

Risk Assessment Study – Safety Issues of Baby Bottles and Children’s Tableware

Objectives

- To review the safety issues on baby bottles and tableware for infants and young children in the form of literature review
- To discuss the health concerns of the potential migration of chemicals from these products

Scope of Study

Articles

- Baby bottles and children's tableware

Materials

- Polycarbonate and melamine
- Plastic and non-plastic materials commonly available in HK market

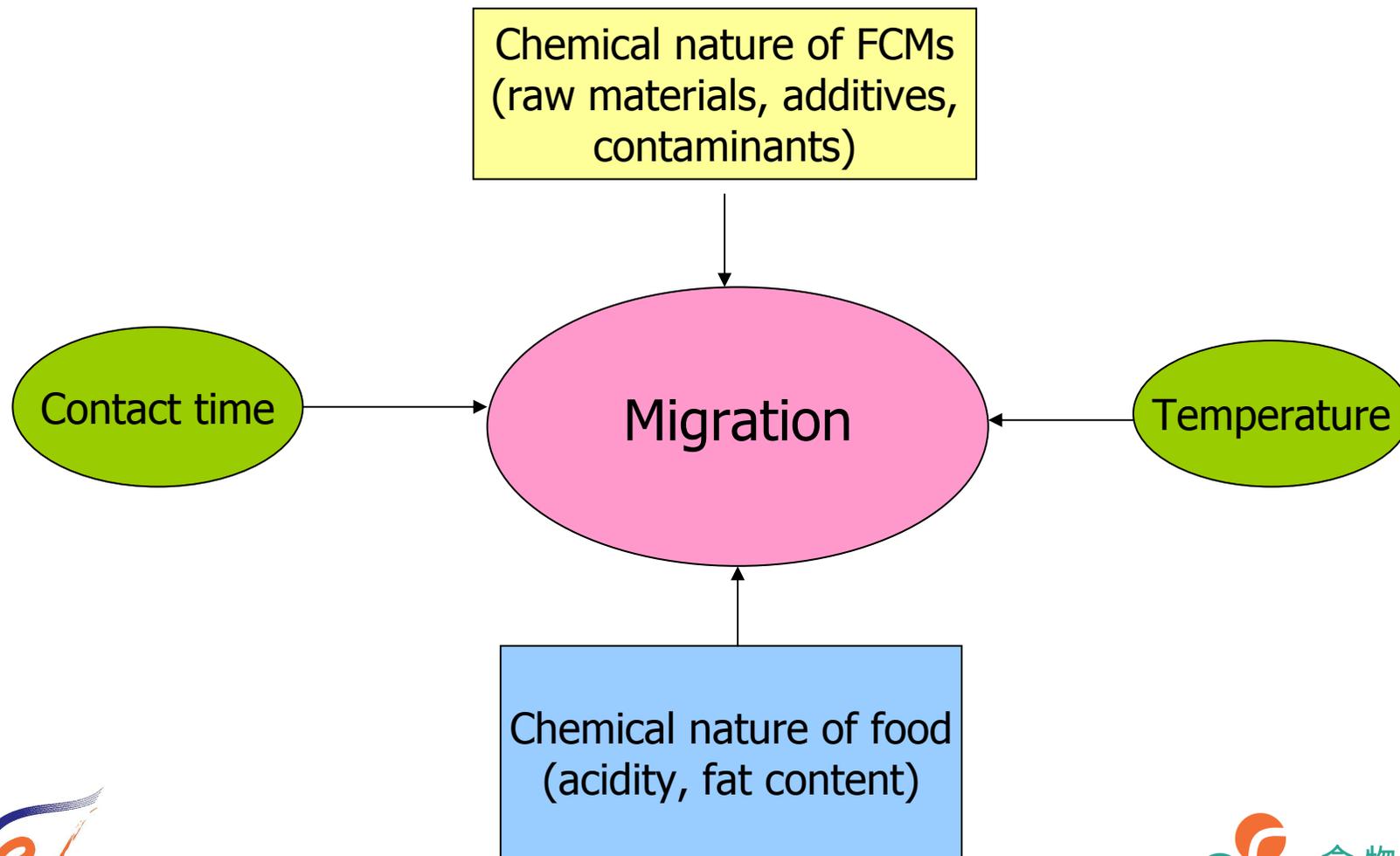
Chemicals

- Monomers, additives and/or contaminants commonly identified as potential migrants

Sources of Information

- Risk assessment reports from WHO/FAO and national authorities (e.g. EFSA, USFDA, BfR, Health Canada, FSANZ, etc.)
- Academic research papers
- Technical data from industrial associations
- Local risk assessment studies and surveillance data

Contributors to Migration



Control of FCMs

International

- No harmonised standards
- General principle: FCMs should not endanger human health

US and the EU

- Authorisation/approval of materials (i.e. monomers, additives)
- Migration limits of specific chemicals

Mainland China

- Control of specific FCMs (i.e. plastics, paper, aluminium, etc.)
- The hygienic standards for uses of additives: made reference to US and EU regulations

Control of FCMs (2)

Local

- Controlled under the Consumer Goods Safety Ordinance (CGSO), Cap 456, enforced by the Customs and Excise Department (C&ED)
- C&ED routinely monitor the safety of food contact materials including baby bottles and tableware sold on local markets
- Under the Public Health and Municipal Service Ordinance (PHMSO), FEHD oversees the safety of food utensils used by local food businesses

Polycarbonate (PC)

- Hard and clear plastic
- Heat resistance $\sim 140^{\circ}\text{C}$
- Monomer: **Bisphenol A (BPA)**
- Specific migration limit (SML)=0.6 mg/kg food (EU, Mainland)



OTHER

Health Concerns of BPA

- Recent claims
 - Low levels of BPA have adverse effects on brain and behaviour during the developmental period and on reproductive system in animal studies
- Major food safety authorities
 - Exposure levels to BPA of infants and young children were well below the safety reference dose
- The Joint FAO/WHO Expert Meeting in 2010
 - It would be premature to conclude that the animal studies on low-dose effect could provide a realistic estimate of the human health risk, based on current knowledge of BPA

International and Local Situation

- Banned the manufacture and sales of BPA baby bottles (Canada, EU and Mainland)
- Encourages voluntary phase out of BPA baby bottles by industry (USA, Australia and Japan)
- CFS supports the industry's actions to stop producing and selling BPA-containing baby bottles and infant feeding cups

Melamine

- Melamine-formaldehyde resin (heat resistance $\sim 120^{\circ}\text{C}$)
- Urea-formaldehyde resin (heat resistance $\sim 80^{\circ}\text{C}$)
- Monomers: melamine, urea, **formaldehyde**
- Specific migration limit of formaldehyde = 15 mg/kg (EU, Mainland)



Health Concerns of Formaldehyde

- Improperly processed melamine-ware will result in excessive migration of formaldehyde
- Formaldehyde can also be found naturally in food including fruits and vegetables, meats, fish, crustacean and dried mushroom
- Ingestion of a small amount of formaldehyde is unlikely to cause any acute effect

Alternative Materials (Examples)



PLA



PCTG



PES

Points to Consider When Using Alternatives

- Alternative materials undergone far fewer tests than PC (or BPA)
- More studies are needed to assess their safety
- Suitability for food use
 - Authorised by EU or USFDA
 - Complied with relevant safety standards
- Specifications
 - Heat resistance
 - Chemical resistance
 - Impact resistance

Summary

- Baby bottles and children's tableware that comply with safety standards are not supposed to pose health risk to consumers
- The responsibility to ensure safety compliance of food contact materials is with the manufacturers
- Parents should always follow manufacturer's instruction when using baby bottles and children's tableware

Advice to Public

For tableware in general

Purchase

- Obtain baby bottles and children's tableware from reliable retailers
- For plastic baby bottles and tableware, choose those with product specifications and user instructions

Use

- Avoid using tableware that is broken or damaged on its surface
- Use tableware according to manufacturer's instructions especially on the temperature limitation and instructions on microwave and freezer uses
- Avoid using plastic tableware to hold hot fatty food or highly acidic foods for long period of time
- Avoid using metal tableware to hold highly acidic foods for long period time

Cleaning

- Do not use abrasive detergents and cleaning tools or strong chemicals which will damage the surface of tableware
- Only use tableware that is labelled as dishwasher-safe and steamer-safe for dishwasher cleaning and steam sterilization, respectively

Advice to Public (2)

For Baby bottles

The following advice applies to all baby bottles or cups, whatever type of plastic they are made from:

- Discard any scratched bottles or feeding cups as they may harbour germs. However, there is no need to replace old bottles unless they are damaged or scratched
- Try to avoid putting boiling or very hot water, infant formula, or other liquids into plastic bottles while preparing them for your child. However, water used to reconstitute powdered infant formula for infant no more than 12 months should be boiled and left for no more than 30 minutes, to ensure it is still hot enough (no less than 70°C) to kill harmful bacteria potentially inherent in the powder
- Do not heat baby bottles of any kind in the microwave - the liquid may heat unevenly and burn your baby
- Sterilise and clean bottles according to instructions on infant formula labels and they should be left to cool to room temperature before adding infant formula
- Parents who are concerned with BPA exposure can choose to use alternatives to PC baby bottles such as glass bottles

Advice to Manufacturers and Retailers of Tableware

- Manufacturers should adopt good manufacturing practices and make sure baby bottles and tableware comply with safety standards
- Manufacturers should provide product specifications and user instructions including temperature limitations and any restrictions on use
- Retailers should obtain baby bottles and tableware from reliable manufacturers and ensure the products are of suitable quality for food use
- CFS supports the industry's actions to stop producing and selling BPA-containing baby bottles and infant feeding cups

Advice to Food Businesses

- Obtain tableware from reliable manufacturers and suppliers and use tableware of suitable quality to serve food to customers
- Use tableware according to the product specifications and user instructions

~End~