

Chemical Hazards

A chemical hazard is any substance that can cause a health problem when ingested or inhaled.

Some chemicals are added to food on purpose. Examples: salt, spices, food additives such as flavour enhancers, preservatives and colourings. Other dangerous chemicals get into food through cross-contamination. Examples are toxins, pesticides, cleaning agents (acids, degreasers, detergents, sanitizers), heavy metals (copper, mercury, zinc), and food additives. Safe food handling procedures prevent these hazards.

Types of chemical hazards:

Naturally occurring

toxins produced by plants, animals or microorganisms (e.g., aflatoxins in peanuts, poisonous neurotoxins in mushrooms, scrombotoxin in fish).

Intentionally added –

These are chemicals added to food beyond the acceptable limits established by the Food and Drugs Act and its regulations (e.g., Yellow #5, sodium nitrate, sulphites, monosodium glutamate).

Unintentionally added –

also called incidental additives, these are chemicals that accidentally contaminate the food being prepared (e.g., sanitation or maintenance chemicals, pesticides or environmental pollutants).

Limits

The Canadian Food and Drug Regulations list the maximum allowable levels (or tolerances) of specific chemicals in food (Section B.15.003).

Health Canada also lists the maximum allowable levels of specific chemicals in food.

Risk of chemical hazards: Chemical hazards can lead to acute chemical poisoning, caused when abnormally high doses of chemicals are consumed.

- Metal food poisoning: Dissolved metal in food can cause chemical food poisoning. If an acidic food, like fruit juice, maple syrup or tomatoes, is stored or cooked in metal containers, the acid can cause the metal to dissolve. Lead, copper, tin, zinc, iron and cadmium are all possible sources of metal food poisoning

- Symptoms such as nausea, vomiting, stomach pain, numbness, dizziness, muscular weakness, loss of appetite, headache, confusion, burning sensation in the back of neck, forearms, and chest, tingling, flushing and sometimes diarrhea may occur quickly, within 20 minutes to a few hours after eating contaminated food
- Risk factors are exposure and toxicity:

Exposure – The amount of chemical concentration in food and the amount of the food ingested will determine the potential for food poisoning

Toxicity – The amount of chemical or toxin that is consumed affects the severity of the food poisoning

Potential sources of chemical hazards:

Incoming materials contaminated with toxins producing bacteria or mould, pesticides, veterinary drugs, non-food grade chemicals/ink used in packaging materials

Food contact surfaces: unapproved materials may lead to chemical contamination to food, such as copper beverage lines, cadmium in shelving, lead in painted dishes/glassware and metal containers

Non-food chemicals: cleaning, sanitizing, disinfecting or maintenance chemicals (used or stored near food contact surfaces), dyes or inks from coding machines, water treatment chemicals, etc.

Employee errors in adding excessive food additives or unapproved ingredients to food

Best practices to control and prevent chemical hazards:

- | | |
|---|---|
| <ul style="list-style-type: none"> • Train employees to follow safe handling and application procedures for the use of all chemicals in the establishment | control chemical hazards to prevent the entry of these hazards into your food establishment |
| <ul style="list-style-type: none"> • Wash hands thoroughly after using chemicals | <ul style="list-style-type: none"> • Do not store chemicals in food containers or containers with food labels |
| <ul style="list-style-type: none"> • Use food-safe utensils such as stainless steel to prepare and serve food | <ul style="list-style-type: none"> • Store chemicals in designated areas away from or below food, ingredients, packaging and food contact surfaces |
| <ul style="list-style-type: none"> • Do not store acidic food in lead-containing dishes/glassware, copper or galvanized (contains zinc) utensils. Acids leach metals and make food dangerous | <ul style="list-style-type: none"> • Follow the manufacturer's instructions on concentration, use of chemicals and the contact time |
| <ul style="list-style-type: none"> • Purchase materials and raw ingredients from reputable suppliers that effectively | <ul style="list-style-type: none"> • Do not use excessive grease or lubricants on equipment |

- Ensure proper cleaning and removal of all chemical residues from food contact surfaces after maintenance
- Ensure clear labelling or colour-coding of chemical containers and measuring tools and that they are used only for chemicals
- Ensure restricted ingredients and additives are correctly measured. Regularly re-evaluate all recipes to ensure they meet the Food and Drug Act and its regulations
- Follow good storage practices (ex: uncontrolled moisture levels during grain storage can produce mycotoxins)

Workplace Hazardous Materials Information System (WHMIS) 2015: Follow these guidelines for the storage and use of chemicals.

- Use only approved foodservice chemicals with the manufacturer's instructions
- Ensure easy-to-read labels and easy-to-use instructions
- Ensure access to Safety Data Sheets
- Avoid exposure by inhalation, ingestion, absorption or injection. If exposure occurs, follow first aid recommendations, and seek emergency medical assistance immediately
- Keep flammable materials away from open flames and sources of heat

The most effective controls for chemical hazards are awareness and prevention.