

# **IMPORTANCE OF MILK CONTACT SURFACES**

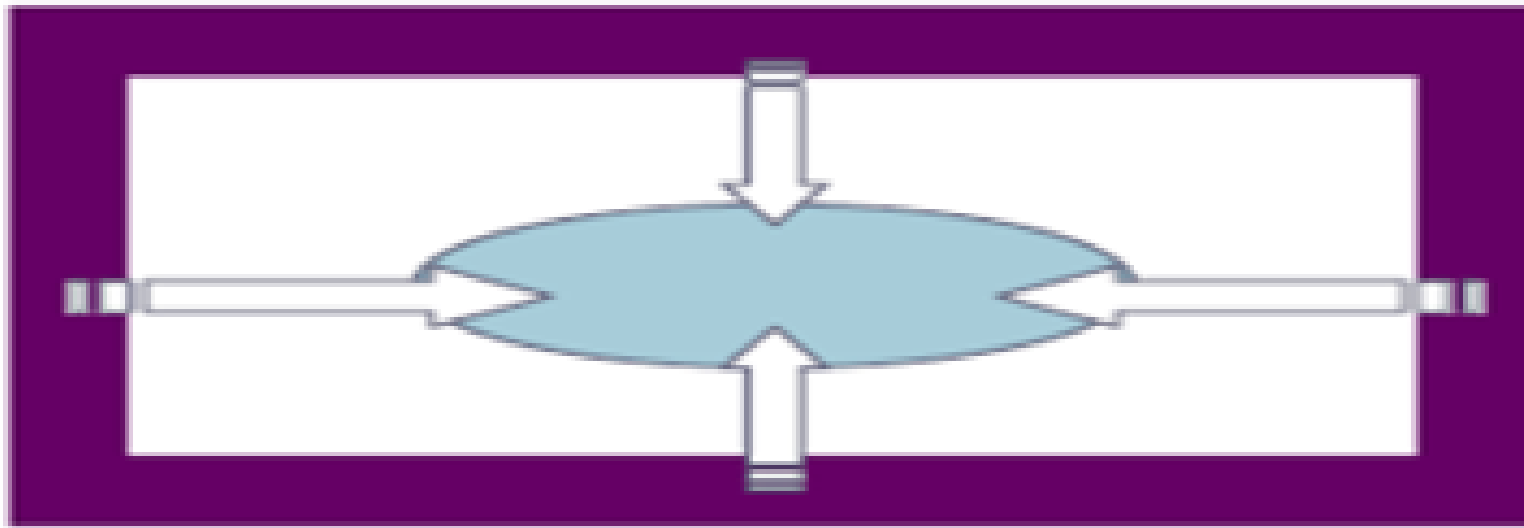
**Dr. Binita Rani**  
**Associate Professor**  
**Department of Dairy Chemistry**  
**SGIDT, BASU , Patna**

## Definition

- **All materials and articles** intended to come into contact with **foodstuffs**, including packaging materials, cutlery, dishes, processing machines, containers etc.
- also includes **materials and articles** which are in contact with **water** intended for human consumption
- it does not cover **fixed public or private water supply equipment**.

- Food contact materials can be constructed from a variety of materials - **plastics, rubber, paper, coatings, metal etc.**
- In many cases **even their combinations** are used.
- Different types of **additives - antioxidants, stabilizers, lubricants, anti-static, antiblocking agents, etc.** are added to → **improve performance** of polymeric packaging materials.

- **Direct contact** between the food and its packaging may result in → **migration of packaging components into food.**
- Recently the **packaging** has been found to represent a **source of contamination** itself through the **migration of substances from the packaging into food**



**Migration of molecules from the package to the product**

# Safety

- **Food contact materials** → be safe.
- They shall **not**
  - ❖ **transfer their components** into food in **quantities** → that could endanger human health
  - ❖ **change the composition** of the food in an unacceptable way or
  - ❖ **deteriorate the taste and odor** of foodstuffs

- Transfer of constituents from food contact materials → food is called **migration**.
- During contact of the **food contact materials** with **food** → molecules may **migrate** from food contact material to the food.
- **Because of this**, in many countries **regulations are made to ensure food safety**.

- ❖ To ensure protection of health of consumer and
- ❖ to avoid any contamination of foodstuff
- **two types of migration limits** have been established for **plastic materials** by EU legislation:
  - ❖ **Specific Migration Limit (SML)**
  - ❖ **Overall Migration Limit (OML)**



## Specific Migration Limit (SML)

- **maximum permitted amount** of a given substance released from a material or article into → food or food simulants.
- **risk management tool** derived from
- **toxicological data**, such as **tolerable daily intakes (TDIs)**, or
- **a limited toxicological assessment** ensuring **safety only for a low migration**

- **Plastic** materials and articles **shall not transfer** their **constituents** to foods in *quantities exceeding the set SML*.
- expressed in terms of **mg of substance per kg** of food or food simulants.
- For substances for which **no specific migration limit** or other restrictions are provided → a **generic specific migration limit of 60 mg per kg** shall apply.

## Overall Migration Limit (OML)

- **maximum permitted amount** of **non-volatile substances** released from a material or article into food simulants.
- may be seen as a **restriction of food contamination** by the **sum** of the substances migrating from food contact materials.

- Plastic materials and articles → intended to be brought into contact with food → shall not transfer their constituents to food simulants in quantities exceeding 60 milligrams of total of constituents released per kg of food or food simulant.
- plastic materials and articles shall not transfer their constituents to food simulants in quantities exceeding the stipulated limits.

## Methods for testing of packaging materials

- **Under mandate of European Commission** the **European Committee for Standardization** has prepared **standard test methods** required for → testing of compliance with the requirements and restrictions in the **plastics Directives**.
- Overall migration test methods are published in **1 to 12** parts of **EU Commission Regulation** on plastic materials and articles intended to come into contact with food.

- Specific migration test methods of seven plastic monomers are published in **eighth parts of the EU Commission Regulation.**
- Methods of analysis for **35 monomers** are developed in a **European research project** and published in **European Commission Regulation.**
- **Test methods** to be used for checking paper and board are prepared and published for
  1. preparation of **cold and hot water extracts**

2. determination of water soluble matter, formaldehyde, polychlorinated biphenyls and metals (cadmium, lead, chromium, mercury)

3. determination of fastness of coloring agents and fluorescent whitening agents

4. transfer of anti-microbial constituents

**Testing is carried out using food simulant**

**Rules** for selecting simulant and test conditions are given in the **relevant EC directives.**

# Milk Contact Materials

- Milk is a **fluid** → it's handling while collection, transport, processing, product manufacturing, storage and marketing requires **use of containers, equipments**
- Some **common articles and material** likely to come in contact with milk from production to consumption chain → at various stages like **milking, storage, transport, processing, packaging, distribution and utilization** are:
  - **Active or intelligent materials**
  - **Adhesives**
  - **Ceramics**
  - **Coatings and lacquers**



- **Cork**
- **Glass**
- **Ion-exchange resins**
- **Metals and alloys**
- **Paper and board**
- **Plastics**
- **Printing inks**
- **Regenerated cellulose**
- **Rubbers**
- **Silicones**
- **Textiles**
- **Varnishes and coatings**
- **Waxes**
- **Wood**

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The rest of the background is plain white.

THANKS