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# Food Safety Tools (GMP, HACCP, Risk Assessment)

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## Why Food Safety is Important?

- Each day 200,000 more people are added to the world food demand.
- The world's human population has increased near fourfold in the past 100 years (UN population Division, 2007)
- It is projected to increase from 6.7 billion (2006) to 9.2 billion by 2050 who will need housing, **food** and other natural resources.

New food production and processing practices, emerging food-borne pathogens, and changing eating habits and demographics have contributed to a higher awareness of food-borne illness in recent years. Increasingly, prevention has become the focus.

Unsafe food causes many acute and life-long diseases, ranging from diarrhoeal diseases to various forms of cancer. WHO estimates that foodborne and waterborne diarrhoeal diseases taken together kill about 2.2 million people annually, 1.9 million of them children.

# FOOD SAFETY:

Food safety is a scientific discipline describing formulating, manufacturing, handling, storage and transportation of food in ways that prevent foodborne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards. Food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause food poisoning.

Some such routines or tools are **HACCP, GMP, Food Safety Assessment**, training, ISO Standards, such as ISO 22000, formulations (preservative systems), New Technologies such as Genetically Modified Foods.

HACCP is not new.  The concepts were developed in the 1960s by a scientist (Dr. Howard Baumann) working for Pillsbury Inc. when NASA asked Pillsbury Inc.to design and manufacture the first foods for space flights. GMP has been a subject of discussion by the Codex Alimentarius Commission (CAC) for at least 45 years.  The original GMPs were adopted by the CAC in 1969 with the addition of a section on HACCP in 2003.

## FOOD SAFETY:

While government agencies and inspectors love HACCP and GMP systems, the resources required to implement such systems are all in the private sector.  It must be clear to all of us that governments do not produce food.  The liability for the production and sale of unsafe or contaminated products always rest with the manufacturer.

# <u>HACCP, GMP and Risk Assessment</u>

• HACCP, GMP and Risk Assessment are useful tools when used by individuals who have had adequate training and experience to fully understand and use these systems properly. **However, it is my view that these systems must never become an alternate or replacement for management commitment to product safety and quality through both in-process inspection and final product testing. QC management must simply recognize these systems are a tool or an aid but not a substitute for management experience and the technical skill of QC staff members.**

• The appeal of HACCP and GMP is that these systems bring a preventative approach to food safety that use structured procedures in an attempt to identify potential food safety hazards during production and processing and thus reduce reliance on final product testing.

• GMP, HACCP and Risk Assessment schemes tend to be generic in nature and thus it is the responsibility of QC management to ensure that adaptation to the production of a certain type of product is both realistic and feasible.

# What is HACCP?

- HACCP stands for Hazard Analysis Critical Control Point.
- HACCP is an internationally recognized, science-based, food safety system that is used to help ensure the manufacture of safe food products.
- HACCP is designed to prevent, reduce or eliminate potential biological, chemical and physical food safety hazards, including those caused by cross contamination.
- During the development of a HACCP system, potential hazards are identified and control measures are implemented at specific points in the manufacturing process.

# Common Benefits of HACCP

i. Increased Focus and Ownership of Food Safety

ii. Increased Buyer and Consumer Confidence

iii. Maintaining or Increasing Market Access

iv. Business Liability Protection

v. Reduced Operational Costs

vi. Efficient Oversight

# Components of HACCP System

## Two Components for an Effective HACCP System:

1. **GMP or Prerequisite Programs**

Designed to control hazards related to **personnel** and the food manufacturing **Environment**, creating conditions that are favourable to the production of safe food products

2. **HACCP Plans**

Designed to control hazards directly related to **the ingredients, the food** being processed or **the manufacturing processes**

# HACCP, GMP and Risk Assessment

- A review of HACCP and GMP on the internet reveals that HACCP, in particular, has become a growth industry.  There are all sorts of courses and certification programs available world-wide.
- It is now possible to obtain a Master of Science degree in HACCP and possibly even a PhD.
- The subject of risk analysis has also become an industry during at least the last two decades.

- Because of the trendiness of  risk analysis for the last 20 to 25 years, the Codex Alimentarius Commission (CAC) started work on this subject through its Committee on General Principles.  After years of meetings, comments and review, in 2007, the CAC adopted Working Principles for Risk Analysis for Food Safety for Application by Governments (CAC/GL 62-2007).

- This Codex guideline (not a Codex standard) states that risk analysis should follow a structured approach comprising the three distinct but closely linked components of risk analysis (risk assessment, risk management and risk communication).

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## Roles in Food Safety

# Food safety is everyone's business

**Consumers:** Consumers depend on farmers, governments and industry for safe food. But we all must take steps to prevent harmful microorganisms from spreading in food and potentially causing food poisoning.
In the home, consumers play an important role in making sure the food they store, prepare and serve is safe.

**Government:** Food safety is a priority for the Governments around the world and they work very hard to make the food safe for their population. They develop food safety standards and policies to help minimize the risk of foodborne illnesses.

**Industry:** Industry plays an important role in keeping the food safe by identifying and managing food safety risks, and by complying with all food safety regulations where they do business.

# <u>The Bottom Line</u>

- I wonder if the proliferation of HACCP, GMP and Risk Analysis systems during the last 20 to 30 years has really increased the level of food safety in any quantitative way.  This is a very difficult thing to measure.

- The use of GMPs is really a matter of common sense and most sectors of the food industry can develop an industry specific GMP that definitely helps to achieve product safety, quality and consumer acceptance.

- HACCP is somewhat different matter as HACCP has application primarily in areas of the food industry where the process or the product is inherently hazardous. Dairy, meat and fish processing are good examples of where a HACCP program may be useful and serve as an adjunct to costly final product testing.

- Risk analysis and risk assessment are trendy concepts that seem to result in endless seminars and meetings. The food industry and the Governments should collectively work together to develop robust process.

Here are some quick but important food safety tips to keep in mind in your kitchen to help reduce the risk of foodborne illness, such as E. coli, Listeria and Salmonella:



**Cook:** Always cook food to the safe internal temperatures. You can check this by using a digital food thermometer.

**Clean:** Wash your hands and surfaces often with warm, soapy water.

**Chill:** Always refrigerate food and leftovers promptly at 4°C or below.

**Separate:** Make sure to always separate your raw foods, such as meat and eggs, from cooked foods and vegetables to avoid cross-contamination.

# <u>How Much Consumer Knows:</u>

According to recent Canadian population studies, despite the fact that a majority of adults feel confident they understand and follow safe food handling procedures, a sizeable number do not consistently follow certain safe food handling practices.

- Only 15% of people consistently use a food thermometer. Using a food thermometer is important because you can't tell food has been cooked safely by how it looks.
- Over half of people say they defrost meat and poultry at room temperature. This practice can allow bacteria to grow on food.
- Only 50% of consumers reported washing their hands for 20 seconds, before and after handling food. Clean hands and surfaces often reduce the risk of foodborne illness.