

Physical Hazards in Food



Physical hazards are either foreign materials unintentionally introduced to food products (e.g., metal fragments in ground meat) or naturally occurring objects (e.g., bones in fish) that are hazardous to the consumer. A physical hazard contaminates a food product at any stage of production. Food processors should take adequate measures to avoid physical hazards in food.

Physical Hazards Risk in Food

- Hard or sharp objects are potential physical hazards and can cause:
 - cuts to the mouth or throat
 - damage to the intestines
 - damage to teeth or gums
- The presence of physical hazards in food can trigger a food recall, affecting the brand name of your company and product.

Factors Determining a Potential Risk

Factors that cause potential risk to consumers in food products include:

- Size: Health Canada states that anything in a food product, that is extraneous, and measures two millimeters or more in size can be a health risk.
- Type of consumer: Products that target infants, the elderly, etc. have a higher risk level.
- Type of product: The form the product takes such as infant formulas, beverages, etc. can increase risk level.
- Physical characteristics: hardness, shape and sharpness of a product can affect risk level.

Common Physical Hazard

Common sources of physical hazards in food include:

- Glass: light bulbs, glass containers and glass food containers
- Metal: fragments from equipment such as splinters, blades, needles, utensils, staples, etc.
- Plastics: material used for packaging, fragments of utensils used for cleaning equipment
- Stones: incorporated in field crops, such as peas and beans, during harvesting
- Wood: splinters from wood structures and wooden pallets used to store or transport ingredients or food products
- Natural components of food: hard or sharp parts of a food (e.g., shells in nut products) if consumers do not expect them

Preventing Common Physical Hazard

There are many ways food processors can prevent physical hazards in food products.

Assess every step of your operation for potential sources of contamination:

- Inspect raw materials and food ingredients for field contaminants, such as stones in cereals that were not found during receiving.
 - Handle food according to Good Manufacturing Practices (GMPs). (E.g., avoid inclusion of physical hazards such as jewelry or false fingernails in food products by using proper personnel practices.)
 - Eliminate potential sources of physical hazards in processing and storage areas. (E.g., use protective acrylic bulbs or lamp covers to prevent contamination by breakable glass.)
 - Install an effective detection and elimination system for physical hazards. (E.g., metal detectors or magnets will detect metal fragments in the production line while filters or screens will remove foreign objects at the receiving point.)
 - Establish an effective maintenance program for the equipment in your facility to avoid sources of physical hazards such as foreign materials that can come from worn out equipment.
- Metal Detectors factsheet, for more information).
- X-Ray machines can be used to identify hazards such as stones, bones and hard plastics, as well as metal.
 - Food radar systems transmit low-power microwaves through food products to identify foreign bodies such as metals, plastics, bones or kernels in food.

Detecting and Eliminating Physical Hazard

There are several methods available to detect foreign bodies on food processing production lines:

- Magnets can be used to attract and remove metal from products.
- Metal detectors can detect metal in food and should be set up to reject products if metal is detected. Equipment should be properly maintained to ensure it is always accurate and doesn't produce false positives (See

For more information on food safety please contact the Food Safety and Inspection Branch at foodsafety@gov.mb.ca.