Ensuring Food Safety: An Important Challenge Today

Alvin Yee Shing CHAN

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

\[
\begin{array}{ccc}
\text{Pb} & \text{Hg} & \text{Cd} \\
\text{LEAD} & \text{MERCURY} & \text{CADMIUM}
\end{array}
\]

**Lead in Drinking Water**

**Source and Severity**

- 21 public housing estates
- 3 kindergartens; 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: 2.5 μg/kg body weight/week for lead

**Health Impact**

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

**Total BLL Elevated**

<table>
<thead>
<tr>
<th></th>
<th>BLL Elevated</th>
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<tbody>
<tr>
<td>All samples</td>
<td>1775</td>
</tr>
<tr>
<td>Total</td>
<td>126 (7.1%)</td>
</tr>
</tbody>
</table>

**Lead in Drinking Water**

- Pregnant Women: 3, 2%
- Lactating Women: 27, 22%
- Children Aged 6 or below: 96, 76%

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

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**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 three 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

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

- **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

**Health Impact**
- Musculoskeletal pain
- Malaise
- Symptoms of common cold

**Actions**
- 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

HKMA Actions

- Contravention of Section 12(1) of the Public Health and Municipal Services Ordinance Cap. 132
- Selling any drug not of the nature, substance or quality demanded by the purchaser, might have occurred
- $10,000
- 3 months’ imprisonment

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

Source:

Bacteria Contamination - *Coliform*

**Source and Severity**
- 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

**Health Impact**
- Cramps
- Diarrhea (gastrointestinal distress)
- Giardiasis
- Cryptosporidiosis

**Actions**
- Warned the importer
- Removed from shelves
- Issued a recall
- Advised the local trade and the manufacturer

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*Excessive Heavy Metal - Cadmium*

**Source and Severity**
- Regular Food Surveillance Programme
- Level of 3.3 parts per million (ppm), exceeding the legal limit of 2 ppm.
- Oysters harvested from Walvis Harbor in Namibia

**Health Impact**
- Cooking cannot remove cadmium accumulated in the oysters.
- Adverse effects of the kidney.

**Actions**
- Suspended the import of cadmium
- Notified the Namibian authorities
- Advised the local trade to source oysters that are grown in and harvested from areas of clean water.

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*Excessive Heavy Metal - Mercury*

**Source and Severity**
- Food Adulteration (Metallic Contamination) Regulations (Cap 132V)
- Prosecution
- Liable upon conviction to a fine of $50,000
- Imprisonment for 6 months

**Health Impact**
- Developing nervous system
- Pregnant women, women planning pregnancy and young children.
- No victim was hospitalized or affected by excessive mercury.

**Actions**
- Informed the importer
- Stopped sale
- Not entered the market
- Exceeded the legal standard of less than 100 ppm.

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*Food Safety Hazards*

**Bacteria Contamination**

- *Bacillus Cereus*
- *Listeria Monocytogenes*
- *Salmonella*
Radiation Pollution

Source and Severity
- 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

Health Impact
- Released radioactive caesium-134 and caesium-137, can be released
- Internal exposure allows the radioactive material to be distributed in muscle tissue, increasing cancer risk

Actions
- Not to import any restricted fresh produce from the five Japanese prefectures
- Recall all restricted produce regardless of the brand and batch
- Expand the relevant production line to carry out thorough cleaning and disinfection

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
Illegal Sales of Banned Carcinogen

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<th>Health Impact</th>
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<td><strong>Product</strong>: Pistachio Crudo</td>
<td><strong>Belongs to Group 1 of the IARC classifications of chemicals based on their carcinogenicity</strong></td>
<td><strong>Marking and sealing of the remaining stock found in the warehouse</strong></td>
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<tr>
<td><strong>Place of origin</strong>: Iran</td>
<td><strong>UNIC International Agency for Research on Cancer of the World Health Organization</strong></td>
<td><strong>The retailer will return the affected product to the importer for mark-and-seal and dispose of by the Centre for Food Safety</strong></td>
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<td><strong>Packers</strong>: LIFE S.r.l. at Sommariva Perno in Italy</td>
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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)

**Ref: http://www.info.gov.hk/gia/general/201509/15/P201509150934.htm**

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Chinese-style salted fish

- **NASOPHARYNGEAL cancer**
- Not the salted fish per se that causes NPC but ingestion of food with high concentration of N-nitrosopyrrolidine compounds that increases the risk of cancer as a whole
  - N-nitrosodiethylamine
  - N-nitrososoprineline
  - N-nitrosoguanidine

**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 favorable for the growth of bacteria such as *Staphylococcus* 
- Salted fish are stored for 4 to 5 months before being consumed

**Ref:**
- Sommer, Buchanan and Fortlage, 1986)

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### POLICIES ENHANCING FOOD SAFETY

**Chemicals - Pesticide**

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<td>Celery sample contained chlorpyrifos at a level of 0.36 parts per million (ppm)</td>
<td>Nervous system</td>
<td>Tracing the source and distribution of the food in question</td>
</tr>
<tr>
<td>7.2 times the maximum residue limit (0.05 ppm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imported from Mainland China</td>
<td>Chronic adverse effects</td>
<td>Pesticide Residues in Food Regulation</td>
</tr>
<tr>
<td>One of the most widely used pesticides in the U.S. with 20 to 24 million pounds applied annually</td>
<td></td>
<td>Maximum fine of $50,000</td>
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### Plant Growth Regulators

- 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
  1. Ethylene
  2. Auxins and related compounds
  3. Forchlorfenuron

- 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:
  - Increased incidence of alopecia (hair loss)
  - Decreased birth weight
  - Increased pup mortality
  - Decreased litter sizes

### Centre for Food Safety – Policing

**Code of Practice on Food Safety Orders**

- (a) prohibit the sale of any food:
- (b) prohibit the import of any food;
- (c) direct that any food supplied be recalled:
- (d) direct that any food be impounded, isolated, destroyed or otherwise disposed of; or
- (e) 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
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

LegCo Panel on Food and Drugs

- Objected to the proposal 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

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

2008: Task Force on Nutrition Labelling

- 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

POLICIES ENHANCING FOOD SAFETY

- Legislative Council vetting of the Food and Drugs (Composition and Labelling) (Amendment) Regulations
- Requirements on nutritional composition of infant formulae
- Nutrition labelling of infant formulae, follow-up formulae and prepackaged food for infants and young children
- Under the Age of 36 Months
- Proposed Regulatory Framework
- Nutrition and Health Claims on Infant Formula, Follow-up Formula, and Prepackaged Foods for Infants and Young Children

ROLE OF THE HKMA

ENSURING FOOD SAFETY: AN IMPORTANT CHALLENGE TODAY
THANK YOU!

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”

Demonstration at the Legislative Council

Meeting with members practicing
- Family Medicine
- Paediatrics
- Obstetrics & Gynaecology

Press Conference

2013: Task Force on Hong Kong Code on Formula Milk