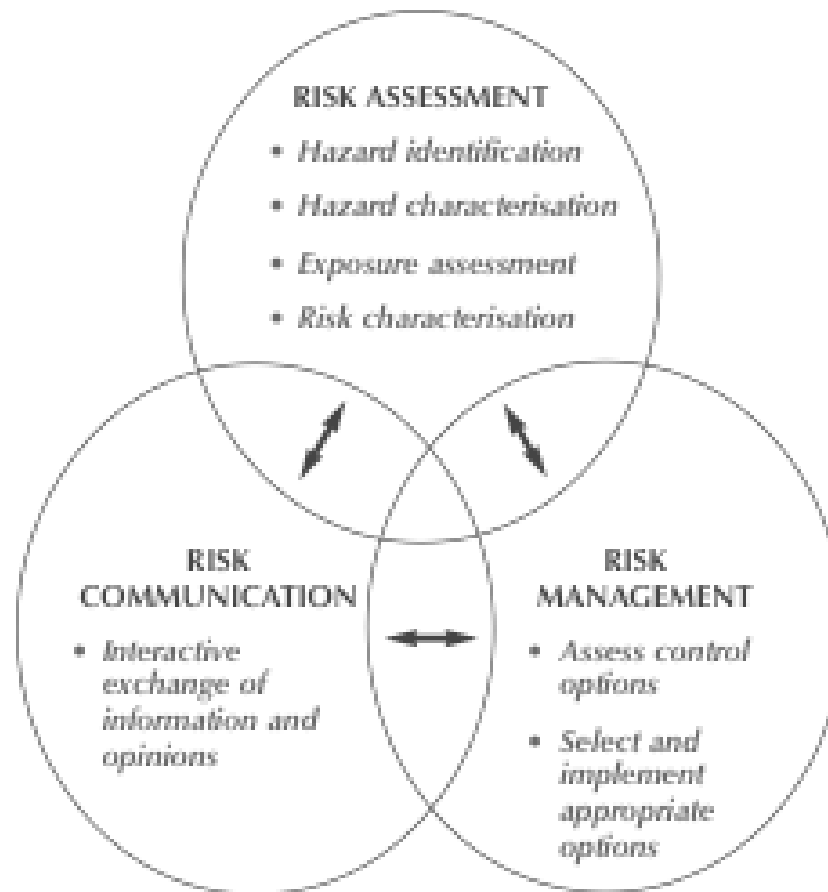


# RISK MANAGEMENT AT FACTORY LEVEL

MK ANALISIS RISIKO

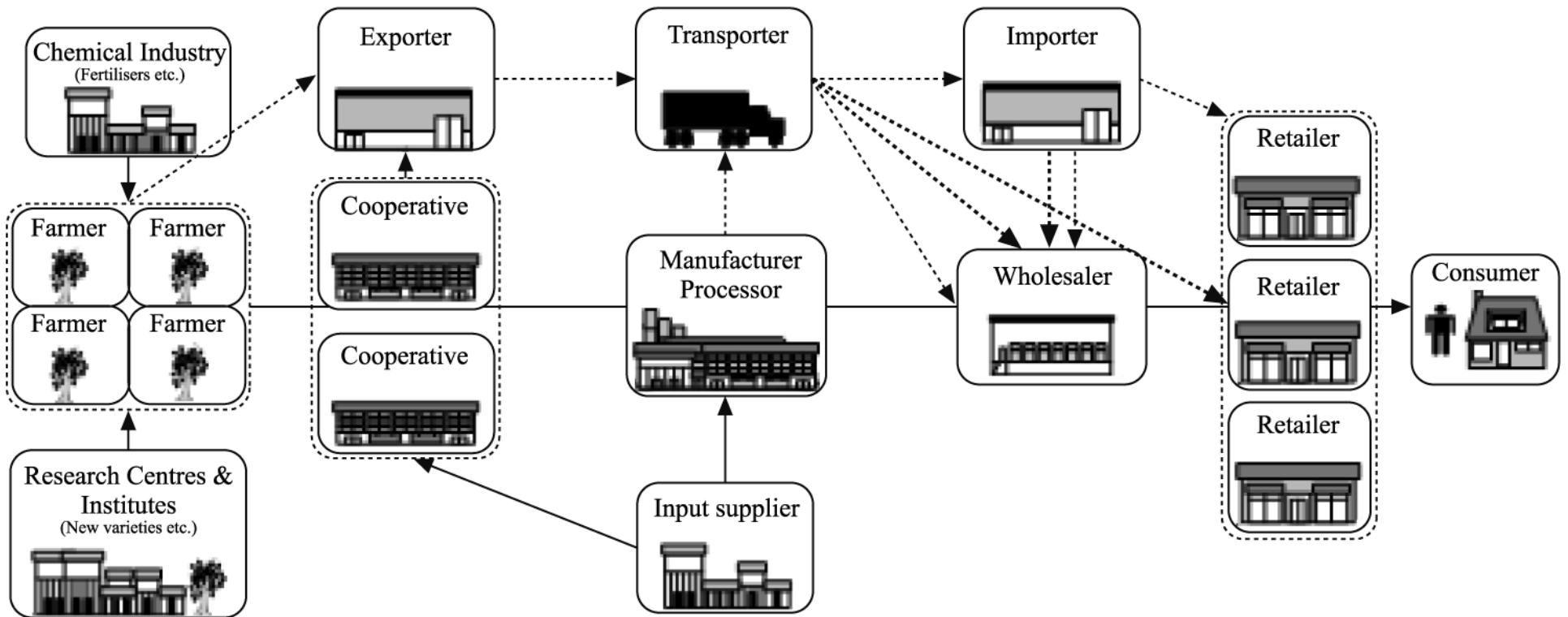
**FIGURE 1**  
**Risk analysis framework**



*Risk assessment and management also need to take into account the public's perceptions of the acceptability of risk in different situations.*

- Food products normally carry some risk to health or the environment which is either accepted as trivial or tolerated in exchange for the benefits of the product or activity. Seldom is it possible to eliminate risk without forgoing benefits, and generally the quest is to achieve a balanced position which provides, *inter alia*, a 'reasonable' level of risk.

# Assessing impacts on producers and consumers



Safety issues may arise at a number of different stages in the production and marketing of food products

## **Food industries faced challenges because of the large number of substances entering the food supply:**

- as natural toxicants and mycotoxins,
- as chemicals used in agricultural production, processing or packaging,
- or present as a result of environmental pollution.

# Case Study of Risk Management in Food Factory

- **Risk Management in A Ready-To-Eat Meal Factory**
- **Risk Management in Public Catering Establishment**

1. What kind of risk management system is applied in the food factory?
2. Mention some food safety risks that present in the food factory! Is it only about microbiological risk?
3. Mention several examples of risk management applied within the food factory!

# Seven Steps of Risk Reduction

1. Identifying options for reducing risks;
2. Identifying the most appropriate strategy for implementing those options;
3. Assessing the risks and benefits associated with each strategy
4. Consulting others affected by the strategy;
5. Drawing up monitoring plans;
6. Revising the strategy, if necessary;
7. Introducing the strategy.

# Codes of Practice

One very useful tool for risk control is the agreement of codes of practice. These may take several forms:

- Statutory, where failure to comply is an offence (unless it can be shown that other means are equally effective)
- Advisory, where general legislation exists and companies need not follow the code, but if they are prosecuted the extent to which they followed the code may be used as evidence in court
- Voluntary, where failure to follow the code has no direct or indirect legal consequences, but the code represents generally accepted good manufacturing practice



# Good Manufacturing Practices & ISO 9000

## ISO 9000

- a series of International Standards which apply to quality management and quality assurance systems.
- The standards specify requirements and recommendations for the design and assessment of management systems which are intended to ensure that suppliers provide products and services which satisfy specific requirements.
- The requirements and recommendations apply to the management of organizations that supply products and services rather than to those products and services themselves.

- Aspects of ISO 9000 quality control procedures which relate particularly to food chemical risk management are the requirements for specification of quality standards, inspection, testing, documentation, record-keeping and audit.
- For most producers who are applying GMP the requirements of ISO 9000 should be already in place, and compliance and registration should not be difficult.

# *Hazard analysis critical control points*

**The HACCP approach** includes seven essential steps:

1. Risk assessment
2. Identification of critical control points
3. Definition of critical limit values
4. Monitoring and surveillance
5. Selection of corrective actions:
6. Audits
7. Documentation and record-keeping

# ISO 22000

- It defines a set of general food safety requirements that apply to all organizations in the food chain.
- Recognized worldwide, this universal standard harmonizes key requirements and overcomes the difficulties of various food safety standards by region, country, activity, organization and food-type.

# ISO 22000

- The ISO 22000 standard intends to define the food safety management requirements that companies need to meet and exceed in order to comply with food safety regulations all over the world.
- ISO 22000 uses generally recognized methods of food safety management such as interactive communication across the food chain, system management, control of food safety hazards through PRPs and HACCP plans, and continual improvement as well as periodic updating of the management system.

# ISO 22000

- The design and implementation of an organization's food safety management system are influenced by varying factors, in particular food safety hazards, the products provided, the processes employed and the size and structure of the organization.
- ISO 22000 will dynamically combine the HACCP principles and application steps with PRPs, using the hazard analysis to determine the strategy to be used to ensure hazard control by combining the PRPs and the HACCP plan.

# ISO 22000

- ISO 22000:2005 was drafted to serve the needs of not just food producers and manufacturers, but also virtually every other organization that participates in the food supply chain.
- ISO 22000 is written with a structure compatible to other management system standards in the light of ISO 9001:2000 while combining HACCP.

# *Monitoring and surveillance*

- Whilst monitoring is a vital part of HACCP systems, it also, with surveillance, has a broader role in risk analysis.
- **'Monitoring'** → activities designed to check compliance to predetermined standards, whereas **surveillance** is less directed towards specific standards and is aimed towards data gathering in the broader sense.

i.e. monitor residue levels & contaminant concentrations to ensure that standards are being complied with.



- **Surveillance** → undertaken to investigate the need for action to control chemicals in food; include also the gathering of dietary information for risk assessment.
- Surveillance programs are normally based on random sampling plans in order to acquire as representative a picture of the real situation as possible.
- Monitoring and, to a lesser extent, surveillance provide a **feedback mechanism** from risk management to risk assessment

# Examples of food related activities & ways of reducing risks

**Table 17.1** Examples of food-related activities and ways of reducing risks

Activity	Primary production	Manufacturing	Processing	Storage	Preparation
Hazard	Glycoalkaloids in potatoes	Preservatives	N-Nitroso compounds in alcoholic drinks	Aflatoxins	Cooked food mutagens
Potential effect	?	Toxicity/allergic reactions	Carcinogen (?)	Carcinogen	Carcinogens(?)
Options for risk reduction	Choose different varieties Breed new varieties Improve agricultural practice Inform consumers	Identify and limit to optimal concentrations Restrict uses Introduce alternative techniques Labelling	Change manufacturing practice Limit concentrations Inform consumers	Limit imports Limit products Detoxify	Alter cooking appliances and practices Consumer advice Consumer information
Means of implementation	Plant breeding programmes Guidelines Legislation	Legislation Labelling Voluntary agreement	Develop new production methods Legislation Voluntary action	Voluntary action Legislation	Voluntary action Advise consumers Inform consumers

# EXAMPLE OF RISK REDUCTION

## **Options for food additive risk reduction**

When intakes of food additives appear to exceed acceptable intakes & steps have been taken in the risk characterization to check that the risk assessment is as accurate as possible → risk reduction should be aimed at controlling exposure.

## **Risk reduction activities for food additives such as:**

1. Examining the range of uses
2. The technological need for each use. The examination of need for each use must consider three aspects:
  - # whether the use is needed at all;
  - # whether satisfactory alternatives are available; and, if the use is shown to be necessary,
  - # then what is the minimum concentration which will fulfill the technological need?

## Product Recall

Responsibility of food industry is still working until the products were expired.

Labelling is one way to control the products which has been released. Information put on the label, such as batch number, production code and expired date.

Food industry must have a good procedure in case there is product failure/complaint to do **Product Recall**.

## **Voluntary agreements**

- Some advantages:
  1. industries are free to adopt the most cost-effective means of achieving given targets
  2. Enforcement can be achieved via the general provisions of food safety legislation
  3. The need for detailed regulation can be reduced.

thank you..