

Food Safety Problems of Local Food Manufacturers - Measures to Reduce the Risk of Contamination of *Listeria monocytogenes* in Ready-To-Eat (RTE) Food

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Background

- ✿ From time to time, products by local food manufacturers are detected with irregularities not in compliance with Hong Kong's regulatory standards
- ✿ This presentation summarised major food safety problems of local food manufacturers for the past 3 years
 - ✦ CFS press release from 2013 – 2015 on food incident of products produced by local manufacturers

Major food safety problems involved local food manufacturers (2013 – 2015)

Date	Food products involved	Irregularity
09/07/2014	Bottled black soybean milk	<i>Bacillus cereus</i>
10/07/2014	Prepackaged Chinese-style soup	<i>Bacillus cereus</i>
14/08/2014	Bottled bean milk	<i>Bacillus cereus</i>
30/10/2014	Ice-cream	Total bacterial count and coliform count
18/11/2014	Ice-cream	Total bacterial count and coliform count
06/12/2014	Ice-cream	Coliform count
29/03/2015	Smoked salmon	<i>Listeria monocytogenes</i>
02/04/2015	Smoked salmon	<i>Listeria monocytogenes</i>
23/06/2015	Ice-cream	Coliform count
26/06/2015	Ice-cream	Coliform count
23/07/2015	Sorbet	Coliform count
27/07/2015	Sorbet	Coliform count
17/08/2015	Soft ice-cream	Coliform count
21/08/2015	Fresh milk	Total bacterial count
28/08/2015	Milk drink	Total bacterial count
01/09/2015	Milk drink	Total bacterial count
04/11/2015	Ice-cream	Coliform count
18/11/2015	Ice-cream	Coliform count
19/11/2015	Sushi rice sample (with salmon, eel, seaweed, egg and whelk)	<i>Listeria monocytogenes</i>
05/12/2015	Ice-cream	Coliform count

Analysis of the problems

- ✿ A total of 20 major food incidents involved local food manufacturers from 2013 – 2015
- ✿ Can be broadly categorised into 4 groups:
 - ✦ Exceeding level of *Bacillus cereus* in prepacked drinks / soup (**3 incidents**)
 - ✦ Exceeding level of total bacterial count and/or coliform count in frozen confections (**11 incidents**)
 - ✦ Exceeding level of total bacterial count in milk / milk drink (**3 incidents**)
 - ✦ Exceeding level of *Listeria monocytogenes* in ready-to-eat food (**3 incidents**)
- ✿ More than half (11 incidents) involved frozen confections (i.e. ice-cream & sorbet)

Prepacked drinks / soup contaminated with *Bacillus cereus*

- ✿ 3 incidents - involved bottled soya bean milk and Chinese style soup
- ✿ *Bacillus cereus* is a spore-forming bacterium and grows best at 30 °C to 37 °C
- ✿ *B. cereus* is ubiquitous and presents in a variety of foodstuffs
- ✿ Improper storage subsequent to heat treatment can allow the bacterium to grow and form heat-stable toxin

Advice on controlling *Bacillus cereus* contamination

- ✿ Time and temperature control following heat treatment is of prime importance to prevent extensive *B. cereus* growth and/or formation of emetic toxin
- ✿ Rapid cooling followed by proper refrigeration after heat treatment helps to prevent the multiplication of the bacterium
- ✿ A set of standard cooling procedures should be established and the storage condition should be monitored
- ✿ Alternatively, cooked food can be kept at above 60° C to restrict the growth of the bacterium

Frozen confections with excessive total bacterial count and/or coliform count

- ✿ 11 incidents – involved ice-cream, soft ice-cream and sorbet
- ✿ Total bacterial count (TBC) & coliform count are hygienic indicator
- ✿ Not necessarily mean that pathogens are present
- ✿ Exceeding level of TBC & coliform count suggested suboptimal hygienic conditions in the course of processing
- ✿ Improper handling of food products such as storing in places with poor hygiene or keeping at temperature not low enough are both conducive to bacterial growth

Advice on frozen confection production

- ✿ Observe good hygienic practices during all preparation and handling processes (including personal hygiene of food handlers) and keep both hands clean
- ✿ Cleanse and sanitise all equipment and utensils as scheduled
- ✿ Obtain ingredients (e.g. milk, cream and ice-cream mix) from licensed and reliable sources
- ✿ Discard the defrosted products and do not re-freeze melted frozen confection for sale
- ✿ Drain off and discard the leftover of soft ice-cream daily

Milk / milk drink with excessive total bacterial count

- ✿ 3 incidents – involved fresh milk and milk drink
- ✿ Total bacterial count is hygienic indicator and does not necessarily mean the present of pathogens
- ✿ May associated with problems in the efficiency of heat treatment (e.g. inadequate pasteurisation)
- ✿ May also caused by re-contamination after heat treatment (e.g. contamination by food handlers or unclean machines)

Advice on milk / milk drink production

- ✿ Check for process failure (e.g. heat treatment) and ensure product safety
- ✿ Obtain supplies of fresh and reconstituted milk from licensed milk factories
- ✿ Import milk or milk beverage from manufacturer approved by the FEHD
- ✿ Follow the recommendations of the Codex Code of Hygienic Practice for Milk and Milk Products (CAC/RCP 57-2004)

Ready-to-eat food contaminated with *Listeria monocytogenes*

- ✱ 3 incidents - involved smoked salmon and Sushi rice sample (with salmon, eel, seaweed, egg and whelk)
- ✱ *Listeria* can be easily destroyed by cooking but can survive and multiply at refrigerator temperatures
- ✱ Most healthy individuals do not develop symptoms or only have mild symptoms when infected
- ✱ Severe complications may occur in the susceptible populations, including the elderly, young children, and people with weakened immunity
- ✱ Listeriosis during pregnancy can lead to miscarriage, stillbirth, premature delivery, or infection in newborns

Advice on controlling *Listeria monocytogenes* contamination (1)

- ✿ Prevention of *Listeria* contamination and controlling its growth is of prime importance in production of refrigerated ready-to-eat food with a long shelf life (greater than five days) (e.g. cold-smoked salmon)
- ✿ Reformulation of the product such that one or more of the parameters influencing the growth of the bacterium (e.g., pH, water activity, presence of inhibitory compounds) is altered so the food no longer supports growth
- ✿ Shortening the duration of the product refrigerated/chilled shelf life are other means for assuring that growth to any significant degree does not occur before the product is consumed

Advice on controlling *Listeria monocytogenes* contamination (2)

- ✿ Inclusion of a step to eliminate *Listeria*
- ✿ Prevent re-contamination of the product
- ✿ Introduce an additional mitigation treatment after final packaging
- ✿ Attention to the design and maintenance of equipment
- ✿ Maintain the integrity of the cold chain (i.e., the temperature of refrigerated/chilled storage)
- ✿ Follow the recommendations of the Codex Guidelines on the Application of General Principles of Food Hygiene to the Control of *Listeria monocytogenes* in Foods (CAC/GL 61 – 2007)

General advice on food production

- ✿ The trade should ensure that all food for sale comply with the legal requirements
- ✿ Observe basic hygiene requirements
 - ✦ Environmental hygiene
 - ✦ Equipment sanitation
 - ✦ Food hygiene
 - ✦ Personal hygiene
- ✿ Observe Good Manufacturing Practice (GMP) in food processing to assure that the food products do not pose risk to the public
- ✿ Local food manufacturers are recommended to implement the Hazard Analysis and Critical Control Points (HACCP) system, to control food safety problems

For more information

- ✿ CFS webpage on HACCP

http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp.html

- ✿ Food Safety Advice on Production of Soups and Drinks

http://www.cfs.gov.hk/english/committee/files/TCF_46/Draft_Food_Safety_Advice_on_Production_of_Soups_and_Drinks_e.pdf

- ✿ Measures to reduce the risk of contamination of *Listeria monocytogenes* in ready-to-eat (RTE) food (Chinese version only)

http://www.cfs.gov.hk/tc_chi/whatsnew/whatsnew_act/files/FS_Seminar_for_Trade_2015/6_Introduction_of_Listeria_monocytogenes.pdf

- ✿ Implementing HACCP and other Food Safety Plans in Food Factories manufacturing Prepackaged Foods and Beverages (Chinese version only)

http://www.cfs.gov.hk/tc_chi/whatsnew/whatsnew_act/files/FS_Seminar_for_Trade_2015/5_Implementing_HACCP.pdf

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