



Industrial perspectives on the use and management of food processing aids

Andy Peng

Jul. 2016

目錄

CONTENTE

01

食品加工助劑的使用工藝必要性

The technological justification of food processing aids

02

食品加工助劑和食品添加物的定義範疇關係

The relationship between processing aids and food additives

03

食品加工助劑和食品添加物的判定方法

How to differentiate the food processing aids and food additives

04

食品加工助劑和食品工業用消毒劑、洗滌劑及其他化學物質的區別？

The difference of food processing aids and food industrial sanitizer, detergent and other chemical substances?

05

食品加工助劑安全生產經營的原則

The principle of safe use for processing aids in food industry

06

結論與建議

Conclusion and suggestion

目錄 CONTENTE

01

食品加工助劑的使用工藝必要性

The technological justification of food processing aids

The technological justification of food processing aids

隨著物質生活水平不斷提高，人們對食品的品質要求越來越高，更加注重和講究食品的色香味、口感、性狀和新鮮度，以及獲取食品的方便性和快捷性。現代的食品工業的發展促進了食品添加物快速發展，同時對食品添加物的依賴性也越來越大，沒有食品添加物就沒有現代食品工業。

With the development of modern society, people has higher and higher requirement for the food's quality, color, flavor, taste, character, and the conveniences. Modern food industry promote the fast development of food additives, as well as more and more dependence of food additive. Without food additives, there is no modern food industry.

食品工業的快速發展對於食品加工和食品工藝的要求也相應提出更多更高的要求，為有利食品加工操作，食品加工過程需要潤滑、消泡、助濾、穩定和凝固等，如果不用這些加工助劑，加工過程基本就無法操作。

The fast development of food industry result higher requirement of food producing and technology. In the manufacturing process, it must use processing aids to lubricate, antifoam, filtrating, stabilize, etc.

同時，食品生產加工過程中使用各種加工助劑能降低原材料的必要性的消耗，能提高產品的收率，降低產品的生產成本，可以產生明顯的經濟效益和社會效益。

Besides, using processing aid could reduce the unnecessary waste of raw material, improve product yield, reduce production cost, and get significant economic and social benefits.

目錄 CONTENTE

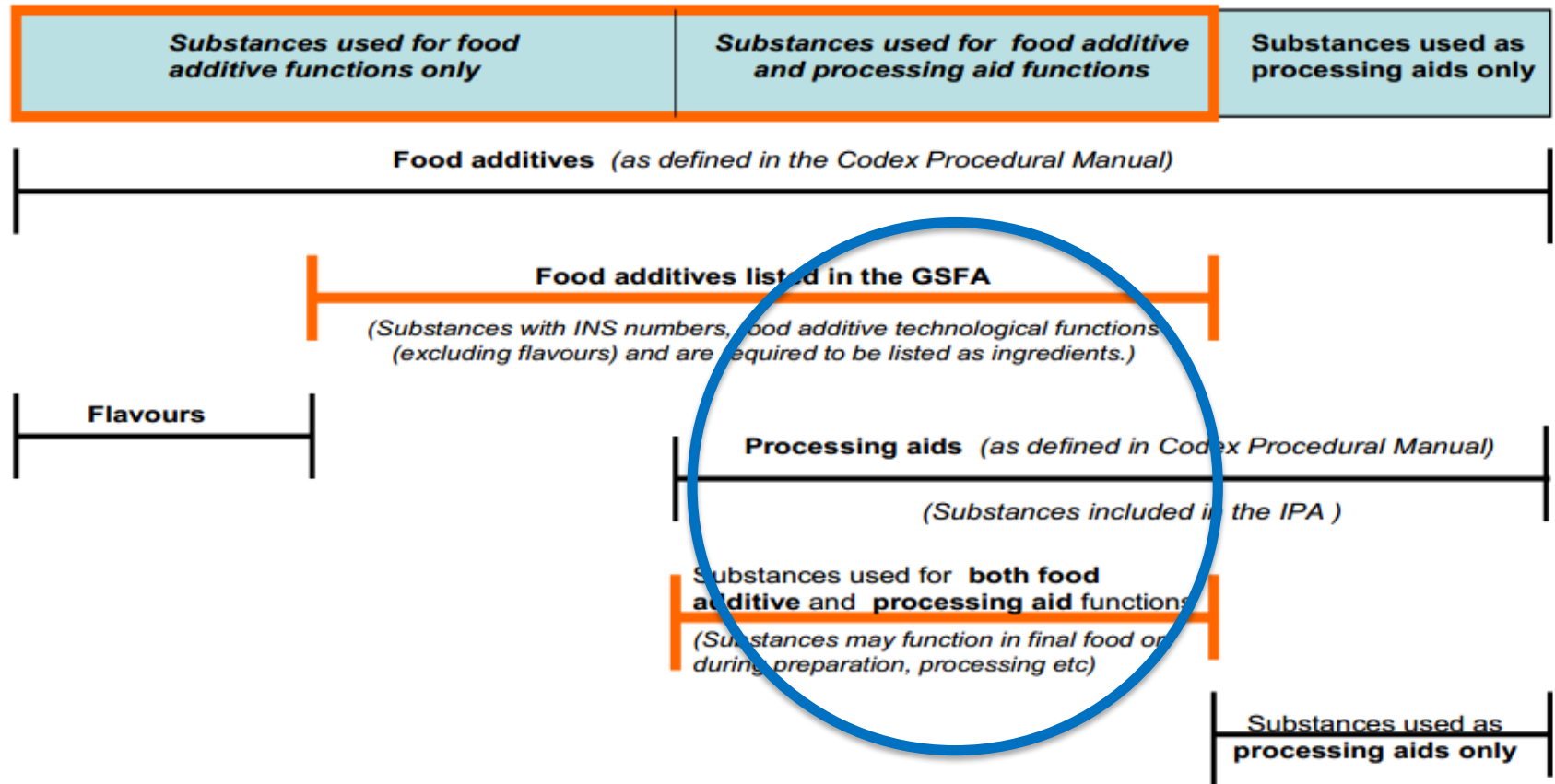
02

食品加工助劑和食品添加物的定義範疇關係
The relationship between processing aids and food
additives

CAC:

Relationship between Food Additives and Processing Aids

(Not to scale)



CAC:

a) **Food additive** means any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food results, or may be reasonably expected to result (directly or indirectly), in it or its by-products becoming a component of or otherwise affecting the characteristics of such foods. The term does not include contaminants or substances added to food for maintaining or improving nutritional qualities.⁴

Processing aid means any substance or material, not including apparatus or utensils, and not consumed as a food ingredient by itself, intentionally used in the processing of raw materials, foods or its ingredients, to fulfil a certain technological purpose during treatment or processing and which may result in the non-intentional but unavoidable presence of residues or derivatives in the final product.¹

The relationship between processing aids and food additives across countries

Substances used for food additive functions only	Substances used for both food additive and processing aid functions only <i>(Substances may function in final food or during preparation, processing etc.)</i>	Substances used as processing aids only	a non-traditional food and has been concentrated or refined, or synthesized, to perform 1 or more of the technological purposes listed in Schedule 14.¹
---	--	--	---

Food additives (as defined in the Australia New Zealand Food Standards Code Standard 1.3.1.)
Australia New Zealand

Food additives (as defined in the GB 2760; List in table A.1, A.2, C.1, C.2, C.3.)
Mainland China

Food additives (as defined in the Food and Drug Regulations)
Canada

a food is used or added to the other food during the course of processing to perform a technological purpose in the course of processing; and does not perform a technological purpose in the food for sale. ²

Processing aids (as defined in the Australia New Zealand Food Standards Code Standard 1.3.3.)
Australia New Zealand

Processing aids (as defined in the GB 2760 and “Policy for Differentiating Food Additives and Processing Aids “)
Mainland China, Canada

¹ The definition in the standard 1.3.1.

² The definition in the standard 1.3.3.

The related category of processing aids and food additives

ANZ:

Section 1.1.2—11 (Definition of *used as a food additive*) provides as follows:

- (1) A substance is **used as a food additive** in relation to a food if it is added to the food and:
 - (a) performs 1 or more of the technological purposes listed in Schedule 14; and
 - (b) is a substance identified in subsection 1.1.2—11(2).
- (2) For subsection 1.1.2—11(1), the substances are:
 - (a) any of the following:
 - (i) a substance that is identified in Schedule 15;
 - (ii) an additive permitted at GMP;
 - (iii) a colouring permitted at GMP;
 - (iv) a colouring permitted to a maximum level; and
 - Note** Schedule 15 lists a number of substances that are not additives permitted at GMP, colourings permitted at GMP or colourings permitted to a maximum level.
 - (b) any substance that is:
 - (i) a *non-traditional food and
 - (ii) has been concentrated or refined, or synthesised, to perform 1 or more of the technological purposes listed in Schedule 14.

Other definitions

- (3) In this Code:
 - additive permitted at GMP** means a substance that is listed in section S16—2.
 - colouring permitted at GMP** means a substance that is listed in section S16—3.
 - colouring permitted to a maximum level** means a substance that is listed in section S16—4.
 - Colours and their aluminium and calcium lakes**
- (4) A reference to a colour listed in Schedule 15, a colouring permitted at GMP or a colouring permitted to a maximum level includes a reference to the aluminium and calcium lakes prepared from that colour.

Section 1.1.2—13 (Definition of *used as a processing aid*) provides as follows:

References to substances that are used as a processing aid

- (1) In this Code, a reference to a substance that is **used as a processing aid** in relation to a food is a reference to a substance that is used during the course of processing:
 - (a) to perform a technological purpose in the course of processing; and
 - (b) does not perform a technological purpose in the food for sale; and
 - (c) is identified in subsection (3).

References to foods that are used as a processing aid

- (2) In this Code, a reference to a food that is **used as a processing aid** in relation to another food:
 - (a) is a reference to a food that:
 - (i) is not a substance identified in subsection (3); and
 - (ii) is used or added to the other food during the course of processing to perform a technological purpose in the course of processing; and
 - (iii) does not perform a technological purpose in the food for sale; and
 - (b) is a reference to so much of the food as is necessary to perform the technological purpose.

Note 1 This Code does not prohibit the use of foods as processing aids (other than foods that are substances referred to in subsection (3)). There are special labelling requirements that apply in relation to foods and substances that are used as processing aids—see paragraphs 1.2.4—3(2)(d), 1.2.4—3(2)(e) and subparagraph 1.2.8—5(a)(vii).

Note 2 If a food is used as a processing aid in relation to another food, and the amount of the food used is greater than the amount that is necessary to perform the technological purpose, the excess amount of the food is not taken to be used as a processing aid in the other food and is not exempted from a requirement to declare ingredients—see section 1.2.4—3(2)(e).

- (3) For subsections (1) and (2), the substances are the following:
 - (a) a substance that is listed in Schedule 18;
 - (b) an additive permitted at GMP.

Note 'additive permitted at GMP' is a defined term—see section 1.1.2—11.

ANZ: 食品添加物的定義範疇和CAC和其他大多數國家基本一致。食品加工助劑不屬於食品添加物範疇，食品加工助劑的範疇比大多數國家的定義範疇要大，包括“可在食品加工過程中起技術作用的一般食品”。

In Australia and New Zealand, processing aid not belong in the scope of food additive definition, the scope of processing aid is larger than most countries, includes some food that are used as processing aids, which could facilitate the food producing.

CAN:

“food additive” means any substance the use of which results, or may reasonably be expected to result, in it or its by-products becoming a part of or affecting the characteristics of a food, but does not include:

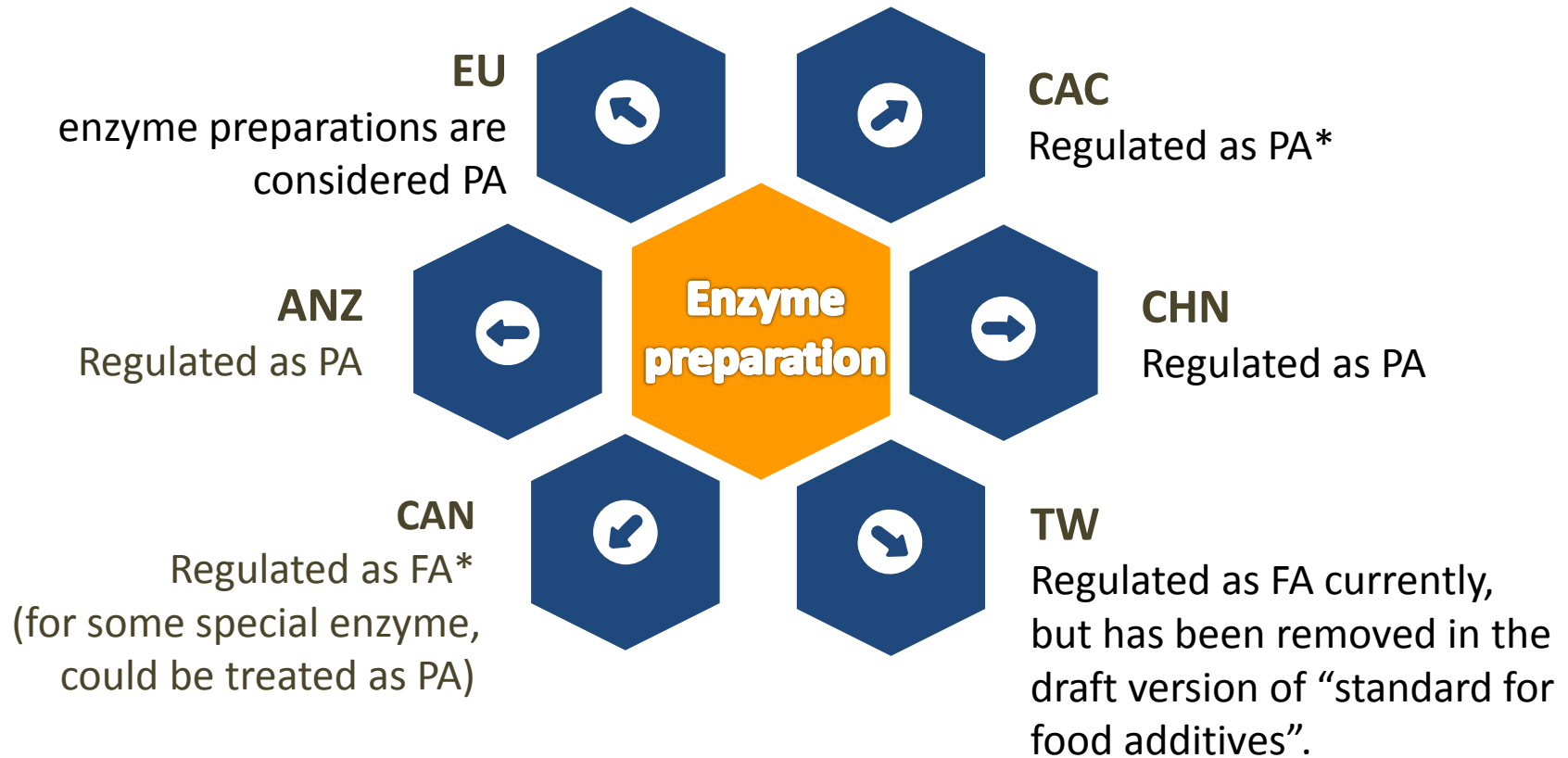
- (a) any nutritive material that is used, recognized or commonly sold as an article or ingredient of food;
- (b) vitamins, mineral nutrients and amino acids, other than those listed in the tables to Division 16,
- (c) spices, seasonings, flavouring preparations, essential oils, oleoresins and natural extractives;
- (d) agricultural chemicals, other than those listed in the tables to Division 16,
- (e) food packaging materials and components thereof; and
- (f) drugs recommended for administration to animals that may be consumed as food;

A food processing aid is a substance that is used for a technical effect in food processing or manufacture, the use of which does not affect the intrinsic characteristics of the food and results in no or negligible residues of the substance or its by-products in or on the finished food.

The technological function of processing aids

COUNTRIES	MANAGEMENT	QTY	PROCESSING AIDS TECHNOLOGICAL FUNCTION
CHN (GB 2760-2014)	Positive list	21	酵素、溶劑（提取、萃取）、防黏劑、澄清劑、脫色劑、冷卻劑、脫模劑、消泡劑、吸附劑、助濾劑、結晶劑、絮凝劑、分散劑、防褐變、發酵用營養物質、螯合劑、催化劑、交聯劑、脫毛劑、推進劑、脫皮劑
CAC (in the IPA (Inventory of processing aids))	Only have guideline currently	18	Antifoam Agents, Boiler water additives, Catalysts, Clarifying agents/ filtration aids, Contact freezing & cooling agents, Desiccating agent/anticaking agents, Detergents (wetting agents), Enzyme immobilization agents & supports, Flocculating agents, Ion exchange resins, membranes, and molecular sieves, Lubricants, release and anti stick agents, moulding aids, Micro-organism control agents, Microbial nutrients and microbial nutrient adjuncts, Propellant and packaging gases, Solvents, extraction & processing, Washing and peeling agents , Food enzymes (including immobilized enzymes), Other processing aids
ANZ (STANDARD 1.3.3)	Positive list (exclude the situation that a food used as processing aids)	18	antifoam agents, catalysts, decolourants, clarifying, filtration and adsorbent agents, desiccating preparations, ion exchange resins, lubricants, release and anti-stick agents, carriers, solvents and diluents, bleaching agents, washing and peeling agents, extraction solvents, enzymes of plant origin and animal origin, enzymes of microbial origin, microbial nutrients and microbial nutrient adjuncts, microbial control agent, and other processing aids with miscellaneous functions.
USA (CFR Title 21, part 173)	--	--	Polymer Substances and Polymer Adjuvants for Food Treatment, Enzyme Preparations and Microorganisms, Solvents, Lubricants, Release Agents and Related Substances, Specific Usage Additives
EU ((EC) No 1332/2008)	--	--	EU's work on registration and evaluation of enzymes is ongoing, and will not turn into regulation until 2020.
CAN (Policy for Differentiating Food Additives and Processing Aids)	--	--	No specific regulation for processing aids.

The management of enzyme preparation



*PA: Processing Aids

*FA: Food Additives

目錄 CONTENTE

03

食品加工助劑和食品添加物的判定方法

How to differentiate the food processing aids and food additives



由於工藝過程的需要，在食品加工過程中加入的，能夠保證食品加工的順利進行的各種物質

Substances have strong technological justification to be used during the food manufacturing process

加工助劑對食品本身并不起功能作用

processing aid not exert function in food

在達到預期目的前提下，應盡可能降低使用量，盡可能降低在終產品的殘留量

shall reduce the dosage as far as possible under the precondition of reaching the desired effect; the residue quantity shall be minimized

案例：二氧化硅作為食品添加物有明確的使用範圍和限量，而作為加工助劑則可在各類食品中使用且沒有殘留量限定。如何判定其作用？

GB 2760—2014

表 A.1 食品添加剂的允许使用品种、使用范围¹⁾以及最大使用量或残留量

二氧化硅 CNS号 02.004 功能 抗结剂	silicon dioxide INS号 551		
食品分类号	食品名称	最大使用量/(g/kg)	备注
01.03	乳粉(包括加糖乳粉)和奶油粉及其调制产品	15.0	
01.08	其他乳制品(如乳清粉、酪蛋白粉)(仅限奶片)	15	
02.05	其他油脂或油脂制品(仅限植脂末)	15.0	
03.0	冷冻饮品(03.04 食用冰除外)	0.5	
.....	可可制品(包括以可可为主要原料	...	

表 C.1 可在各类食品加工过程中使用,残留量不需限定的加工助剂名单(不含酶制剂)

序号	助剂中文名称	助剂英文名称
1	氨水(包括液氨)	ammonia
2	甘油(又名丙三醇)	glycerine (glycerol)
3	丙酮	acetone
4	丙烷	propane
5	单、双甘油脂肪酸酯	mono-and diglycerides of fatty acids
6	氮气	nitrogen
7	二氧化硅	silicon dioxide

根據中國大陸的GB2760，所有食品添加物均為批准在GB 2760中的物質。附錄A包括了僅發揮食品添加物功能和既發揮食品添加物功能又發揮加工助劑功能的物質，附錄C批准的物質才能作為加工助劑使用。二氧化硅的判定根據其是否会影响食品的本身特性，是否会在食品中发挥功能作用。如果二氧化硅仅在食品加工过程中，由於加工过程的需要而使用，则应依照附錄C进行管理，不再适用附錄A中二氧化硅的使用範圍和限量。

Case sharing: SiO₂ has regulation stipulation both in food additives and processing aids, how to judge and apply the regulatory requirement?

目錄 CONTENTE

04

食品加工助劑和食品工業用消毒劑、洗滌劑及其他化學物質的區別？

The difference of food processing aids and food industrial sanitizer, detergent and other chemical substances?

The difference of food processing aids and food industrial sanitizer, detergent?

問題：食品加工時，所使用的機器管道清洗劑是不是加工助劑？

Case study: The equipment pipeline cleaner used in food manufacture should be treated as processing aid or not?

根據中國大陸對於食品加工助劑和食品工業用化學物質的法規監管情況：

食品加工助劑是在食品加工過程中使用的，為食品加工過程順利進行，對最終食品不起功能作用的物質。一般會直接接觸食品本身。

Processing aids is used during food manufacture process to facilitate the food producing, not exert any function in the finished food. And normally will direct contact the food.

食品工業用**消毒劑**、**洗滌劑**是直接用於清洗、消毒食品、餐飲具以及直接接觸食品的工具、設備或者食品包裝材料和容器的物質。

The food industrial sanitizer, detergent is the substances which used to clean, disinfect food, tableware, and the instrument, equipment, or food contact material and container that direct contact with food.

The difference of food processing aids and food industrial sanitizer, detergent?

中國大陸關於消毒劑和洗滌劑的管理：

消毒劑實行原料清單管理：**食品用消毒劑原料（成份）名單（2009版）**

The material(ingredient) list of sanitizer used for food (2009)

洗滌劑根據食品安全風險的大小分為三類：

第一類，可用於**洗滌食品**（包括果疏、食品原料和食品半成品等）、**餐飲具**和食品工業**設備**的洗滌劑原料；

第二類，僅限用於洗滌**餐飲具**和食品工業**設備**的洗滌劑原料；

第三類，僅限用於食品工業**設備**的洗滌劑原料。

Detergent could be classified into three groups according to the food safety risk level:

Group I, substances which could be used to clean food(including fruit, vegetable, food material and semi-finished product, etc.), tableware and food industry equipment;

Group II, substances which could only be used to clean tableware and equipment;

Group III, substances which only used to clean food industry equipment.

The difference of food processing aids and food equipment used chemical substances ?

問題：食品加工時，**加工用設備自身所需的潤滑油**，如白油（礦物油）等，是否為加工助劑？

飲料生產企業，食品生產設備中**用作灌注時灌注頭升降的壓縮空氣**，是否為加工助劑？

Case study: Should the lubricating oil used by the equipment itself be classified as processing aid or not?

In beverage industry, the compressed air used for lifting the perfusion head of the production equipment, should it be treated as processing aid or not?

根據中國大陸加工助劑的定義和判定原則，食品工業用設備自身所需的化學物質，如問題中提到的潤滑劑和壓縮空氣等，**均不應當判定為加工助劑**，食品設備自身所用物質不直接接觸食品，不殘留在食品中，對食品自身無工藝功能作用。但在選購相關化學物質時，應當注意安全風險，如問題中的白油（礦物油），應當選用依據**GB/T 12494** 食品機械專用白油進行生產的產品。

According to the definition and judge principle of processing aids, chemical substances used by the equipment itself, as the lubricating oil mentioned in the case, should not be treated as processing aid. As this kind of substances will not direct contact food, don't have residue in finished food, don't exert any function to the food. But, manufacture should consider the food safety risk when using this kind of substances. For example, when using the white oil (mineral oil) to lubricate, food manufacture should purchase the product which is apply with GB/T 12494.

目錄 CONTENTE

05

食品加工助劑安全生產經營的原則

The principle of safe use for processing aids in food industry

- ◆ 各國對加工助劑的管理都有差異，但不管以哪種方式進行管理，均需符合綜合的食品安全相關的法規和標準，安全生產且對人體無害。

The regulation of PA varies all over the world, some countries don't have particular regulation for PA, and some countries regulate it as their own category (Australia does this) or as a sub-category of food additives. Either way, it should meet the general requirement that PA's should not be harmful to the consumer.

- ◆ 食品加工助劑的安全使用和殘留量監測應作為**HACCP**計劃中的關鍵控制點重點進行控制。

The safe use and residual value of processing aids should be a critical control point of the HACCP plan of the plant.

- ◆ 如果生產企業所在國有明確的針對食品加工助劑的管理法規，包括食品加工助劑的品種和殘留量規定，則食品生產企業所使用的食品加工助劑應當是在工廠所在國已批准使用的合法加工助劑。殘留量若有規定，則最終食品中的殘留量也應當符合，無明確殘留量規定的，則應依據**CAC**和相應國家的原則盡可能降低殘留。

The processing aids that food plant use have to be approved for use in the country that make the product in. and if there is no regulations for processing aids, then it could follow the principles of CAC to reduce the residues as possible.

目錄 CONTENTE

06

結論與建議

Conclusion and suggestion

Conclusion and suggestion

01

食品添加劑和食品加工助劑的定義範圍要清晰；
The definition of FA and PA should be clearly specified;

02

應有明確的判定區分原則；
Should have clear principle for differentiate FA and PA;

03

食品加工過程中（包括食品設備）的所用到的所有相關物質的管理應明晰；
The management of all materials used during food processing should be clarify;

04

食品行業或企業自身應有食品加工安全控制程序和措施；
Food industry or enterprises them self should have safety management procedureds for materials using during food processing;

05

各國食品加工助劑定義範疇和管理模式均不相同，對全球化貿易造成挑戰和壓力，各國加工助劑管理應趨於一致。
The definition scope, regulation stipulation of processing aid is varies and sometimes inconsistence across countries, it gives big challenge and pressure for international trade, it would be better that the management of PA consistence to some extent across countries.





THANK YOU