食物安全焦點
Food Safety Focus

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Centre for Food Safety

食物環境衞生署
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認識二氧化硫在蔬果製品中的用途
Understanding the Use of Sulphur Dioxide in Fruit and Vegetable Products

食物安全中心風險評估組
科學主任黃詩雯女士報告

Reported by Ms. Sosanna WONG, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

二氧化硫具多種功能，長久以來用於食物生產，主要用來抑制微生物生長，以及防止水果和蔬菜製品等食物變色。然而，食物安全中心在食物監測行動中，偶爾發現有食物違規使用二氧化硫、二氧化硫含量超出法定上限，或產品標籤未有標示含有二氧化硫。

二氧化硫在蔬果製品中的作用

為何製作乾果和醃製蔬菜等蔬果製品時會使用二氧化硫？

防止褐變

水果和蔬菜含有多種天然化合物，在加工或長時間貯存期間暴露於氧氣中，可發生酵素和非酵素褐變，導致蔬果變成褐色。二氧化硫能干擾這兩類反應，有效防止食物褐變。酵素褐變是最常見的褐變反應。二氧化硫能抑制引起褐變的酵素（即多酚氧化酶），並阻止褐色色素形成。至於非酵素褐變，在杏脯等乾製食物中，主要涉及梅納反應。二氧化硫能與葡萄糖和果糖等還原糖結合，防止這些糖與氨基酸產生反應，從而抑制褐變。透過上述機制，二氧化硫有助保持這些製品的天然色澤和外觀。即使如此，部分食物製造商選擇不使用二氧化硫，接受產品顏色較深的外觀。

抑制微生物生長

此外，二氧化硫在某些蔬果製品中亦有重要的抗微生物作用，能抑制酵母菌、細菌和霉菌等微生物生長，減低食物腐壞的風險，並延長保質期。

認識二氧化硫的相關規管

二氧化硫用於食物加工由來已久，雖安全且在技術層面合理，但其使用仍有限制。以下逐一說明幾種情況：

准許使用二氧化硫加工的食物，含量符合法定上限

在香港，防腐劑和抗氧化劑的使用受《食物內防腐劑規例》（第132BD章）規管。根據該規例，二氧化硫和亞硫酸鹽可用於指明的食物分類，包括果乾、菜乾和醃菜等蔬果製品，但含量不得超出訂明的最高准許含量。

Sulphur dioxide has long been used in food production for its multifunctional properties, primarily to inhibit microbial growth and prevent discolouration in foods including fruit and vegetable products. However, food surveillance conducted by the Centre for Food Safety has occasionally identified cases in which sulphur dioxide was found in unpermitted food, in excessive amounts, or left undeclared on product labels.

The Roles of Sulphur Dioxide in Fruit and Vegetable Products

Why do some fruit and vegetable products, like dried fruits and pickled vegetables, need the help of sulphur dioxide in the first place?

Anti-browning

Fruits and vegetables are packed with natural compounds that cause them to turn brown, involving enzymatic and non-enzymatic browning, when exposed to oxygen during processing or prolonged storage. Sulphur dioxide acts as an effective anti-browning agent by disrupting both pathways. For enzymatic browning, which is the most common form of browning, sulphur dioxide inhibits the browning enzyme (i.e. polyphenol oxidase) and blocks the formation of brown pigments. For non-enzymatic browning, which is primarily associated with the Maillard reaction in dried foods such as dried apricots, sulphur dioxide binds to reducing sugars like glucose and fructose to prevent them from reacting with amino acids, thus halting the browning process. Through these mechanisms, sulphur dioxide helps maintain the natural colour and appearance of these products. Even so, some food manufacturers choose to forgo sulphur dioxide, embracing the darker appearance of their products.



圖1：二氧化硫可防止果乾褐變，例如圖中的芒果乾、提子乾、菠蘿乾和杏脯（由左上起順時針排列）。
Figure 1: Sulphur dioxide can act as an anti-browning agent in dried fruits. For example, (clockwise from top left) dried mango, raisins, dried pineapple and dried apricots.

Antimicrobial

In addition, sulphur dioxide provides important antimicrobial benefits in certain fruit and vegetable products. It inhibits the growth of microorganisms such as yeasts, bacteria and moulds, reducing spoilage risk and extending shelf life.

不准許使用二氧化硫加工的食物

另一方面，某些食物（例如未經處理的新鮮水果和蔬菜）嚴禁使用二氧化硫加工。儘管如此，仍可能有人違法使用二氧化硫處理竹筍等未經加工的新鮮農產品，令產品保持異常潔白亮麗的外觀，誤導消費者以為產品格外新鮮。

准許使用二氧化硫加工的食物，但含量超出法定上限

雖然法例准許使用二氧化硫加工某些食物（例如提子乾和乾竹笙），但仍偶爾出現含量超出法定上限的個案。

准許使用二氧化硫加工的食物，含量符合法定上限，但未有標示

即使是准許使用二氧化硫加工的食物，含量亦符合法定上限，仍可能未有按規定在預先包裝食物的標籤上列明。根據《食物及藥物（成分組合及標籤）規例》（第132W章），如預先包裝食物使用了二氧化硫，配料表須列明其作用類別（例如抗氧化劑或防腐劑），以及其確實名稱（例如二氧化硫）或國際編碼系統中的識別編號（例如220）。

此外，由於二氧化硫可能令敏感人士出現過敏反應，第132W章亦規定，如預先包裝食物所含的亞硫酸鹽濃度達到或超過百萬分之十，應在配料表中列明其作用類別及名稱。

給市民的建議

- 二氧化硫可溶於水，大部分可透過清洗和烹煮去除。
- 敏感人士選購食物前應查看食物標籤，避免購買含有二氧化硫的食品。

給業界的建議

- 使用二氧化硫及在標籤上標示其存在時，須遵守法例規定。

Decoding the Regulations on Sulphur Dioxide

Although sulphur dioxide has a long history of safe and technologically justified use, its use is not always permitted. Let us take a closer look at the following scenarios:

Permitted food, permitted level

In Hong Kong, the use of preservatives and antioxidants is governed by the Preservatives in Food Regulation (Cap. 132BD). The use of sulphur dioxide, as well as sulphites, is permitted in specified food categories, including certain fruit and vegetable products like dried fruits, dried vegetables and pickled vegetables, within specified maximum levels under Cap. 132BD.

Food in which sulphur dioxide is not permitted

On the other hand, the use of sulphur dioxide in some food products, such as untreated fresh fruits and vegetables, is strictly prohibited. Despite this, sulphur dioxide may be illegally applied to untreated fresh produce, like bamboo shoots, to maintain an unnaturally bright and white appearance that tricks consumers into thinking the produce is exceptionally fresh.

Permitted food, excessive level

There are occasional cases where the use of sulphur dioxide is permitted in some food products, such as raisins and dried bamboo fungi, but the levels exceed the legal limits.

Permitted food, permitted level, undeclared presence

Sulphur dioxide may be used in a permitted food within the legal limit, but its presence in a prepackaged food is not declared on the label. According to the Food and Drugs (Composition and Labelling) Regulations (Cap. 132W), if sulphur dioxide is used in prepackaged food, its functional class (e.g. antioxidant, preservative) together with its specific name (e.g. sulphur dioxide) or identification number under the International Numbering System (e.g. 220) must be declared in the ingredient list.

Furthermore, since sulphur dioxide is a potential allergen for susceptible individuals, Cap. 132W also stipulates that if sulphite is present in prepackaged food in a concentration of 10 parts per million (ppm) or more, the functional class of the sulphite and its name should be specified in the ingredient list as well.



圖2：在食物標籤上標示二氧化硫的不同方式 Figure 2: Different labelling formats of sulphur dioxide

Advice to the Public

- Since sulphur dioxide is water soluble, most of it can be removed through washing and cooking.
- Susceptible individuals should check food labels before purchase, and avoid food products containing sulphur dioxide.

Advice to the Trade

- Use sulphur dioxide and declare its presence in compliance with legal requirements.

自2026年12月30日起須全面遵守經修訂的《食物內防腐劑規例》（第132BD章）

Full Compliance with the Amended Preservatives in Food Regulation (Cap. 132BD) starting from 30 December 2026

食物安全中心風險評估組科學主任邱頌韻女士報告

Reported by Ms. Joan YAU, Scientific Officer, Risk Assessment Section, Centre for Food Safety

隨著兩年過渡期即將結束，經修訂的《食物內防腐劑規例》（第132BD章）將於2026年12月30日起須全面遵守。過渡期旨在讓食物業界及本地檢測機構按新的食物安全要求作出調整。本文將重溫經修訂的第132BD章如何加強保障消費者，並介紹食物安全中心（食安中心）為協助業界順利過渡所做的工作。

食物安全標準的更新

為使香港的食物安全規管與國際標準接軌，第

The amended Preservatives in Food Regulation (Cap. 132BD) must be fully complied with starting from 30 December 2026, as the two-year transitional period comes to an end. This transitional period aims to help food traders and local testing laboratories adjust to the new food safety requirements. In this article, let's refresh our memory of how the amended Cap. 132BD will better protect consumers and look at what the Centre for Food Safety (CFS) has done to ensure a smooth transition.

Updating Food Safety Standard

To keep Hong Kong's food safety controls aligned with international benchmarks—primarily using the standards of the Codex Alimentarius Commission (Codex) as the backbone, supplemented with those adopted by the Chinese Mainland and major food trading partners of Hong Kong—Cap. 132BD has been updated with:

132BD章以食品法典委員會的標準為主要骨幹，輔以中國內地及香港主要食物貿易伙伴採用的標準，作出以下更新：

- **增加准許添加劑，規管更嚴格：**准許防腐劑和抗氧化劑的總數由32種增至58種，並訂明各類食物可使用的種類及最高含量，加強規管。其中25種添加劑於修訂前並不屬第132BD章中「防腐劑」和「抗氧化劑」定義的涵蓋範圍。現參考食品法典委員會採納的相應定義予以修訂後，這些添加劑現已納入准許名單。所有准許添加劑的安全性均經國際及國家食物安全機構（例如聯合國糧食及農業組織／世界衞生組織聯合食品添加劑專家委員會（專家委員會））評估。
- **剔除被淘汰的化學物：**碳酸銅、二苯基和甲酸已從准許名單中剔除，因為這些物質並未列於食品法典委員會的標準，中國內地及香港主要食物貿易伙伴目前亦不准許將這些物質用作食物添加劑。
- **擴大規管範圍：**訂有指明最高准許含量的「添加劑—食物」組合由約900個增至約2,000個。食物分類系統亦已參照食品法典委員會的最新標準更新。

順利過渡，保障食物安全

修訂規例設有24個月過渡期，讓業界有充足時間去適應新訂的食物安全標準，並讓本地檢測機構建立所需的檢測能力。過渡期亦顧及市面上加工及預先包裝食物的保質期一般較長。

因應修訂帶來的轉變，食安中心已採取多項措施，協助業界過渡至新規定。食安中心已與業界舉行四次技術會議，討論經修訂的第132BD章所涉及的技術事宜，為持份者提供一個平台，讓他們提出問題，並釐清實際應用上的疑問。此外，食安中心已發布更新的《使用指引》及《其他常見問題》，幫助業界進一步了解及遵守經修訂的第132BD章。

有關L-抗壞血酸的補充指引

因應業界查詢，食安中心在網頁新增了一條常見問題，說明根據經修訂的第132BD章，L-抗壞血酸可添加於葡萄酒中。

L-抗壞血酸一般稱為「維他命C」，在食物中有多種用途。除了作為營養素，亦有抗氧化作用，保護食物免受氧化致變壞，從而保持食物的品質及穩定性。

專家委員會已全面評估L-抗壞血酸的安全性，認為L-抗壞血酸作為食物添加劑按預期用途從食物的攝入量，加上食物中天然存在的分量，不會危害消費者健康。

- **More Permitted Additives, Stricter Oversight:** The total number of permitted preservatives and antioxidants has increased from 32 to 58, strengthening regulatory control by specifying permitted types and their maximum levels in foods. Notably, 25 of these additives originally falling outside the definitions of "preservative" and "antioxidant" in Cap. 132BD before the amendments are now included on the permitted list following the definitions amended with reference to the corresponding ones adopted by Codex. The safety of all these permitted additives has been evaluated by the international and national food safety authorities such as the Joint Food and Agriculture Organization of the United Nations/World Health Organization Expert Committee on Food Additives (JECFA).
- **Phasing Out Obsolete Chemicals:** Copper carbonate, diphenyl and formic acid have been removed from the permitted list because they are not listed in the Codex standard and are not currently permitted for use as food additives in the Chinese Mainland or by our major food trading partners.
- **More Comprehensive Coverage:** The number of "additive-food" pairs with specified maximum permitted levels has increased from around 900 to around 2,000. The food category system has also been updated in light of the latest Codex standard.

Smooth Transition for Safer Products

To allow the trade sufficient time to adjust to the updated food safety standards, and to enable local testing laboratories to develop the necessary testing capabilities, a 24-month transitional period has been provided. This timeline also takes into account the longer shelf lives of processed and prepackaged foods already on the market.

In view of the changes introduced by the amendments, the CFS has implemented various measures to facilitate the trade's transition to the updated requirements. The CFS has conducted four technical meetings with the trade to discuss technical issues related to the amended Cap. 132BD, providing a platform for stakeholders to raise questions and seek clarifications on the practical implications. Furthermore, the CFS has issued updated User Guidelines and a set of Additional Frequently Asked Questions to help the trade better understand the amended Cap. 132BD and to facilitate their compliance.

Additional Guidance on L-ascorbic Acid

Following enquiries from the trade, the CFS has added a Frequently Asked Question on the website to clarify that the use of L-ascorbic acid in grape wines is allowed under the amended Cap. 132BD.

L-ascorbic acid, commonly known as "vitamin C", serves multiple functions in food. In addition to acting as a nutrient, it serves as an antioxidant to protect food against deterioration caused by oxidation, thereby maintaining its quality and stability.

JECFA has thoroughly evaluated the safety of L-ascorbic acid and concluded that dietary exposure resulting from its intended uses as a food additive, combined with its natural levels in food, poses no health hazard to consumers.

業界準備好了嗎？請參照以下簡易清單，檢視你的業務是否已準備就緒：

- ☑ **核查配料：**對照更新後的58種准許防腐劑和抗氧化劑名單，核查產品配方，確保產品不再使用碳酸銅、二苯基和甲酸作為食物添加劑。
- ☑ **檢查含量：**確保產品符合約2,000個「添加劑—食物」組合所對應的最高准許含量。
- ☑ **核實供應鏈：**聯絡供應商，取得最新的產品規格資料。
- ☑ **檢查食物標籤：**按需要更新食物標籤上的配料表，尤其是在更改產品配方後。
- ☑ **清理舊存貨：**妥善規劃存貨，確保2026年12月30日當天貨架上已沒有不符合新規定的產品。

Traders, are you ready? Use this quick checklist to find out if your business is prepared:

- ☑ **Audit Ingredients:** Verify your formulations against the updated list of 58 permitted preservatives/antioxidants. Ensure copper carbonate, diphenyl and formic acid are no longer used as food additives in your products.
- ☑ **Check Limits:** Ensure your products comply with the maximum permitted levels for around 2,000 updated additive-food pairs.
- ☑ **Verify Supply Chains:** Contact your suppliers to secure updated product specifications.
- ☑ **Check Food Labels:** Update the ingredient lists on your food labels as necessary, particularly after product reformulation.
- ☑ **Clear Old Stock:** Plan your inventory to ensure no non-compliant stock remains on shelves on 30 December 2026.

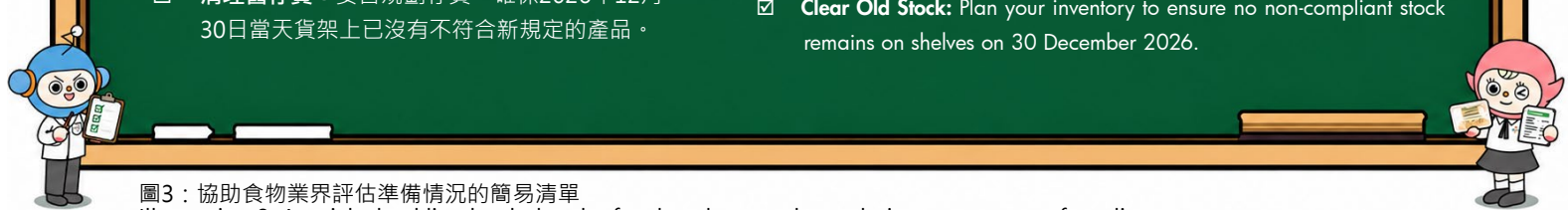

圖3：協助食物業界評估準備情況的簡易清單
Illustration 3: A quick checklist that helps the food trade to evaluate their current state of readiness

攜手提升食物安全

經修訂的第132BD章是香港食物安全規管與國際標準接軌的重要一步。修訂以食品法典委員會的標準為骨幹，並輔以中國內地及香港主要貿易伙伴的標準，在加強保障消費者的同時，亦便利食品貿易。

與選購含有其他食物添加劑的食品一樣，市民應細閱食物標籤，作出知情選擇，並保持均衡及多元化的飲食。業界則應善用食安中心的資源，確保所有產品由2026年12月30日起全面符合經修訂的第132BD章的規定。

Work Together for Better Food Safety

The amended Cap. 132BD represents a significant step forward in aligning Hong Kong's food safety regulation with international standards. With the Codex standards adopted as the backbone and supplemented with standards from the Chinese Mainland and major trading partners of Hong Kong, the amended Cap. 132BD enhances consumer protection while facilitating the food trade.

As with other food additives, the public is advised to read food labels carefully to make an informed choice and maintain a balanced and varied diet. On the other hand, the trade is encouraged to make full use of the CFS' resources to ensure all products fully comply with the amended Cap. 132BD from 30 December 2026.

淡奶和加糖煉奶：放入雪櫃還是室溫存放？

To Fridge or Not to Fridge? Evaporated Milk vs. Sweetened Condensed Milk

淡奶和加糖煉奶常用於增添食物及飲品的風味。兩者均是去除水分製成的乳製品，但含糖量不同，因此用途和保質期亦有所不同。

淡奶並無添加糖分，在包裝後經加熱處理殺菌。相反，加糖煉奶則是透過加入糖分來降低水活性，防止微生物滋生，達到防腐效果。未開封的淡奶和加糖煉奶均屬耐存食品，只要在「此日期前最佳」日期前存放在陰涼乾燥處即可。

然而，一旦開封，淡奶和加糖煉奶均須存放於雪櫃。開封後，應將剩餘的淡奶和加糖煉奶轉移至乾淨的密封容器中才放入雪櫃。開封後，淡奶應在三至五天內用完，而加糖煉奶則應在一至兩星期內食用完畢。支裝加糖煉奶能減少產品接觸空氣，有助保護產品。每次使用後，應抹淨管口並扭緊蓋子。若發現產品發霉、發出異味、顏色有異或其他異常情況，應立即棄掉。

We use evaporated milk and sweetened condensed milk to enhance the flavour of food and drink. Both are milk products with water removed, but they differ in sugar content, which determines their usages and storage durations.

Evaporated milk has no added sugar and is sterilised through heat treatment after packaging. In contrast, sweetened condensed milk is preserved by adding sugar, which lowers water activity to prevent microbial growth. Unopened evaporated milk and sweetened condensed milk are shelf-stable in a cool, dry place before their best before date.

Once opened, both products should be refrigerated. It is advised to transfer unused portions to a clean, airtight container before putting it in the fridge, and consume the opened evaporated milk within 3 to 5 days and sweetened condensed milk within 1 to 2 weeks. Sweetened condensed milk packaged in a tube could better protect the products from air. Wipe the tip and screw the cap after each use. Discard any product if there is mould, a bad smell, or when unusual signs or colours appear.

妥善處理罐頭食物　方便又安全

Handle Canned Food Properly to Enjoy the Convenience Safely

罐頭食物種類繁多，可供即食，並可在室溫下貯存，是安全又方便的選擇。然而，為確保食用安全，必須妥善處理。

選購罐頭食物時，應仔細檢查容器，避免購買罐身發脹、滲漏、生鏽、嚴重凹陷或接縫受損的罐頭，因為這表示罐頭可能已非完全密封。未開封的罐頭應存放於陰涼乾燥處，並按「先入先出」原則，先食用較接近到期日的罐頭。搬動罐頭時應小心輕放，以免意外損壞容器。開罐前，應先抹淨罐頂，清除污染物，並使用清潔、鋒利的開罐器。

罐頭食物一經開封，便與新鮮製備的食物一樣容易變壞。開罐後應立即檢查內容物，如發現食物顏色或氣味異常，或容器內壁生鏽，應將食物棄掉。剩餘的食物應轉放至清潔的玻璃或塑膠容器內，蓋好後放入雪櫃貯存，並於三天內食用。

Canned food provides a safe and convenient way to obtain a wide variety of ready-to-eat food that can be stored at room temperature. However, proper handling is vital for keeping it safe.

When purchasing canned food, inspect the containers thoroughly; avoid buying cans showing signs of swelling, leakage, rust, deep dents or damaged seams, as these may compromise the seal. Unopened cans should be stored in a cool, dry place. Practise "first-in, first-out" by using those nearer expiration first. Handle canned food carefully to prevent accidental damage. Before opening, always wipe the top clean to remove contaminants. Use a clean, sharp can opener.

Once opened, canned food becomes as highly perishable as freshly prepared food. Inspect the contents immediately and discard food displaying an unusual colour or odour, or if the container's interior is rusted. Transfer any remaining food into a clean glass or plastic container, cover it securely and store it in the refrigerator. Consume the leftovers within three days.



風險傳達工作一覽（二零二六年十月）

Summary of Risk Communication Work (October 2026)

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