

# 食物安全焦點

## Food Safety Focus



食物安全中心  
Centre for Food Safety

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### 焦點個案

#### Incident in Focus

## 受大腸菌羣污染的食用冰 Edible Ice Contaminated with Coliform Bacteria

食物安全中心  
風險評估組

研究主任方朗茵博士報告

Reported by Dr. Fiona FONG, Research Officer,  
Risk Assessment Section,  
Centre for Food Safety

食用冰廣泛用於製造食物，例如凍飲，故食用冰的衛生質素及安全十分重要。如果製造或處理不當，食用冰可成為傳播食源性疾病的媒介。

二零一七年七月，食物安全中心(中心)透過恆常的食物監察計劃抽取的一個食用冰樣本被檢出大腸菌羣含量超標。本文將探討食用冰受微生物污染的可能性，以及減低受污染風險的預防措施。

### 食肆的食用冰來源

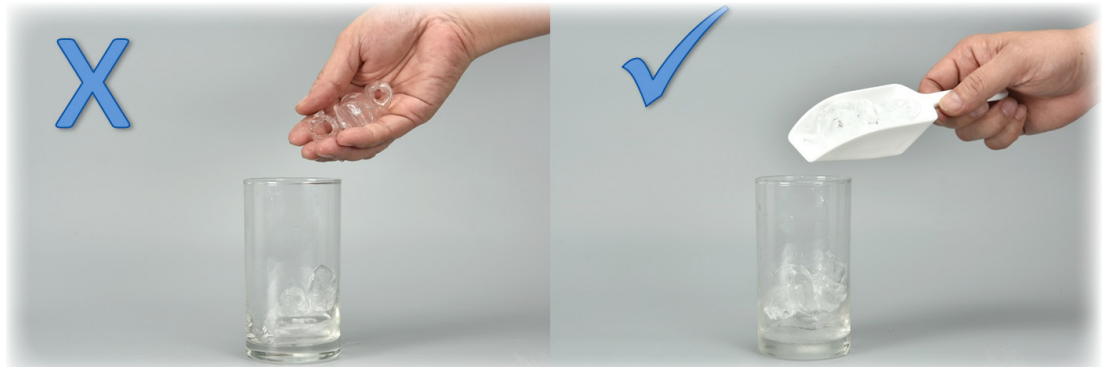
一般來說，在零售點供人食用的冰主要有兩個來源：(1)由製冰廠供應，冰塊在製冰廠製造及包裝，然後以包裝冰方式運送到食肆；以及(2)個別食肆在處所即場(例如使用製冰機)製造。

Edible ice is widely used in preparing food, e.g. cold drinks. This makes its hygienic quality and safety so important. If not manufactured or handled properly, edible ice can potentially be a vehicle of spreading foodborne diseases.

In July 2017, an edible ice sample collected under the routine Food Surveillance Programme of the Centre for Food Safety (CFS) was found to contain excessive coliform bacteria. This article discusses the potential sources of microbiological contamination in edible ice and preventive measures to minimise the associated risks.

### Sources of Edible Ice in Food Premises

Generally speaking, edible ice used for human consumption in retail outlets is from two major sources: (1) supplied by ice manufacturing plants in which the ice is prepared and packed and then transported to the food premises as a packaged form; and (2) produced locally at individual food premises, e.g. by ice-making machines.



使用潔淨的器具取用食用冰，絕對不能用手。  
Do not dispense edible ice with bare hands but clean utensils.

### 食用冰可能受微生物污染的問題

水源直接影響所製造的食用冰的質素及安全。一般來說，製冰廠/食肆有自來水供應是標準的發牌條件，故水源的微生物質素有所保證。食用冰在製成後，可能受微生物污染的因素包括在製冰廠、運送途中及食肆內處理食用冰時忽略衛生。在運送或貯存包裝食用冰的過程中，包裝袋的表面可能受微生物污染，在打開包裝袋和倒出食用冰時，冰塊會因而受污染。製冰機保養欠佳、工具(例如冰桶及勺子)沒有經常清潔，以及處理食用冰不衛生(例如徒手處理食用冰)均可能令食用冰受微生物污染。

### Potential Microbiological Contamination of Edible Ice

Source water directly affects the quality and safety of the edible ice manufactured. Generally speaking, provision of public mains water is a standard licensing requirement which provides some form of guarantee of the microbiological quality of source water. After manufacturing, potential sources of microbiological contamination of edible ice include lapses in hygiene in handling of edible ice at the manufacturing plants, during transport and at food premises. During transportation or storage of the packaged edible ice, the external surface of the ice bags can be contaminated with microorganisms which can subsequently cross-contaminate the edible ice during opening and emptying of the ice bags. Poor maintenance of ice-making machine, infrequent cleansing of equipment such as ice buckets and scoops, and unhygienic practices in handling edible ice, e.g. with bare hands, etc., are potential sources of microbiological contamination.

焦點個案  
Incident in Focus

預防措施

若要製造優質食用冰，先決條件是有飲用水供應，並遵從良好的衛生規範。在打開包裝袋和倒出食用冰前，應先用潔淨的抹布清潔及抹乾包裝袋的表面。將食用冰從包裝袋倒入冰桶時，包裝袋的表面和雙手不應接觸食用冰。取用食用冰時均須使用潔淨的器具，例如勺子，不能用手；並在每天工作結束後及在有需要時，清洗勺子(見圖)。貯食用冰的容器不得用作冷卻或貯存其他物品，例如罐裝／瓶裝飲品。

如在食肆內以製冰機製造食用冰，應按製造商的指引定期清潔及妥善保養製冰機。

食用冰的微生物含量準則

中心編製的《食品微生物含量指引》列明食用冰的微生物含量準則。除了指定食源性致病菌外，該指引還包括食用冰的需氧菌落計數、大腸桿菌及大腸菌羣含量準則。需氧菌落計數是質素的指標；而大腸桿菌是糞便污染指示微生物，通常顯示食用冰直接／間接受糞便污染。至於大腸菌羣，大腸菌羣數目偏高，一般顯示在製冰期間或處理食用冰時的衛生條件欠佳或有人不注重衛生。

採取的行動

中心已知會有關食肆上述違規事項，並指示停售含有冰塊的凍飲。此外，中心已向負責人及有關員工提供食物安全及衛生教育，而該食肆亦已按中心要求進行徹底清潔和消毒。

注意要點

1. 食用冰可能成為傳播食源性疾病的媒介，故食用冰的衛生質素及安全十分重要。
2. 食用冰的大腸菌羣數目偏高，顯示在製冰期間或處理食用冰時的衛生條件欠佳或有人不注重衛生。
3. 處理食用冰時應遵從良好的衛生規範，以減低冰塊被污染的風險。

給業界的建議

- 向食物環境衛生署申領相關的牌照，以製造食用冰。
- 如在食物業處所內以製冰機製造食用冰，應按製造商的指引妥善清潔及保養製冰機。
- 處理食用冰時遵從良好的衛生規範。

給消費者的建議

- 使用飲用水製造食用冰。
- 使用潔淨的器具製造及貯存食用冰。
- 貯存及處理食用冰期間避免交叉污染。

Preventive Measures

Potable water supply and good hygiene practices are prerequisites to the production of good quality edible ice. The external surface of the ice bags should be cleaned and dried with a clean cloth before opening and emptying and the external surface of the ice bags and bare hands should not touch the edible ice when filling the ice buckets. Clean utensils such as scoops, instead of bare hands, should always be used to dispense edible ice and the scoops should be cleaned at the end of every working day and whenever necessary (see Figure). Edible ice storage chests should never be used for cooling or storing other items such as cans/bottles of beverages.

As regards the edible ice produced on the food premises by ice-making machines, the machines should be regularly cleaned and properly maintained in accordance with manufacturer's instructions.

Microbiological Criteria for Edible Ice

Microbiological criteria for edible ice are set out in the Microbiological Guidelines for Food prepared by the CFS. Apart from specific foodborne pathogens, criteria for aerobic colony count (ACC), *Escherichia coli* (*E. coli*) and coliform bacteria specifically for edible ice are included. ACC is an indicator of quality while *E. coli* is a faecal indicator organism which generally indicates direct or indirect faecal contamination. For coliform bacteria, high counts of which generally indicate unsanitary conditions or poor hygienic practices during or after production.

Actions Taken

The CFS has informed the food premises concerned of the irregularity and instructed it to stop selling cold drinks with ice cubes. The CFS has also provided health education on food safety and hygiene to the person-in-charge and staff concerned, and has advised them to carry out thorough cleaning and disinfection of the premises.

Key Points to Note

1. Hygienic quality and safety of edible ice are important as it can potentially be a vehicle of spreading foodborne diseases.
2. High coliform count in edible ice is an indication of unsanitary conditions or poor hygiene practices during or after production.
3. When handling edible ice, good hygienic practices should be observed so as to minimise the associated microbiological risk.

Advice to Trade

- Obtain relevant licence from the Food and Environmental Hygiene Department for manufacturing of edible ice.
- If edible ice is produced on premises using ice-making machines, manufacturer's instructions should be followed for proper cleaning and maintenance of the machines.
- Observe good hygienic practices when handling edible ice.

Advice to Consumers

- Use potable water to prepare edible ice.
- Use clean utensils to prepare and store edible ice.
- Avoid any cross-contamination during storage and handling edible ice.

風險傳達  
工作一覽  
Summary of  
Risk Communication Work

風險傳達工作一覽 (二零一七年七月) Summary of Risk Communication Work (July 2017)	數目 Number
事故/食物安全個案 Incidents / Food Safety Cases	106
公眾查詢 Public Enquiries	48
業界查詢 Trade Enquiries	245
食物投訴 Food Complaints	478
給業界的快速警報 Rapid Alerts to Trade	7
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	29
上載到食物安全中心網頁的新訊息 New Messages Put on the CFS Website	63

# 鎘：引起重大公共衛生關注的金屬污染物

## Cadmium: A Metallic Contaminant of Major Public Health Concern

食物安全中心  
風險評估組  
科學主任馬嘉明女士及邱頌韻女士報告

Reported by Ms. Janny MA and Ms. Joan YAU, Scientific Officers,  
Risk Assessment Section,  
Centre for Food Safety

回顧上期文章內容，鎘是世界衛生組織識別為引起重大公共衛生關注的四種金屬污染物之一。本文將更深入看看鎘，並從本地總膳食研究所載鎘的各種主要食物來源，探討市民減少攝入鎘的方法。

### 對健康的影響

從膳食攝入鎘導致急性中毒的機會微乎其微。至於慢性鎘中毒，主要受損器官是腎臟。鎘主要積聚在腎臟，或會破壞腎功能，情況不能逆轉。攝入大量鎘亦會導致鈣代謝失調，形成腎結石。此外，因在受鎘污染的地方居住或工作而攝入鎘的人，亦可能出現骨質軟化及患上骨質疏鬆症。

國際癌症研究機構認為有足夠證據證明，因職業關係攝入鎘及鎘化合物會令人患癌，故將鎘及鎘化合物列為第1組物質(即令人類患癌)。然而，從飲食中攝入鎘，似乎不具有明顯的基因毒性，亦不大可能令人患癌。

本地研究顯示香港市民從膳食攝入鎘的分量低於健康參考值(攝入量一般及攝入量偏高的市民，分別為健康參考值的33%及75%)，反映一般市民不會因攝入鎘而對他們的健康構成風險。健康參考值是估計人在特定時間內從飲食攝入某化學品而不致對健康帶來顯著風險的分量。

### 膳食中的鎘

泥土及水所含的鎘能被某些農作物及水生生物所吸收，並在食物鏈中積聚。攝入鎘的主要膳食來源是“蔬菜及蔬菜製品”、“魚類和海產及其製品”及“穀物及穀物製品”，分別佔總攝入量的36%、26%及21%。

#### 蔬菜

蔬菜可透過根部吸收而含有鎘，而大氣的沉降物亦會令蔬菜(特別是葉菜類蔬菜)含有鎘。鎘通常在植物的葉積聚，故葉菜類蔬菜(例如菠菜)的鎘含量或會較高。此外，一些野生食用真菌的鎘含量亦可能較高。

我們應注意，進食足夠分量的蔬菜是健康飲食不可或缺的一環。保持均衡飲食，進食多種葉菜類及非葉菜類蔬菜，可避免因偏吃某幾類食品而過量攝入鎘。此外，清洗蔬菜及把根菜類及薯芋類蔬菜削皮，可在一定程度上減低鎘污染。

#### 海產

甲殼類動物會天然地在體內積聚鎘。食物安

To recap, cadmium is one of the four metallic contaminants identified as of major public health concern by the World Health Organization. In this article, let's find out more about cadmium and explore ways to reduce its exposure from various major food sources as revealed from the local Total Diet Study.

### Health Effects

Acute toxicity of cadmium due to dietary exposure is very unlikely. The kidney is the critical target organ in terms of chronic toxicity. Cadmium accumulates mainly in the kidneys and may lead to irreversible kidney dysfunction. High intake of cadmium can also lead to disturbances in calcium metabolism and the formation of kidney stones. In addition, softening of the bones and osteoporosis may occur in those exposed through living or working in cadmium-contaminated areas.

The International Agency for Research on Cancer considered that there was sufficient evidence of carcinogenicity of cadmium and cadmium compounds in humans upon occupation exposure and classified them as Group 1 agent, i.e. carcinogenic to humans. Nevertheless, cadmium did not appear to have significant genotoxic and carcinogenic potential via the oral route.

Local study revealed that the dietary exposure to cadmium of the local population fell below the health-based guidance value (HBGV) (the dietary exposures of average and high consumers of the population accounted for 33% and 75% of HBGV respectively), indicating that the general population was not at risk due to cadmium. HBGV is an estimate of the amount of a chemical that can be ingested over a defined time period without appreciable health risk.

### Cadmium in Our Diet

Cadmium contained in soil and water can be taken up by certain crops and aquatic organisms and accumulates in the food-chain. The major dietary sources of cadmium are “vegetables and their products”, “fish and seafood and their products” and “cereals and their products”, which contribute to 36%, 26% and 21% of the total exposure respectively.

#### Vegetables

The presence of cadmium in vegetables may be due to the absorption of cadmium through the roots. Atmospheric fall-out will also contribute to the content of cadmium, especially for leafy vegetables. In general, cadmium accumulates in the leaves of plants and therefore higher level of cadmium may be found in leafy vegetables such as spinach. In addition, some wild edible fungi may also contain high levels of cadmium.

We should all note that adequate amount of vegetable intake is an essential component of healthy eating. Maintaining a balanced diet with a variety of leafy and non-leafy vegetables can avoid excessive exposure to cadmium from a small range of food items. In addition, washing of vegetables and peeling of roots and tubers can reduce cadmium contamination to some extent.

#### Seafood

Crustaceans are natural accumulators of cadmium.

The Centre for Food Safety Food Surveillance Programme had previously found some crab samples, in particular brown crabs, containing high levels of



棕褐螃蟹的褐色肉(包括性腺、肝臟及消化腺)及扇貝內臟的鎘含量可能較高。  
Brown meat (including gonads, liver and digestive glands) in brown crabs and viscera of scallops may contain higher levels of cadmium.

全中心的食物監察計劃曾檢出一些鎘含量高的螃蟹樣本(特別是棕褐螃蟹樣本)。海外及本地研究均顯示，蟹鉗及蟹腳的肌肉(一般稱為白肉)的鎘含量較低，但褐色肉(包括性腺、肝臟及消化腺)的鎘含量往往較高(見圖)。進食較多螃蟹(特別是棕褐螃蟹)的人士若要減低風險，應限制或避免進食褐色肉。

軟體動物(例如蠔及扇貝)為濾食性動物，一如其他污染物，鎘也是積聚在內臟。為盡量減低有關風險，市民應避免過量進食貝類。在烹煮扇貝前，應先摘除內臟，並只進食閉殼肌。

魚類中的鎘含量通常較低。

#### 穀類

由於食用量高，穀類(包括小麥、米及其製品)是本地市民攝入鎘的主要膳食來源之一。鎘主要存在於穀物的外部，可在碾磨的過程中全部或大部分去除。然而，全穀類食物含有膳食纖維等重要營養素，故通常推薦使用全穀類食物作為健康飲食的一環。總的來說，均衡及多元化的飲食至為重要。

#### 下期有什麼內容?

我們將會在下期探討食用真菌這種食品所含的金屬污染物。

cadmium. Overseas and local studies have shown that levels of cadmium in the muscle meat of crab claws and legs (commonly referred to as white meat) are low but those in the brown meat (including gonads, liver and digestive glands) can often be higher (see Figure). To reduce the risk, people who consume more crabs, particularly brown crabs, are advised to limit or avoid the consumption of brown meat.

Being filter-feeders, cadmium, like other contaminants, is concentrated in viscera of molluscs such as oysters and scallops. To minimise the associated risk, over-indulgence in shellfish consumption should be avoided. Viscera of scallops should also be removed before cooking and only the adductor muscles should be consumed.

Fish normally contain lower levels of cadmium.

#### Cereals

Due to the high consumption, cereals including wheat and rice as well as their derived products are one of the major dietary sources of cadmium in the local population. Cadmium can mainly be found in the outer parts of the grain, which are wholly or partly removed in the milling process. Nevertheless, consumption of whole grains is generally recommended as part of a healthy diet due to the presence of important nutrients such as dietary fibre. All in all, it is essential to take a balanced and varied diet.

#### What's Next?

In the next article, let's have a look on the metallic contaminants in a specific food commodity, i.e. edible fungi.



### 抗菌素耐藥性與食物安全

政府在上月推出《香港抗菌素耐藥性策略及行動計劃(2017-2022)》。抗菌素耐藥性是指抗菌素未能有效抑制或殺死致病微生物，是當今全球公共衛生，以至世界經濟的一大威脅。現時應採取跨界別和動員整體社會的做法，醫學及獸醫學、農業及食品業等各界人士應同心協力，盡力減少抗菌素耐藥性擴散。

食物可能是抗菌素耐藥性微生物的來源。人類或會因不注重衛生或進食受污染的食物而受感染。無論微生物是否具備抗菌素耐藥性，只要在準備食物時遵從良好的衛生規範，便能有效預防食源性疾病。食物安全中心一直向業界及消費者推廣“食物安全五要點”，以預防因食物而引起的感染。這五個要點分別是：“選擇安全的原材料”、“保持雙手及用具清潔”、“分開生熟食物”、“徹底煮熟食物”及“把食物存放於安全溫度”。

### Antimicrobial Resistance (AMR) and Food Safety

The Government launched the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2017-2022) last month. AMR happens when microorganisms resist previously effective antimicrobials, which is one of the greatest threats to global health and economy. A multi-sectoral and whole-of-society approach involving human medicine, veterinary medicine, agriculture and the food sector should take collective actions to minimise the spread of AMR.

Food can be a source of AMR-microorganisms. Through unhygienic practices or consumption of contaminated food, people can be infected. Observation of good hygienic practice during food preparation is an effective mean to prevent foodborne illness, regardless of whether the microorganisms are AMR or non-AMR. The Centre for Food Safety has always been promoting the “5-Keys to Food Safety” (5-keys) to the food trade and consumers to prevent foodborne infections. The 5-keys are “choose safe raw materials”, “keep hands and utensils clean”, “separate raw and cooked food”, “cook thoroughly”, and “keep food at safe temperature”.

### 基因改造食物的安全

基因改造食物是指任何食物，本身是或衍生自利用現代生物科技改造遺傳物質的生物。在香港，一直有人對基因改造食物的安全表示關注。根據世界衛生組織，目前在國際市場上出售的基因改造食物已通過相關國家或地方的食物安全規管機構所作的評估，不大可能會對人類健康產生危險。

食物安全中心一直通過食物監察計劃監察食物(包括基因改造食物)的安全。政府正考慮推行強制性銷售前安全評估計劃，致力在適當時候就擬議計劃進行公眾諮詢。擬議計劃旨在提供多一重保障以加強對基因改造食物的食物安全管制，同時為防止未經認可的基因改造食物進入本地市場確立法律基礎。

### Safety of Genetically Modified Food (GMF)

GMF is any food that is, or is derived from, an organism in which the genetic material has been modified using modern biotechnology. Locally, there have been some concerns on the safety of GMF. According to the World Health Organization, GMF currently available for sale in the international market has passed safety assessments of the food safety regulatory bodies of the relevant countries or places and is not likely to present risk for human health.

The Centre for Food Safety has been monitoring the safety of food (including GMF) through the Food Surveillance Programme. The Government is considering the introduction of a mandatory pre-market safety assessment scheme, with a view to launching a public consultation on the proposed scheme in due course. The proposed scheme aims to provide a further safeguard to enhance the food safety control over GMF and to provide the legal basis for preventing unauthorised GMF from entering into the local market.