

Recent Developments in GMP's & HACCP



Good Manufacturing Practices

Modern GMP's (mGMP's)

Multiple updates, including:

- Strengthening ready-to-eat (RTE) controls
- Chemical Control Program
- Traceability
- Recall

Good Manufacturing Practices

Food Safety relies on Prevention and Control through strong programs, policies, and practices that are understood and documented.

HACCP

Hazard

Analysis

Critical

Control

Point

HACCP

A systematic approach to assessing possible risks associated with a product and determining the controls necessary to minimize or eliminate the risks of causing illness or injury.

The National Advisory Committee
on Microbiological Criteria for Foods



HACCP

- Identify **food safety** related issues
- Identify programs that **control or prevent** the identified food safety issues.
- Identify process steps that **eliminate or reduce** the identified food safety issues
- Identify activities that can **monitor and measure** whether or not these programs and process steps are being controlled.
- Document** results.

HACCP

Biological

- Pathogenic bacteria
- Viruses
- Parasitic worms
- Protozoa

Chemical

- Mycotoxin
- Pesticides
- Plant chemicals
- Allergens

Physical

FDA study
7 to 25 mm
Industry standard
< 4.0 mm
Not expected

HACCP

Non-food safety issues:

An undesirable condition or contaminant which will not cause injury or illness to the consumer

- Insects
- Hair
- Filth, Spoilage not related to food safety
- Economic fraud or other violations of regulatory food standards not directly related to safety
- Psychological trauma



HACCP

Food Safety Concerns Biological



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Food Safety Concerns - Biological

Pathogens Barriers / Hurdles to Growth

pH - < 4.6

Water activity (a_w) - < 0.86

Food Safety Concerns - Biological

pH

- Corn tortilla - pH of 5.2
- High lime tortilla - pH of 9.0

Water activity (a_w)

- Tortilla - > 9.0

Food Safety Concerns - Biological

Pathogens of Concern for Tortillas & Tortilla Chips

- ❑ *Salmonella*
(raw materials and employees)
- ❑ *Listeria monocytogenes*
(environment)

Food Safety Concerns - Biological

Prevention *Salmonella*

Raw materials – Approved suppliers

Sanitation

Employees – Personnel GMP's

Food Safety Concerns - Biological

Prevention

Listeria monocytogenes

- Effective sanitation
- Environmental monitoring

Food Safety Concerns - Biological

Elimination

Salmonella & Listeria

- ❑ Cook to an internal temperature of
> 165⁰ Fahrenheit

Food Safety Concerns - Biological

Prevent recontamination
after cooking

Employees

- Pollinators, Break coverage
- Uniform and hands

Sanitation



HACCP

**Food Safety Concerns
Chemical**

Food Safety Concerns - Chemical

Sources

Raw materials

- Agricultural chemicals
- Economic fraud
- Mycotoxins
- Allergens

Plant chemicals

Food Safety Concerns - Chemical - Mycotoxins

Aflatoxin and Fumonisin

Aflatoxin – FDA max. - 20 ppb

Fumonisin – FDA
recommendation - 4 ppm

Food Safety Concerns

- Chemical - Mycotoxins

Aflatoxin and Fumonisin Prevention

Supplier controls

- Raw material specifications
- Letter of Continuing Guarantee
- Certificate of Analysis

Internal testing

- Periodic verification



Food Safety Concerns - Chemical - Mycotoxins

Aflatoxin – Reduction

Some studies indicate that the alkaline cooking of the corn may reduce aflatoxin; however, cannot be relied upon.



Food Safety Concerns

- Chemical - Allergens

Allergens

- Protein chain
- Hyper-response by immune system
- Same immune reaction as for hay fever, animals, bee stings, penicillin allergies, etc.

Food Safety Concerns - Chemical - Allergens

Allergy vs. Intolerance

Food intolerance

- The body cannot synthesize the material – Examples: Lactose intolerance, gluten intolerance
- Some symptoms may be the same as in food allergy.

Food Safety Concerns - Chemical - Allergens

Regulated Allergens - USA

The "Big Eight"

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Food Safety Concerns - Chemical - Allergens

Regulated Allergens - USA

The “Big Eight”

- Peanuts
- Tree nuts
- Milk
- Eggs
- Soy (intact protein)
- Wheat
- Fish
- Shellfish

Food Safety Concerns - Chemical - Allergens

Regulated Allergens - Canada

- The “Big Eight”

Plus

- Sesame seeds (allergen)
- Sulfites (food intolerance, not an allergic reaction)

Food Safety Concerns - Chemical - Allergens

Prevention & Control are Essential

There is not an “acceptable level” for the regulated food allergens – if added / present, must be on the label.

Food Safety Concerns - Chemical - Allergens

Prevention & Control are Essential

Food allergens are very stable and not removed/destroyed by typical manufacturing processes.

Food Safety Concerns

- Chemical - Allergens

Identify the regulated allergens in all raw materials

- Ingredients
- Processing Aids
- Food Contact Surfaces (packaging, inserts, etc.)

Food Safety Concerns - Chemical - Allergens

Labeling

**#1 Cause of Allergen Recalls:
Allergens not correctly identified on
the label**

INGREDIENT LIST:
Water, Lentils 35%, Carrots, Yellow
Peas, Tomatoes, Potatoes, Modified
Maize Starch, Salt, Vegetable Oil,
Hydrolysed Vegetable Protein,
Sugar, Vegetable Bouillon, Flavour
Enhancer: Monosodium Glutamate,
Colour: Beta Carotene, Spices.



HACCP

Food Safety Concerns Physical



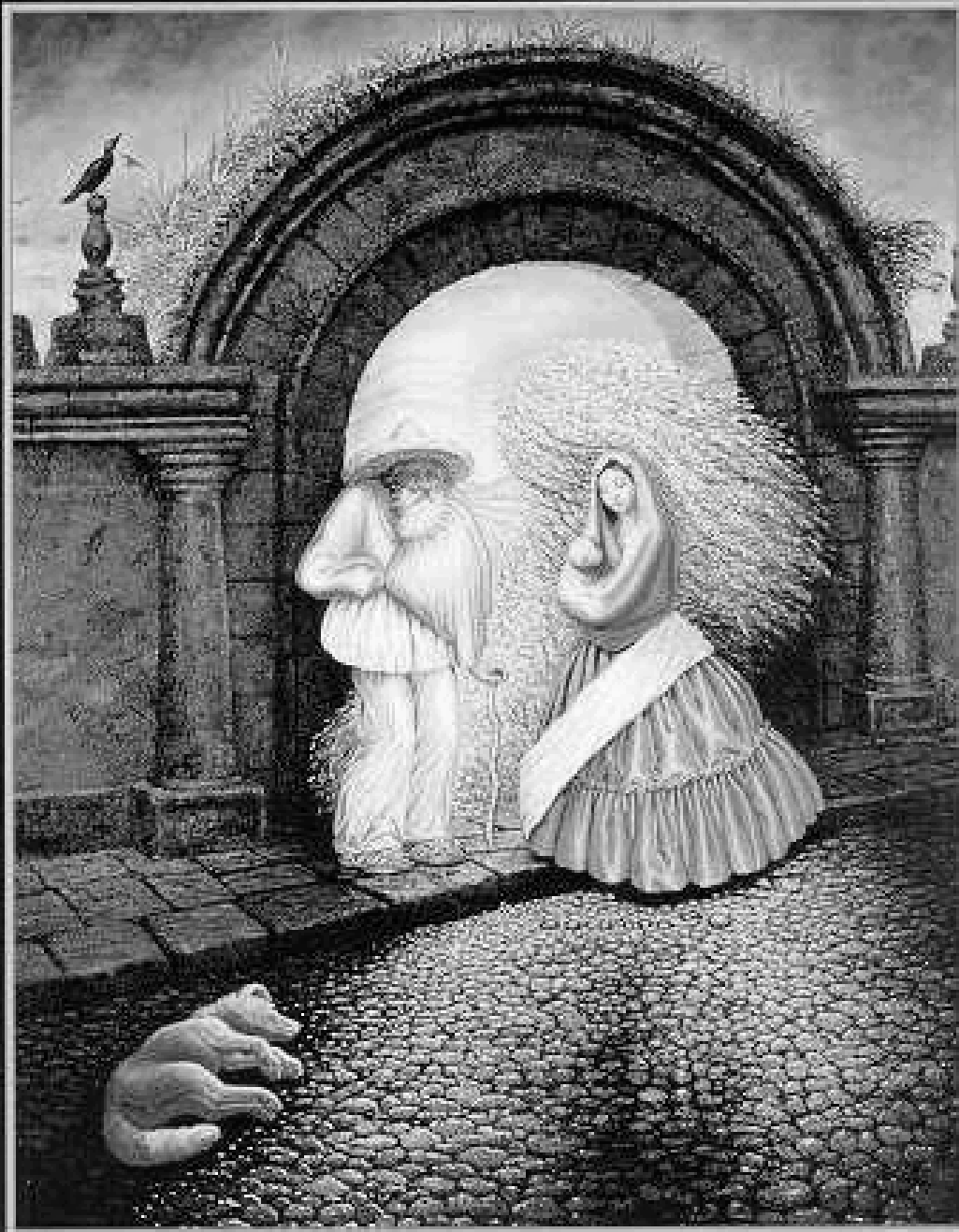
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Food Safety Concerns - Physical

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