

[Hong Kong]

Ensuring Food Safety: An Important Challenge Today*¹

Alvin Yee Shing CHAN¹

Food Safety Hazards

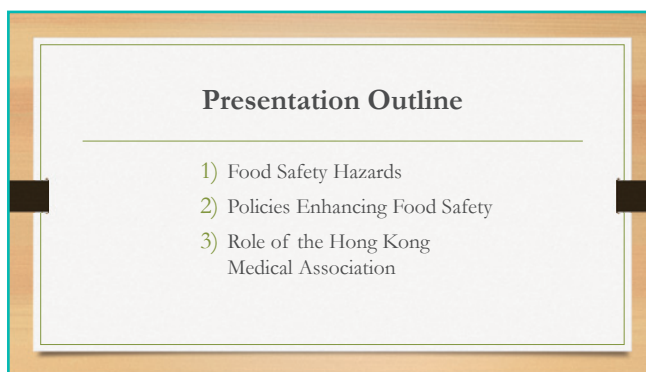
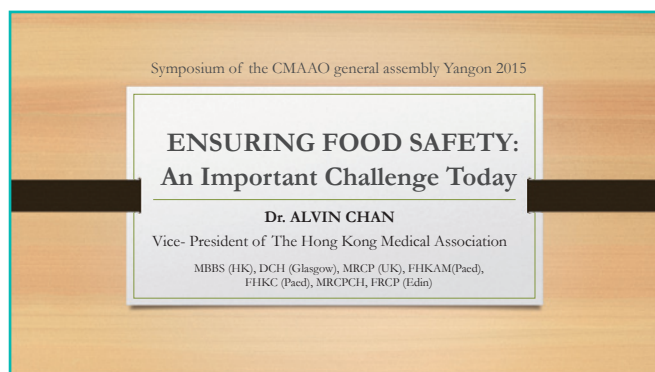
- a. Excessive Metals
 - i. Lead
 - ii. Mercury
 - iii. Cadmium
- b. Bacteria Contamination
 - i. Bacillus cereus
 - ii. Coliform
 - iii. Salmonella
 - iv. Listeria monocytogenes
- c. Radiation Pollution
- d. Illegal Sales of Banned Carcinogen
- e. Chemicals
 - i. Preservative
 - ii. Pesticide

Policies Enhancing Food Safety

- a. Centre for Food Safety—police
 - i. Code of Practice on Food Safety Orders
- b. Report to Department of Health
- c. Regulatory Framework on Nutrition and Health Claims on Infant Formula, Follow-up Formula, and Prepackaged Foods for Infants and Young Children Under the Age of 36 Months in Hong Kong
- d. Vetting of the Food and Drugs (Composition and Labelling) Regulation

Role of the Hong Kong Medical Association

- a. Submissions of response and advice to consultations
- b. Task Force on Nutrition Labelling
 - i. joined hands with 24 other organizations to
 1. hold a press conference
 2. stage a demonstration
 3. put up an advertorial on MingPao to counter the commercial forces
- c. Task Force on Hong Kong Code on Formula Milk
 - i. Legislative Proposals Relating to Formula Products and Foods intended for Infants and Young Children under the age of 36 months in Hong Kong
- d. Ad Hoc Committee on Toxic Effects of Lead Contaminated Water
 - i. Co-working with the government of departments to respond to the crisis
 - ii. Education and recommendations to doctors through Rapid communication system
 - iii. Public education through mass media and, doctors community networks



*¹ This article is based on a presentation made at the Symposium “Ensuring Food Safety: An Important Challenge Today” held at the 30th CMAAO General Assembly and 51st Council Meeting, Yangon, Myanmar, on September 23-25, 2015.

¹ Vice-President, Hong Kong Medical Association (hkma@hkma.org).

FOOD SAFETY HAZARDS

Excessive Heavy Metal

Pb

Hg

Cd

LEAD
MERCURY
CADMIUM

Lead in Drinking Water

Lead in Drinking Water

Source and Severity

- 11 public housing estates
- 2 Universities; 4 primary schools; 2 private housing estates
- Soldering Materials of **Water Pipes**
- Up to **153 micrograms** of lead per litre of water
- Exceed the WHO standard of **10 micrograms**
- Tolerable weekly intake: **25 µg/kg** body weight/week for lead

Health Impact

- Abdominal pain
- Vomiting
- Anaemia
- Children:
 - Retarded cognitive Intellectual development
 - Infant, young children and foetus
 - Central nervous system
- No victim was hospitalized

Source and Severity

	Total	BLL Elevated
All samples	1773	126 (7.1%)

Source: LC Paper No. CB(2)2051/14-15(01) (Updated 01/09/2015)

Heavy Metal Poisoning
Please specify: _____

Report to Department of Health on Poisoning or Communicable Diseases Other than those Specified in the Prevention and Control of Disease Ordinance

Actions

Government

- Provision of distilled water
- Emergency water supply from supplementary water pipe systems
- Install temporary standpipes
- Tendering process on hold for four housing estates
- **Commission of Inquiry into Excess Lead found in Drinking Water**
 - Chaired by High Court Judge Andrew CHAN
 - Submit report in 9 months on causation investigation

- Inter-departmental meeting
 - Transport and Housing Bureau
 - Development Bureau
 - Food and Health Bureau
 - Housing Department
 - Water Supplies Department
 - Department of Health

Actions

- 980 kindergartens would be the **top priority in the water tests**
- Tap water samples from about **80 government-funded primary and secondary schools** completed after 2005 will be taken in the second phase
- Follow-up medical care and surveillance
- Cognitive Development Assessment for children** with lead in blood level more than 5 micrograms per litre of water
- DH has set up a **hotline (2125 1122)** for **answering public enquiries** on the health impact of lead and providing health advice

HKMA Actions

Ad Hoc Committee on Toxic Effects of Lead Contaminated Water

- Emergency meeting with **Hospital Authority and Department of Health representatives** was held
- Education and recommendations to doctors through Rapid communication system
- 17 Health Education Activities** were delivered in Public Housing Estates, Primary Schools and Social Organizations

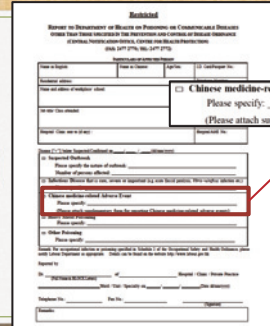


Lead in Chinese Medicine

Lead in Chinese Medicine

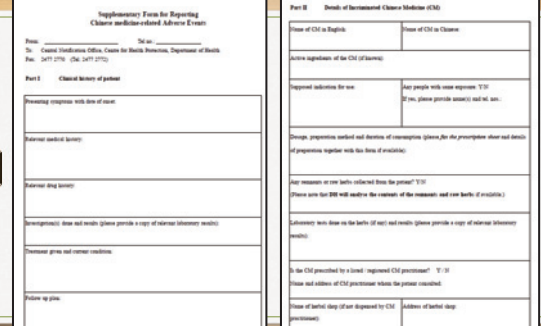
Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> Bo Ning Tan Prepared by a traditional Chinese medicine practitioner Three patients with lead poisoning Duration of pill consumption ranged from 3 days to 6 months 	<ul style="list-style-type: none"> Musculoskeletal pain Malaise Symptoms of common cold Chelating therapy was not given because of altered liver function The patient stopped taking the herbal pills and her liver function normalised within 3 weeks 	<ul style="list-style-type: none"> Contravention of Section 52(1) of the Public Health and Municipal Services Ordinance Cap. 132 <ul style="list-style-type: none"> Selling any drug not of the nature, substance or quality demanded by the purchaser, might have occurred \$10,000 3 months' imprisonment

Source: <http://www.hkma.org.hk/system/files/hkma/202661.pdf> (2001)



Chinese medicine-related Adverse Event
Please specify:
(Please attach supplementary form for reporting Chinese medicine-related adverse events)

Report to Department of Health on Poisoning or Communicable Diseases Other than those Specified in the Prevention and Control of Disease Ordinance



Supplementary Form for Reporting Chinese medicine-related Adverse Events

Part I Clinical history of patient

Part II Details of Suspected Chinese Medicine (CM)

Excessive Heavy Metal - **Mercury**

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> • Notified by Rapid Alert System for Food and Feed of the European • Skin-on frozen swordfish exported from Vietnam • Three kinds of swordfish loin and steak • Legal limit of 0.5 parts mercury per million 	<ul style="list-style-type: none"> • Developing nervous system • Pregnant women, women planning pregnancy and young children: • Avoid consumption of large predatory fish • No victim was hospitalized or affected by excessive mercury 	<ul style="list-style-type: none"> • Informed the importer • Stopped sale • Not entered the market • Marked and sealed • Recall from distributors • Alert the trade • Liaise with the Vietnam authorities

Excessive Heavy Metal - **Cadmium**

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> • Regular Food Surveillance Programme • Level of 3.2 parts per million (ppm), exceeding the legal limit of 2 ppm • Oysters harvested from Walvis Harbor in Namibia 	<ul style="list-style-type: none"> • Cooking cannot remove cadmium accumulated in the oysters • Adverse effects of the kidneys and bones • No victim was hospitalized or affected 	<ul style="list-style-type: none"> • Suspended the import • Notified the Namibian authorities • Alerted the trade and the public • Advise the trade to source oysters that are grown in and harvested from areas of clean water

Regulations and Penalty

Food Adulteration (Metallic Contamination) Regulations (Cap 132V)

- Prosecution
- Liable upon conviction to a **fine of \$50,000**
- Imprisonment for **6 months**

FOOD SAFETY HAZARDS

Bacteria Contamination

Bacillus Cereus	Coliform
Salmonella	Listeria Monocytogenes

Bacteria Contamination - **Bacillus Cereus**

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> • Soup with pork lung, apricot kernel and Chinese ham • Tea retailer Hung Fook Tong • Bacillus cereus at a level of 300,000 per gram • "Microbiological Guidelines for Food": Injurious to health if a gram of food contains more than 100 000 of Bacillus cereus 	<ul style="list-style-type: none"> • Gastrointestinal upset • Vomiting • Diarrhoea • No victim was hospitalized or affected by Bacillus cereus 	<ul style="list-style-type: none"> • Inform the vendor • Stop the sale • Trace the source and distribution • Inform the Mainland authorities and the local trade

Bacteria Contamination - **Coliform**

Source and Severity	Health Impact	Action
<ul style="list-style-type: none"> • 1000 samples of ice-cream and frozen confections were collected • Two samples of soft ice-cream were found to contain 570 and 170 coliform organisms per gram respectively • Exceeded the legal standard of less than 100 per gram • Brand: New Zealand Natural • Place of origin: New Zealand 	<ul style="list-style-type: none"> • Cramps • Diarrhea (gastrointestinal distress) • Giardiasis • Cryptosporidiosis • Intestinal illness • No victim was hospitalized or affected 	<ul style="list-style-type: none"> • Warning letters were issued • Removed from shelves • Advice on personal hygiene, cleaning and sanitizing of production facilities • Collect follow-up samples for testing • Alert the local trade and the New Zealand authorities

Bacteria Contamination - Salmonella

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> The Taiwan-made Horng Ryen Jen sandwiches Genetic testing of nine patients showed the bacteria salmonella enteritidis which belongs to serogroup D salmonella had identical genotyping patterns 	<ul style="list-style-type: none"> Sickened 33 males and 55 females aged one to 79 in 31 clusters Fever, Vomiting, abdominal pain, diarrhoea A 34-year-old woman who was readmitted to the Hospital due to persistent fever and diarrhea 	<ul style="list-style-type: none"> The import and sale of the sandwiches was banned in Hong Kong Tracing the sources and distribution Stop selling or using the affected product Inform the Taiwanese authorities and the local trade

Bacteria Contamination - Listeria Monocytogenes

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> Manufacturer: Polyfood Food Service Co Ltd Upon receipt of a notification from the Macau authorities A batch of smoked salmon imported from Hong Kong was contaminated with Listeria monocytogenes 	<ul style="list-style-type: none"> A 23-year-old man was hospitalized Diagnosed with listeriosis infection Fever, muscle pain, headache, nausea, vomiting or diarrhoea Septicemia, meningitis Miscarriages in pregnant women 	<ul style="list-style-type: none"> Recall all smoked salmon produced, regardless of the brand and batches Suspend the relevant production line to carry out thorough cleansing and disinfection

Listeriosis

Prevention and Control of Disease Ordinance (Cap. 599)
Notification of Infectious Diseases other than Tuberculosis

Microbial Contamination of Ingredients When Making Homemade Ice-cream

- Raw eggs: **Salmonella infection**
- U.S. Food and Drug Administration**
 - 71 to 80°C in a water bath
 - 10 to 30 minutes
- Kill pathogenic bacteria without affecting the texture and flavor of the ice-cream

Microbial Contamination of Ingredients When Making Homemade Ice-cream

- Dairy products: **Listeria monocytogenes**
- Able to survive and reproduce below 0°C
- Incompletely sterilized milk are classified as high risk food
- The mortality rate could be as high as 30%
- Homemade ice-creams are free from stabilizers and additives
 - Consume as soon as possible

Radiation Pollution

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> Received a complaint Importing 10 boxes of carrots from Chiba, Japan Import documents did not state that the consignment was originated from the prefecture concerned 	<ul style="list-style-type: none"> Radioactive caesium, caesium-134 and caesium-137, can be released Internal exposure allows the radioactive material to be distributed in muscle tissue, increasing cancer risk 	<ul style="list-style-type: none"> Not to import any restricted fresh produce from the five Japanese prefectures Maximum fine of \$100,000 Imprisonment for 12 months The importer was prosecuted

Illegal Sales of Banned Carcinogen

Source and Severity	Health Impact	Action
<ul style="list-style-type: none"> Product: Pistacchio Crudo Place of origin: Iran Packer: LIFE S.r.l. at Sommariva Perno in Italy Aflatoxins at a level of 282 microgram (µg) per kg The Italian packer has initiated a recall 	<ul style="list-style-type: none"> Belongs to Group 1 of the IARC classifications of substances based on their carcinogenicity IARC: International Agency for Research on Cancer of the World Health Organization Liver Cell Cancer (LCC) 	<ul style="list-style-type: none"> Marking and sealing of the remaining stock found in the warehouse The retailer will return the affected product to the importer for mark-and-seal and disposal by the Centre for Food Safety

Aflatoxin

Cause:

- Many *Aspergillus species* infect nuts and cause decay of the kernels before harvest
- The shells of most pistachio nuts split naturally in the orchard prior to harvest
- Sometimes the hull is attached to the shell so that it splits with the shell, exposing the kernel to moulds and insects. This is called an **"early split"**
- When early splits were examined in one study about **20 percent of the samples (50 nuts each) were found to be contaminated with aflatoxin**, while there was no contamination in nuts with hulls that remained intact in the orchard (Doster and Michailides, 1995; Sommer, Buchanan and Fortlage, 1986)

References: Sommer, N.F., Buchanan, J.R. & Fortlage, R.J. 1986. Relation of early splitting and rotting of pistachio nuts to aflatoxin in the orchard. *Phytopathology*, 76(7): 692-694. Doster, M.A. & Michailides, T.J. 1995. The relationship between date of hull splitting and decay of pistachio nuts by *Aspergillus* species. *Plant Dis.*, 79(8): 766-769.

Group	Description	Food-related Examples
1	Carcinogenic to humans: • Evidence is sufficient in humans	Aflatoxins , alcoholic beverages, inorganic arsenic compounds, benzo[a]pyrene (B[a]P), chromium (VI) compounds, dioxins, polychlorinated biphenols (PCBs), Chinese-style salted fish
2A	Probably carcinogenic to humans: • Evidence is limited in humans; and is sufficient in experimental animals.	Acrylamide, inorganic lead compounds, certain nitroso compounds resulted from ingested nitrate / nitrite
2B	Possibly carcinogenic to humans: • Evidence is limited in humans; and is less than sufficient in experimental animals; or • Evidence is inadequate in humans; but is sufficient in experimental animals.	Bracken fern, fumonisin B1, ochratoxin A
3	Not classifiable as to its carcinogenicity to humans: • Evidence is inadequate in humans; and is inadequate or limited in animals.	Chromium (III) compounds, metallic chromium, citrinin, patulin
4	Probably not carcinogenic to humans	

Reference: <http://www.euro.who.int/en/about-us/who-activities/food-safety-and-food-quality/chemicals/food-safety/chemicals-in-food/chemicals-in-food-classification/codex-2011-nci-preventable-exposures.pdf> (2011)

Chinese-style salted fish

- NASOPHARYNGEAL cancer**
- Not the salted fish per se that causes NPC but ingestion of food with high concentration of **N-nitroso compounds** that increases the risk of cancer as a whole
 - N-nitrosamines**
 - N-nitrosodiethylamine**
 - N-nitrosopyrrolidine**
 - N-nitrosopiperidine**
- Production:**
 - Fish are generally **not gutted**
 - Sometimes, fish is allowed to soften by **decomposition** before salting, to produce 'soft meat' salted fish
 - Insect infestation** can be a serious problem, especially in damp weather
 - Average **annual temperature and humidity are high** and are favourable for the **growth of bacteria such as Staphylococci**
 - Salted fish are stored for **4 to 5 months** before being consumed

Reference: <http://www.ncbi.nlm.nih.gov/books/NBK304384/>

Chemicals – Preservatives: Sulphur Dioxide

Source and Severity	Health Impact	Action
<ul style="list-style-type: none"> Upon receipt of a notification from the Macau authorities Raisins Brand: Nature's Choice Place of origin: South Africa/Chile/USA 	<ul style="list-style-type: none"> Can induce asthma when inhaled or ingested Inhibits specific nerve signals, restricts lung performance Direct allergen where over 65% asthmatic children are sensitive to sulfur dioxide No victim was hospitalized or affected 	<ul style="list-style-type: none"> Informed the vendor Stop selling Trace the distribution Recall the affected batch of the product

Chemicals – Preservatives

Source and Severity	Health Impact	Action
<ul style="list-style-type: none"> Sulphur dioxide <ul style="list-style-type: none"> Preserved leaf mustard 330 parts per million (ppm) Exceeding legal limits of 100 ppm Benzoic acid <ul style="list-style-type: none"> Preserved mustard 7,100 ppm exceeding legal limits of 2,000 ppm 	<ul style="list-style-type: none"> Individuals who are allergic to this preservative may experience symptoms of shortness of breath, headache and nausea According to the Material Safety Data Sheet (MSDS), benzoic acid can irritate the eyes, skin, lungs and digestive tract Benzoic acid can enter the body through the skin as well as the digestive and respiratory tracts 	<ul style="list-style-type: none"> Remove from shelves the affected products Prosecution will be initiated should there be sufficient evidence Preservatives in Food Regulation (Cap 132BD) Offenders are liable to a maximum fine of \$50,000 and six months' imprisonment upon conviction

References: <http://www.info.gov.hk/igra/general/201509/15/P201509150914.htm>

Chemicals - Pesticide

Source and Severity	Health Impact	Actions
<ul style="list-style-type: none"> Celery sample contained chlorpyrifos at a level of 0.36 parts per million (ppm) 7.2 times the maximum residue limit (0.05 ppm) Imported from Mainland China One of the most widely used insecticides in the U.S. with 20 to 24 million pounds applied annually 	<ul style="list-style-type: none"> Nervous system Low-dose exposure may include headaches, agitation, inability to concentrate, weakness, tiredness, nausea, diarrhea and blurred vision Higher doses can lead to respiratory paralysis and death 	<ul style="list-style-type: none"> Tracing the source and distribution of the food in question Pesticide Residues in Food Regulation Maximum fine of \$50,000 Imprisonment for six months upon conviction

Chemicals - Pesticide

Pesticides	Type of adverse effects	Possible symptoms/effects
Methamidophos	Acute adverse effects	<ul style="list-style-type: none"> Vomiting Diarrhea dizziness and numbness Breathing difficulties and blurred vision were noted in severe cases Liver damage
DDT	Chronic adverse effects	<ul style="list-style-type: none"> Adverse effects on reproduction and development have been observed in laboratory animals

Plant Growth Regulators

<ul style="list-style-type: none"> Extend the use of plant hormones to regulate growth of other plants Act by controlling or modifying plant growth processes Plant growth regulators are classified under "pesticides" Three Common Plant Growth Regulators <ol style="list-style-type: none"> Ethylene Auxins and related compounds Forchlorfenuron 	<ul style="list-style-type: none"> If misused, crops will grow excessively fast, resulting in ripening on the fruit surface with the core remaining raw, which will adversely affect the palatability and quality of fruits Side effects (of Forchlorfenuron) revealed in animal studies included: <ul style="list-style-type: none"> Increased incidence of alopecia (hair loss) Decreased birth weight Increased pup mortality Decreased litter sizes
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POLICIES ENHANCING FOOD SAFETY

Centre for Food Safety – Policing

Code of Practice on Food Safety Orders

- prohibit the **import** of any food;
- prohibit the **supply** of any food;
- direct that any food supplied be **recalled**;
- direct that any food be **impounded, isolated, destroyed** or otherwise **disposed** of; or
- prohibit the **carrying on** of an activity in relation to any food or permit the carrying on of any such activity in accordance with conditions

POLICIES ENHANCING FOOD SAFETY

Department of Health

- On **poisoning** or communicable diseases other than those specified in the **Prevention and Control of Disease Ordinance**
- Notification** of Infectious Diseases other than Tuberculosis


Food poisoning

Number of persons known to be affected: _____

Place and district of consumption (e.g. "XX Restaurant in Mongkok"):

Date of consumption: _____

Prevention and Control of Disease Ordinance (Cap. 599)
Notification of Infectious Diseases other than Tuberculosis



POLICIES ENHANCING FOOD SAFETY

2014	2015
<ul style="list-style-type: none"> ▪ Legislative Council: vetting of the Food and Drugs (Composition and Labelling Amendment) (No. 2) Regulation ▪ Requirements on nutritional composition of infant formulae ▪ Nutrition labelling of infant formulae, follow-up formulae and prepackaged food for infants and young children 	<ul style="list-style-type: none"> ▪ Proposed Regulatory Framework ▪ Nutrition and Health Claims on Infant Formula, Follow-up Formula, and Prepackaged Foods for Infants and Young Children ▪ Under the Age of 36 Months

ROLE OF THE HKMA

Dr. LEUNG Ka Lau, Legislative Councillor (Medical) is a Council Member of the Hong Kong Medical Association



2008: Task Force on Nutrition Labelling

- **LegCo Panel on Food and Drugs** (Composition and Labelling) (Amendment: Requirements for Nutrition Labelling and Nutrition Claim) Regulation
 - Joined hands with **24 other organizations** to
 - Hold a press conference
 - Stage a demonstration
 - Put up an **advertorial** on MingPao on 28 May 2008 to counter the commercial forces

LegCo Panel on Food and Drugs




- Objected to the proposed broadening of the exemption scheme
- Supported proposal on **small volume exemption** (without claims) only to protect the interest of the **minority ethnic** groups
- Raised our concern on the amended regulations do not cover the labelling of pre-packaged food **sold through the internet**



2013: Task Force on Hong Kong Code on Formula Milk

Documents submitted to the government

1. Consultation document on "Hong Kong Code of Marketing and Quality of Formula Milk and Related Products, and Food Products for Infants and Young Children"
2. "Legislative Proposals Relating to Formula Products and Foods Intended for Infants and Young Children under the Age of 36 Months in Hong Kong"



2013: Task Force on Hong Kong Code on Formula Milk



Meeting with members practicing

- Family Medicine
- Paediatrics
- Obstetrics & Gynaecology

Press Conference

2013: Task Force on Hong Kong Code on Formula Milk



THANK YOU!