Food Safety
in
Milk Products

How Milk harm people?

By making people very sick

When Milk Harm People?

If Milk is not properly ….

- ✓ Farmed
- ✓ **Processed**
- ✓ Stored
- ✓ Handled
- ✓ Prepared/Consumed

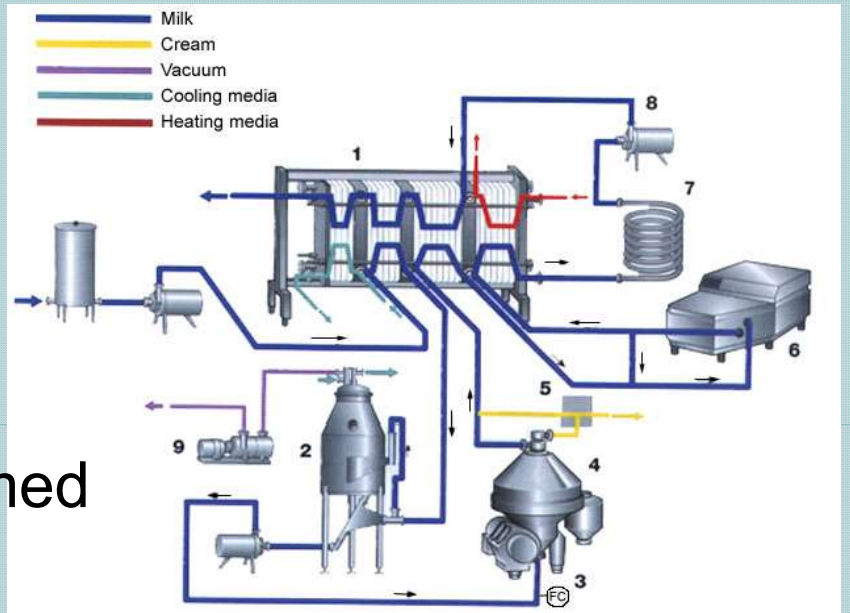


Fig. 6.6.5 Milk treatment plant with deaerator.

1 Pasteurizer
2 Deaerator
3 Flow controller
4 Separator
5 Standardization unit
6 Homogenizer
7 Holding tube
8 Booster pump
9 Vacuum pump

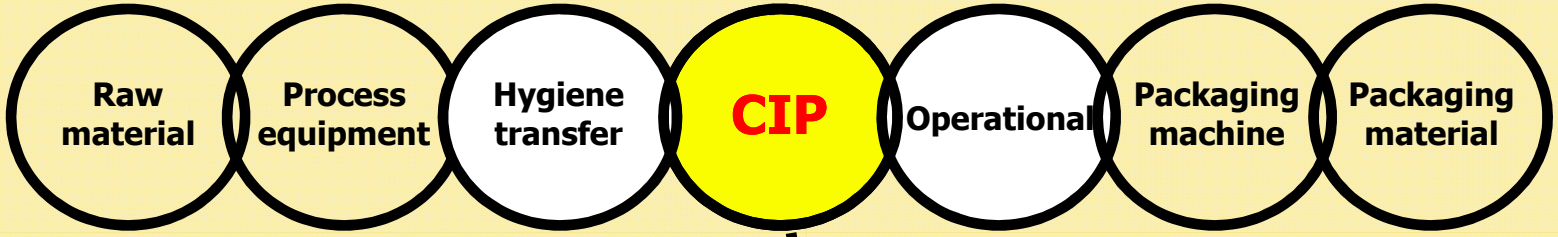
Five Keys to Safer Food

- Keep Clean
- Separate Raw and Cooked
- Cook Thoroughly
- Keep Food at Safe Temperature
- Use Safe Water and Raw Material

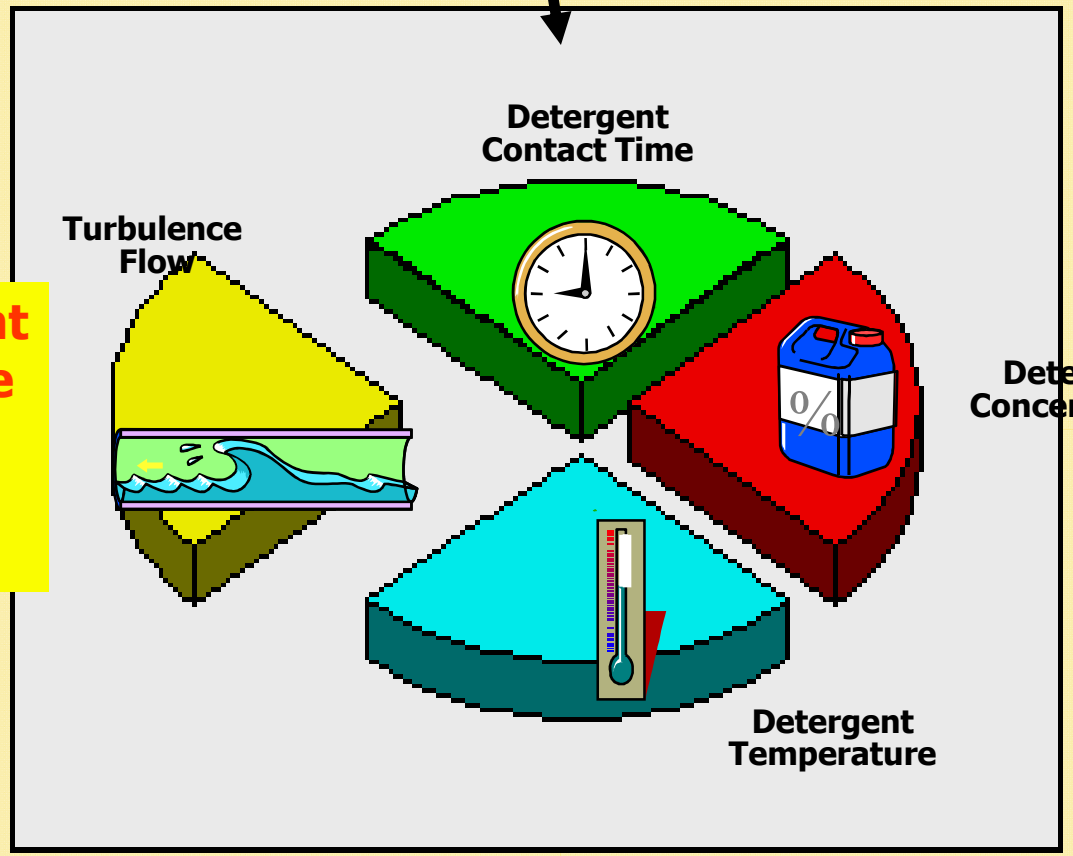
Key – 1 : Keep Clean

Cause of Hygiene Problems

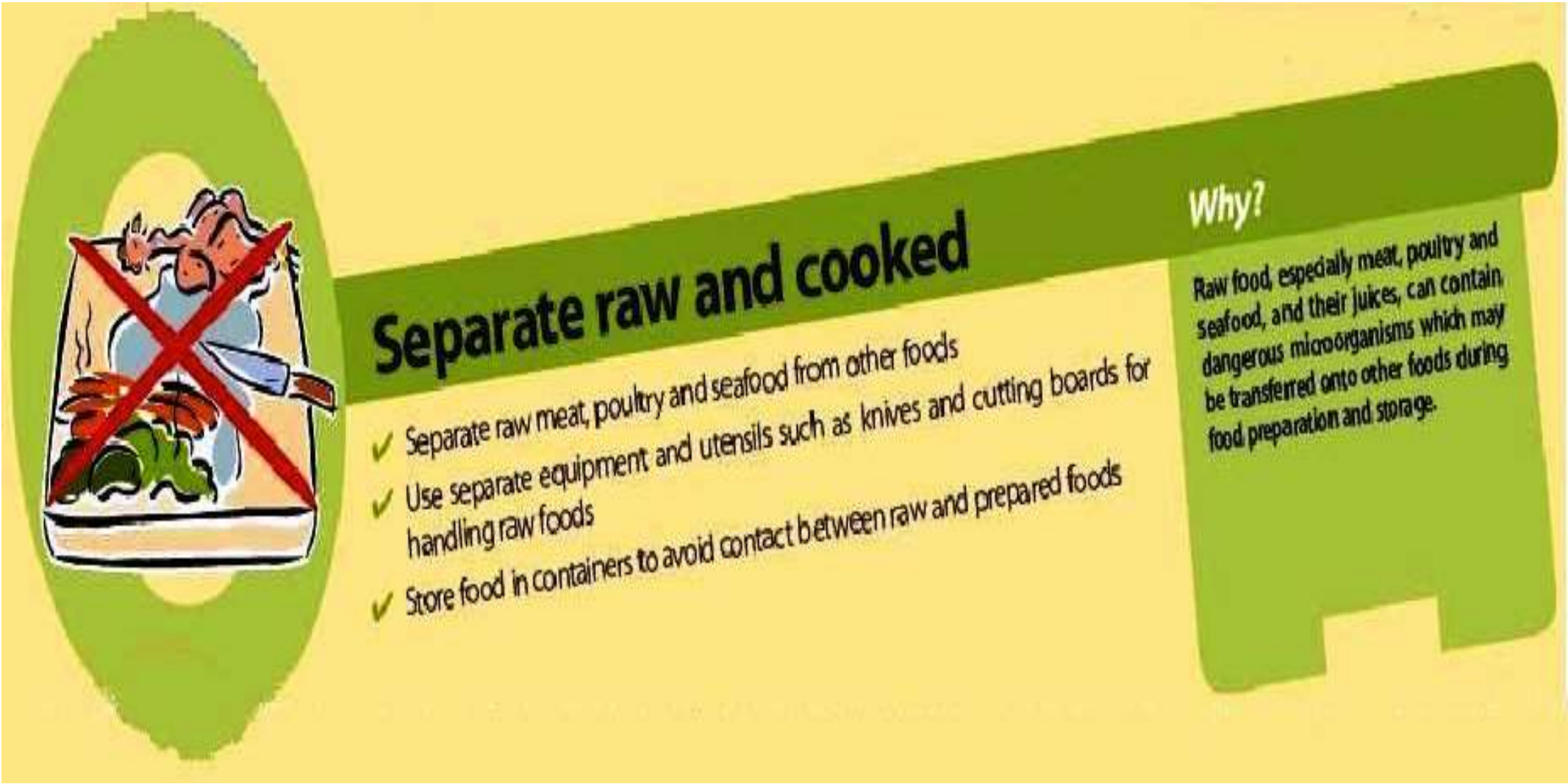
50% of the hygienic problems are related to poor CIP



Insufficient flow is the most common reason

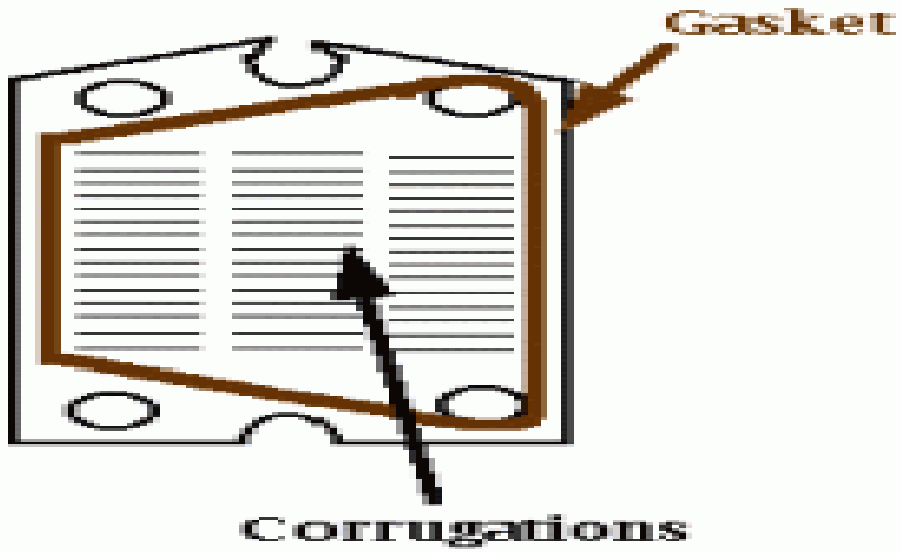


Key 2 – Separate raw and cooked

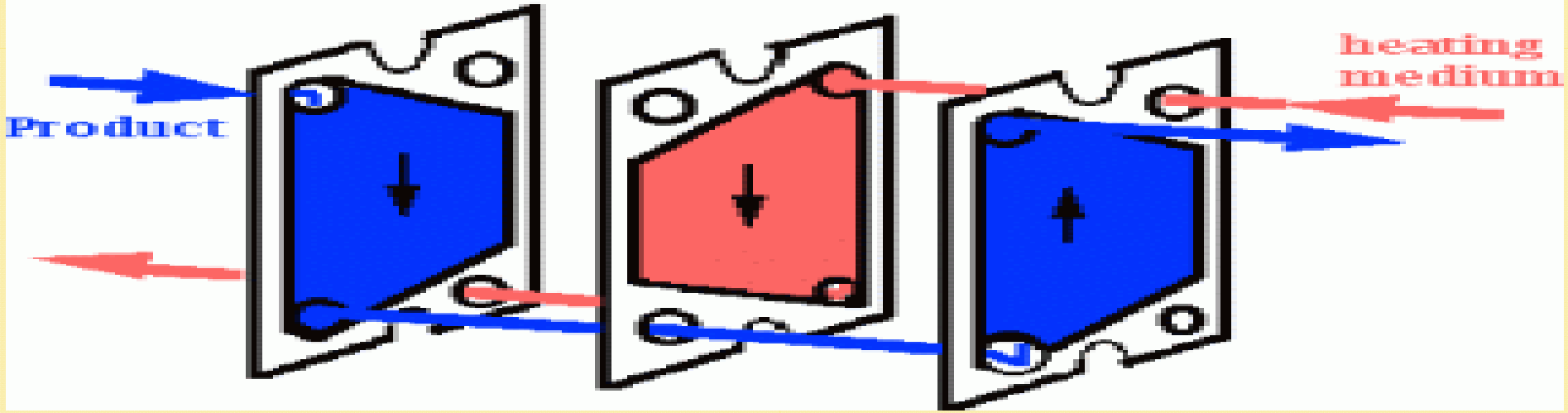


Separate raw and cooked

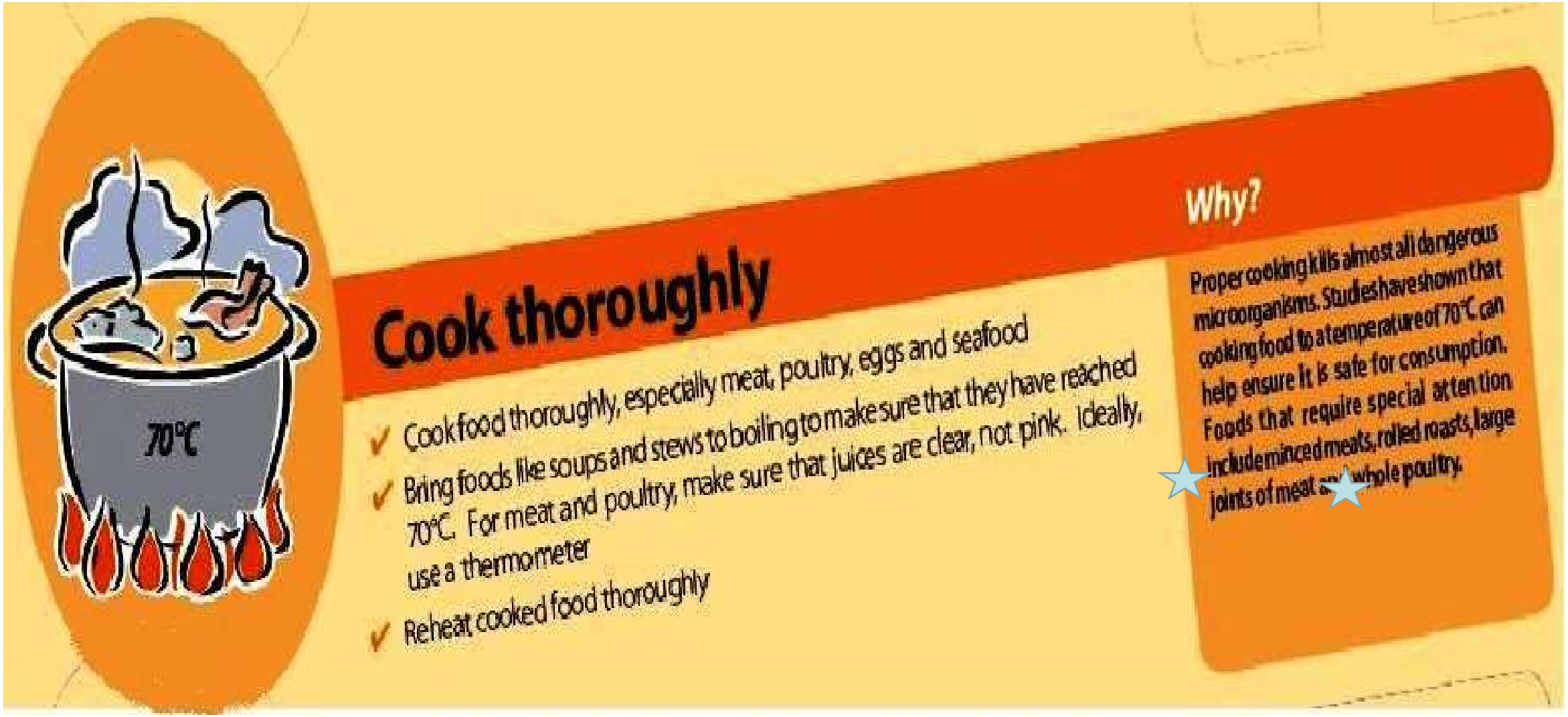
Single Plate



Flow Pattern in Series of Plates



Key 3 – Cook thoroughly

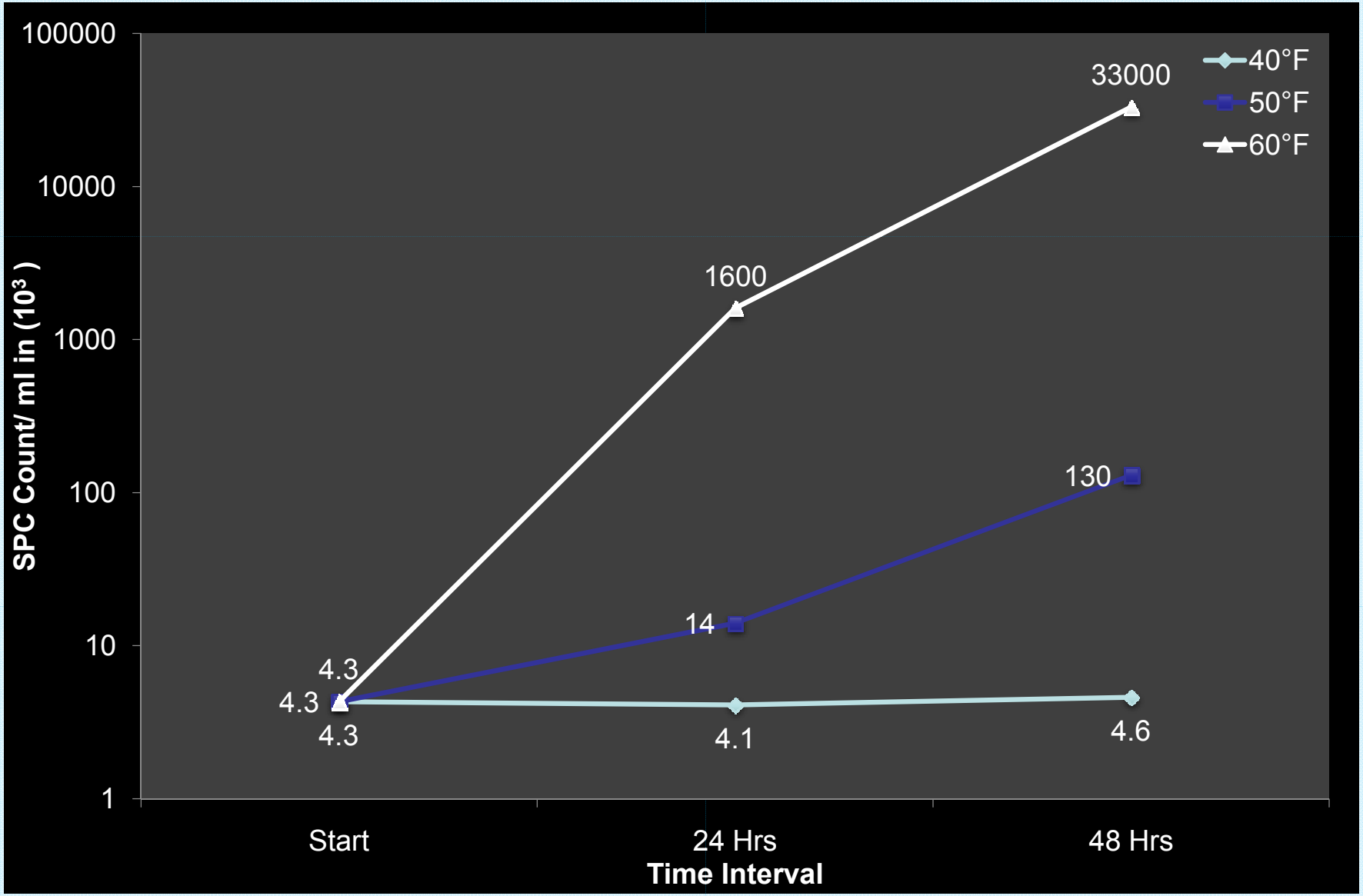


Use appropriate equipment for Process Control

Key 4 – Keep food at Safe Temperature

SPC COUNT IN RAW MILK

Count in Thousand's



Key 5 – Use safe water and raw materials

Use safe water and raw materials

- Use safe water or treat it to make it safe
- Select fresh and wholesome foods
- Choose foods processed for safety, such as pasteurized milk
- Wash fruits and vegetables, especially if eaten raw
- Do not use food beyond its expiry date

Why?

Raw materials, including water and ice, may be contaminated with dangerous microorganisms and chemicals. Toxic chemicals may be formed in damaged and mouldy foods. Care in selection of raw materials and simple measures such as washing and peeling may reduce the risk.

Status of Food Safety in India

- Food Safety Standards for Microbiology
  - ❖ Stringent FSSAI Requirements for Microbiological Parameters
    - ➢ Acceptable / Unacceptable & Potentially Hazardous
  - ❖ FSSAI Microbiological Specifications are almost similar with International references

- Concerns
  - – Educational /Training Gap

Microbiological Specification – Different Countries

…

Standards ==>		fssai Food Safety and Standards Authority of India	Aus / Newzeland FOOD STANDARDS Australia New Zealand	PMO - 2009	Canada	Europe
SPC* /ml	n	5	5			
	c	2	1			
	m	30000/g	50000/ml		10000/m	50000/m
	M	50000/g	100000/ml	20000/ml	25000/m	5000000
Coliforms /ml	n	5	5			
	c	0	1			
	m		1/ml		<1/ml	0/ml
	M	<10/g	10/ml	<10 /ml	<10/ml	<5/ml
Salmonella /25 ml	n	5	5			
	c	0	0			
	Count	absent/25g	0/g			
Listeria monocytogenes /25 ml	n	5	5			
	c	0	0			
	Count	Absent /g	0/g			
E Coli/g	n	5				
	c	0				
	Count	absent				
Staphaureus/g	n	5				
	c	0				
	Count	Less than10				

How to Achieve Food Safety?

Implement HACCP

H - Hazard

A - Analysis

C - Critical

C - Control

P - Point

An **internationally recognized system** used in the food industry to **identify and reduce hazards during food processing.**

What is Hazard ?

A biological, Chemical or physical

agent in/or condition of

food

with the potential to **cause an adverse effect**

on

the health of consumer

Objective of HACCP

Identify

&

prevent, eliminate, or reduce

to

acceptable levels

any

biological, chemical, or physical hazard

that would be likely to occur in a food production or distribution environment

FSSAI Regulation for Dairy Products

FSSAI lays down science-based standards for articles of foods, and to regulate their manufacture, storage, distribution, sale and import, to ensure safe and wholesome food for human consumption

standards, which include both vertical and horizontal standards.

Horizontal standards: cut across various categories of foods and contain standards about Contaminants, Toxins, Residues, Packaging, Labelling, etc .

Vertical standards : mainly include identity and compositional standards of specific food products which cover compositional, additives, microbiological requirements etc.

Food Product Classification

Standardized Food Product

Comply with all the regulatory provisions specified in these regulations and in Appendices A and B.

Propritary Food

Article of food not standardized under FSSAI regulation
Comply with all other regulatory provisions specified in these regulations and in Appendices A and B.

Product standards includes:-

1. **Description**
2. **Essential Composition & Quality Factors**
    - **a) Raw Materials**
    - **b) Permitted Ingredients**
    - **c) Composition**
3. **Food Additives**
4. **Contaminants, Toxins & Residues**
5. **Hygiene**
6. **Labelling**
7. **Method of Sampling & Analysis**

Food Product Standards

Appendix A :-

List of additives and amount for various food categories and sub-categories

Appendix B:-

Microbiological requirements for various food categories and sub-categories

Lab analysis –NABL accredited & FSSAI recognized

a) **Heavy Metals (Pb, As, Hg, Sn)**

b) Pesticide Residues

c) Contaminants (Melamine, Aflatoxin)

d) Nutritional Parameters (Initial & end of shelf life)

e) Microbiology (pathogens)

Labelling Requirements:

General:

- Name/Class of Food
- Ingredient List
- Nutrition Facts
- List of Food Additives
- Lot Code Identification
- Net Quantity
- Date of Manufacture or Packaging
- Best Before / Use by Date
- Name & Address of Manufacturer
- Veg/Non Veg Logo
- Additional Guidelines for Specific Food Product

Labelling Requirements:

For Liquid Milk/Flavoured Milk:

1) The class of milk as per General Standard for Milk and Milk Products from which it is prepared;

2) The heat treatment, as per the General Standard for Milk and Milk Products, to which product has been
subjected to;

Milk Definition:-

"Milk" means the normal mammary secretion derived from complete milking of healthy milch animal, without either addition thereto or extraction therefrom, unless otherwise provided in these regulations and it shall be free from colostrum

Milk Types:-

Sr No	Type of Milk	Milk Fat Min.	Solids-not-Fat (SNF) Min.
1	Mixed Milk	4.5	8.5
2	Standardized Milk	4.5	8.5
3	Toned Milk	3.0	8.5
4	Double Toned Milk	1.5	9.0
5	Full Cream Milk	6.0	9.0

Specific Requirements for Milk & Products:-

Provided that products which contain milk or milk products, or milk constituents, which are an essential part for characterisation of the product, the term “milk”, or the name of a milk product may be used in the description of the true nature of the product.

Provided further that the constituents not derived from milk are not intended to take the place, in part or in whole, of any milk constituent:

Provided also that if the final product is intended to substitute milk, a milk product or
composite milk product, dairy terms shall not be used:

Provided also that the products which contain milk, or a milk product, or milk constituents, which are not an essential part in terms of characterisation of the product, dairy terms shall only be used in the list of ingredients. For these products, dairy terms shall not be used for other purposes.

THANK YOU ALL