mind. You will probably get mad when they do their best trick to spoil your favourite food. You may also have heard of moulds forming dangerous toxins. In this article, let's take off our tinted glasses and have a closer look on these microorganisms to see if they are really heinous.

What are Moulds?

Moulds are fungi that can be found virtually in every environment. They are common in Hong Kong because our warm and humid climate is conducive to their growth; however, they can also grow at refrigerating temperatures. These microorganisms grow well on most types of food and if you notice their presence in food, it is generally a sign of spoilage.

Moulds reproduce by tiny spores which are invisible to the naked eyes and spread through air, water or other means including food handling. After landing in a suitable environment such as food, spores can germinate and grow. When the mould colony is large enough, you may see them with naked eyes. However, sometimes you may not be aware that moulds are present in your food, particularly if their colour has low contrast against that of the surrounding product. For instance, grey patches are readily visible on white bread but difficult to be seen on dark chocolate cake. Therefore, we may occasionally consume mould contaminated food which appears to be mould-free!

Are Moulds Always Dangerous?

Most moulds are harmless and some are even desirable; in general acute toxicity resulted from the consumption of mouldy food is unlikely. Nevertheless, certain moulds can be dangerous. Some moulds can cause infection especially in patients with weakened immunity, such as patients infected with human immunodeficiency virus (HIV) or suffering from some chronic diseases (e.g. cancer), and some others can produce poisonous mycotoxins (toxins from fungi). Mycotoxins can cause acute and/or chronic health effects in humans, for example aflatoxins can cause acute liver damage and are best known for their potential in causing liver cancer.

Can Moulds be Desirable?

Some moulds are desirable. They can be used to give certain types of cheeses unique flavours and textures. For instance, the blue colour of blue veined cheeses such as Roquefort comes from a type of mould called *Penicillium roqueforti* added during the manufacturing process while other cheeses like Brie and Camembert contain white surface moulds. The moulds used to produce these cheeses are generally safe to eat.

In addition, some salamis, Italian salami for example, have a characteristic thin, white mould coating which is also edible.

What to do with Mouldy Food? Use or Discard?

Even moulds are not always hazardous; they generally spoil food and affect the overall quality of the product. However, the major concern of mouldy food is still on whether the moulds have mycotoxin-producing ability. In general, mycotoxin producing moulds are primarily found



菌絲可侵入食物深層，單靠去除食物表面上肉眼可見的霉菌並不足以保證食物安全。
Root of the mould invades deeply into food. Simply removing visible mould from food surface cannot guarantee food safety.

類農作物，但芹菜、葡萄汁、蘋果和其他產品都有可能含有霉菌毒素。單憑肉眼很難知道食物中的霉菌是否有害。

為確保食物安全，除了那些在製造過程中刻意加入的霉菌外，如發現食物有霉菌便應丟棄。單靠去除食物表面上肉眼可見的霉菌並不足以保證食物安全，因為菌絲可能已侵入食物深層(見圖)。若干危險霉菌的有毒物質通常藏於菌絲內外，有時毒素甚至可能已蔓延到整個食物。此外，變質的食物除了霉菌外，通常也有細菌一起生長。

為免浪費食物，我們應每次只買少量食物並盡快用完，以防食物發霉。此外，食物要蓋好，以防接觸到空氣中的霉菌孢子，造成交叉污染。容易腐壞的食物和剩餘的食物應放在雪櫃並盡快食用。其他食物則應按照存放指示貯存，如沒有指示，則應在食用前放在陰涼乾燥的地方。

in grain and nut crops, but are also known to be on celery, grape juice, apples and other produce. Inspection by the naked eyes is unable to tell if the mould present in food is harmful or not.

To ensure food safety, apart from food containing moulds as part of the manufacturing process, you should discard food when you see mould on it. Simply removing visible mould from food surface cannot guarantee food safety because root of the mould may have already been invaded deeply into the food (see diagram). For some dangerous moulds, poisonous substances are often contained in and around the roots and in some cases, toxins may even have spread throughout the food. In addition, spoiled food may also have bacteria growing along with the mould.

To avoid food wastage, buy small amounts of food and use them as soon as possible can prevent food from turning mouldy. It is also important to keep food covered to prevent exposure to mould spores in the air and possible cross contamination. Perishable foods and leftovers should be refrigerated and consumed as soon as possible. For other foods, they should be stored in accordance with the storage instructions provided. If storage instructions are not available, store them in a cool and dry place before consumption.

食物事故點滴 Food Incident Highlight

咖啡和奶茶中的咖啡因

食物安全中心最近與消費者委員會合作研究本港食肆調製的咖啡和奶茶的咖啡因含量。兒童、孕婦、授乳婦女及對咖啡因有較大反應的人士應格外留意咖啡因的攝取量。

咖啡因是一種中樞神經興奮劑，天然存在於咖啡豆、茶葉、可可豆和可樂果等植物。很多食物和飲品都加了咖啡因，以取其苦澀味和提神作用。每個人對咖啡因的耐受性都不同。咖啡因攝取過量可令人產生焦慮、心跳加速、手震、影響睡眠、胃部不適等情況；孕婦攝取過量更有可能導致嬰兒出生時體重過低；而兒童攝取過量則行為可能會受短暫影響。

一般而言，健康的成年人只要保持均衡飲食，適量飲用含咖啡因的飲品不會引致健康問題。但是，咖啡因對身體的影響因人而異。兒童不應飲用咖啡和奶茶，並應保持均衡及多元化的飲食。而孕婦和授乳婦女亦應避免攝取過量咖啡因。個別對咖啡因有較大反應的人士則應按個人對咖啡因的敏感度和耐受性來控制其咖啡因攝取量。

Caffeine in Coffee and Milk Tea

Recently, the Centre for Food Safety (CFS) has conducted a joint study with the Consumer Council on the caffeine levels in various non-prepackaged coffee and milk tea available in the local market. The CFS advises children, pregnant and lactating women, and caffeine-sensitive individuals to be mindful about their caffeine intake.

Caffeine is a stimulant of the central nervous system. It occurs naturally in plants like coffee beans, tea leaves, cocoa beans, cola nuts etc. It may also be added to food and beverages for its bitter taste and stimulating effects. Tolerance to caffeine differs between individuals. Excessive caffeine intake may cause anxiety, rapid heartbeat, tremor, sleep disturbance, stomach upset, increased risk of giving birth to low birth weight babies in pregnant women and transient behavioural change in children.

In general, consumption of caffeine-containing drinks in moderation, in the context of a balanced diet, should cause no harm to healthy individuals. However, caffeine sensitivity varies among different individuals. Children are advised not to drink coffee and milk tea and to maintain a balanced and varied diet. Pregnant and lactating women should avoid excessive caffeine intake. Caffeine-sensitive individuals should be aware of their own sensitivity and tolerance to caffeine and adjust their caffeine intake accordingly.

食用冰塊中的大腸菌羣

最近有傳媒驗出來自本地食肆的食用冰塊樣本含大腸菌羣，報道引起市民關注。

大腸菌羣是一組非常相近，存在於泥土、水、溫血動物腸道和植物中的細菌，大部分是無害的。由於大腸菌群一般數量較多，而且較致病菌容易檢測，所以通常用作食物和水的衛生指標。雖然驗出大腸菌羣含量高反映食物在製作過程中及後期處理的衛生情況欠佳或衛生程序有不妥之處，但並不一定代表食物中存在致病菌或食物受到糞便污染。

食物安全中心一直有監測食用冰塊中大腸桿菌等微生物的含量。大腸桿菌較大腸菌群更適合作為糞便污染的指標。如檢出大腸桿菌，即顯示有關樣本有可能受糞便污染，存在病原體的風險甚高。二零一零年至二零一二年期間，中心檢測了120個食用冰塊樣本，結果全部令人滿意。業界應遵循在食肆製造和處理冰塊的衛生指引，在處理冰塊時採取良好的衛生規範。

Coliforms in Edible Ice

Recently, a study conducted by the media detected coliforms from edible ice samples obtained from local food premises and has raised concerns.

Coliforms are a group of closely related, mostly harmless bacteria commonly found throughout the environment in soils, water, guts of warm-blooded animals and on plants. Since coliforms are present in higher numbers and are easier to detect than pathogens, they are commonly used as a hygienic indicator for food and water. While high level of coliforms generally indicates unsanitary condition or poor hygiene practices during or after food production, their detection does not necessarily mean that pathogens are present or reflect possible faecal contamination.

The Centre for Food Safety has been monitoring the microbiological quality, including *E. coli* count in edible ice. The detection of *E. coli*, which is a better indicator than coliforms, indicates possible faecal contamination and a risk that pathogens may be present. From 2010 to 2012, 120 edible ice samples were tested and all results were satisfactory. Traders are advised to follow the Guidelines on Hygienic Production and Handling of Ice in Food Premises and observe good hygiene practices when handling ice.