



TECHNICAL ASSISTANCE TO BUILD FOOD SAFETY CAPACITY FOR THE FISHERIES SECTOR



MODULE 1

Chemical and Physical Hazards

Training for TIBU Impex, Guyana



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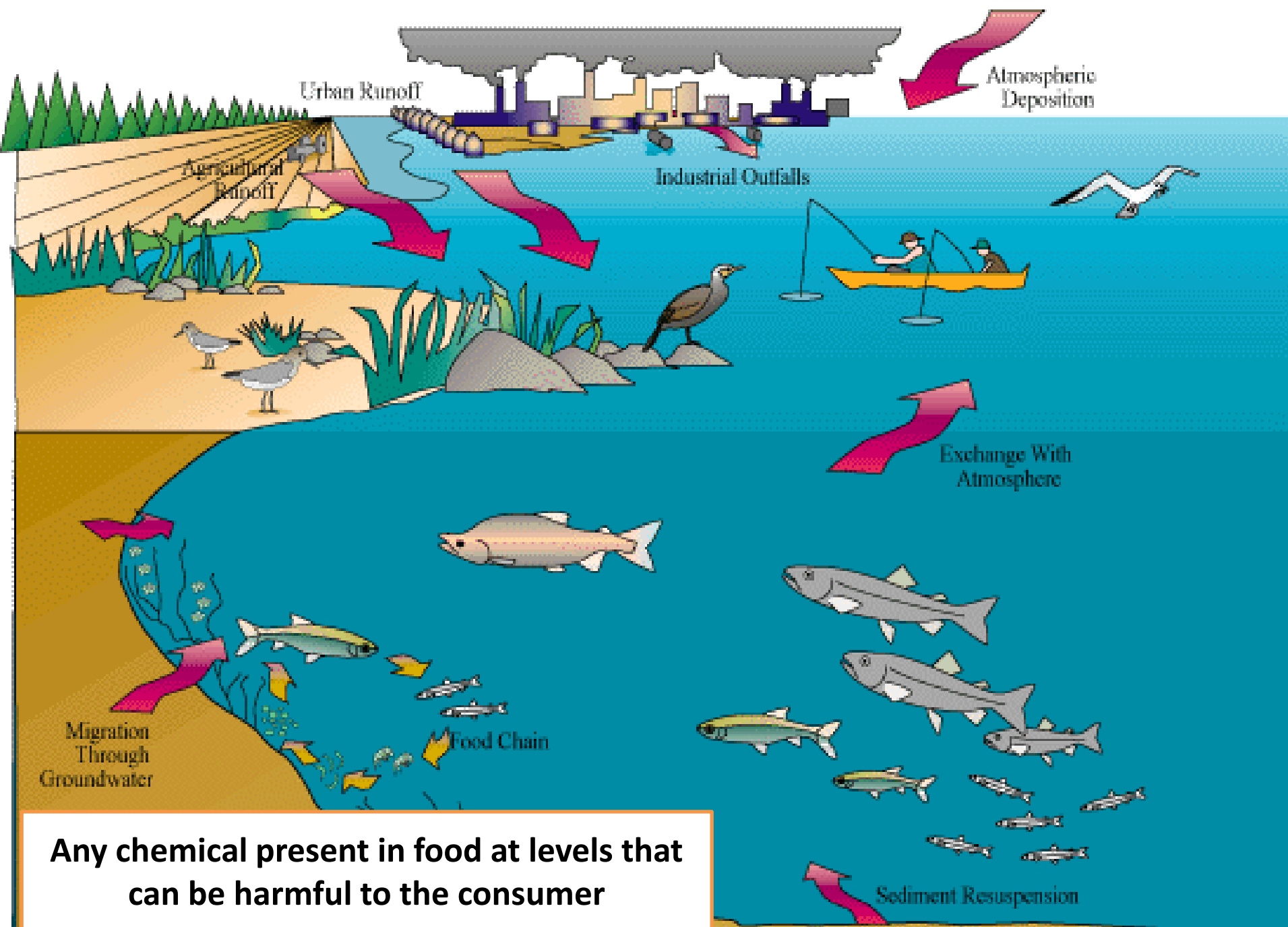
Learning Outcomes

At the end of this session, you should be able to:

- Describe chemical and physical hazards.
- Give examples of chemical and physical hazards.
- Explain the symptoms of chemical food poisoning and allergic reactions.
- Discuss ways to control chemical and physical hazards.



**What is a chemical
hazard?**



Chemical hazards

Naturally occurring

Intentionally added

Unintentionally added



Types of chemical hazards

Naturally occurring

- Food allergens
- Mycotoxins (eg aflatoxin)
- Scombrototoxin (histamine)
- Ciguatoxin
- Shellfish toxins (eg Paralytic shellfish poisoning)

Environmental & other contaminants

- Polychlorinated biphenyls (PCBs)
- Pesticides
- Antibiotics
- Heavy metals
- Lubricants
- Cleaners
- Sanitizers
- Paints

Food additives

- Polycyclic aromatic hydrocarbons
- Carbon dioxide
- Sulphur

From packaging material

- Plasticizers
- Vinyl chloride
- Printing/coding inks
- Adhesives



Histamine-producing fish species

Scombroid dark-meat fish



Tuna



Mackerel



Bonito



Marlin



Skipjack

Nonscombroid fish



Mahi mahi



Sardine



Herring



Blue fish



Yellowtail

An example of how chemical poisoning can occur - Chemical Hazard

**FARMER
SPRAYS HIS
LETTUCE
WITH
PESTICIDES**



**CONTAMINATED
LETTUCE USED
TO MAKE SALAD**



**PESTICIDE-
CONTAMINATED
SALAD
CONSUMED**

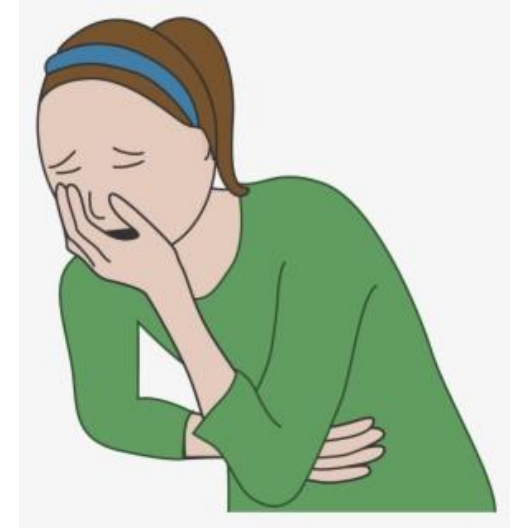
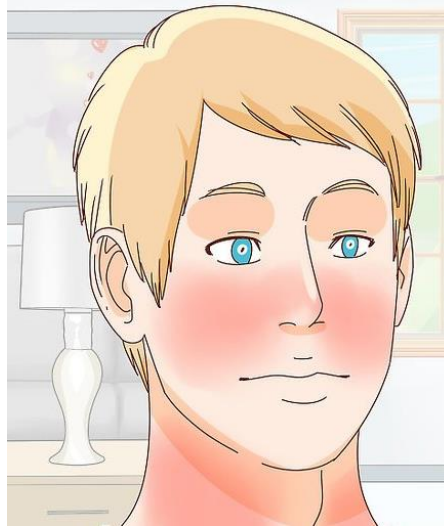


**CONSUMER
DEVELOPS
CHEMICAL
FOOD
POISONING**



**HOURS LATER, SOMEONE
STEALS THE LETTUCE AND
SELLS THEM**

Symptoms of Chemical Food Poisoning /Allergic Reaction



Food poisoning cases related to fish and fish products...



Sweden reports histamine outbreak from imported fish

By [News Desk](#) on April 15, 2021

Almost 20 people have fallen ill in Sweden this month from histamine poisoning in fish from Vietnam.



Red snapper steak

Ciguatera poisoning from imported fish suspected in the Netherlands

By Joe Whitworth on June 14, 2020

Five people in the Netherlands have been affected by ciguatera poisoning likely caused by frozen red snapper steaks from India.



**How can chemical hazards be
controlled?**

**Use approved suppliers for
chemicals and packaging**



Use approved food-grade chemicals



Store chemicals in designated areas away from food, packaging and food contact surfaces



Don't store chemicals in unmarked containers

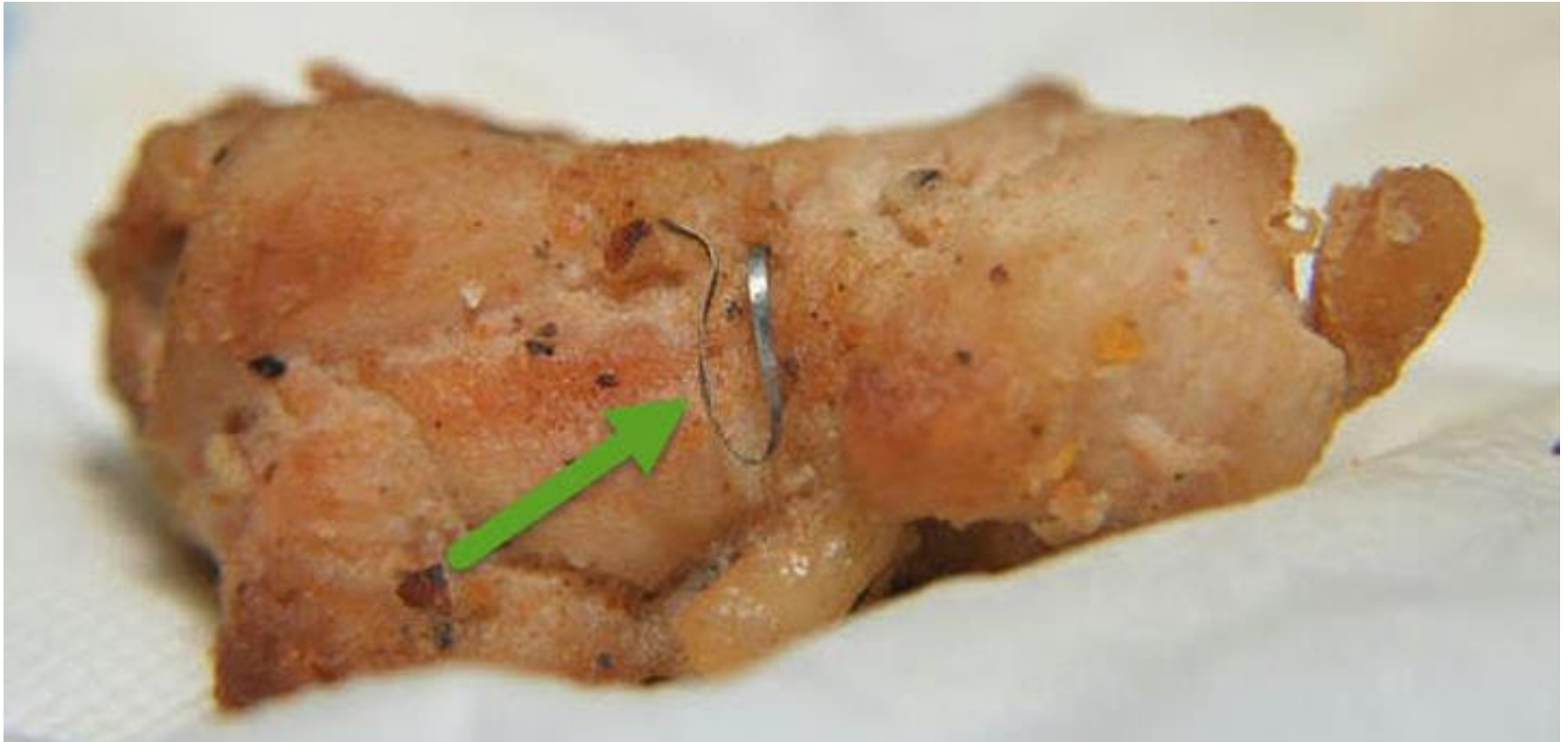


**Follow correct dilution procedures
for cleaning chemicals**



**What is a physical
hazard?**

Any foreign object that is found in a food product, which is either naturally occurring or not normally present with that specific food, that can cause injury to consumer.



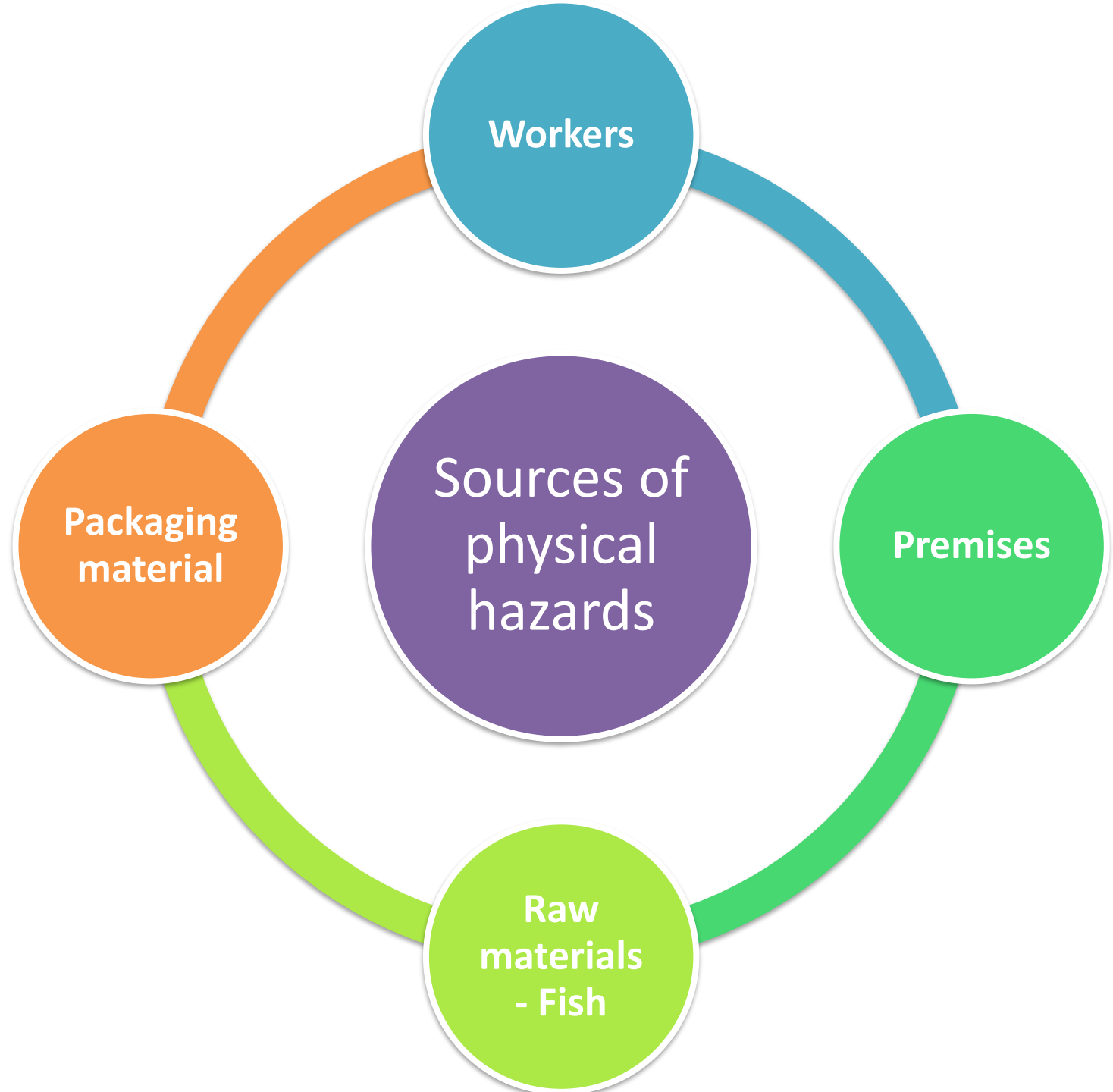

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graph TD; A[Physical hazards] --> B[Naturally occurring]; A --> C[Unnaturally occurring];
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Physical
hazards

Naturally
occurring

Unnaturally
occurring







Control of physical hazards

Physical hazards can be eliminated in food by:

- Workers following the strict food safety guidelines of your organization (e.g. no glass items in the processing area)
- Conducting thorough inspections of the food (e.g. using metal detector for any metal inclusions)

Activity

**Say if the following is a chemical,
allergenic or physical hazard**

(A) Allergenic (B) Chemical (C) Physical

| | |
|--------------|-----|
| Histamine | (B) |
| Broken knife | (C) |
| Hair | (C) |
| Disinfectant | (B) |
| Ciguatoxin | (B) |
| Shrimp | (A) |
| String | (C) |
| Metal | (C) |
| Insects | (C) |
| Milk | (A) |

| | |
|---------------------|-----|
| Bones in fish | (C) |
| Jewellery | (C) |
| Peanuts | (A) |
| Heavy metals | (B) |
| Detergent | (B) |
| Shells of Shellfish | (C) |
| Shellfish | (A) |
| Pesticides | (B) |
| Cashews | (A) |
| Veterinary drugs | (B) |

Topics to be covered next week

1. Food hygiene and sanitation

- Hygiene in on-board vessel handling and in-plant production activities; the importance of personal hygiene and health in food safety; effective hand washing; cleaning and disinfection techniques; safe use of cleaning chemicals; waste disposal management; control of food pests; water quality and safety.

2. Hazards associated with Caribbean fish and fishery products and their control

- Pathogenic bacteria, natural toxins, heavy metals, veterinary drug residues and environmental contaminants; toxin formation as a result of time and temperature abuse; control measures.

3. Food safety responsibilities of fish operators

- Product traceability and recall procedures; lab testing; implementation of prerequisite programmes based on GHP/GMP; food safety audits/inspections; documentation and record-keeping.

Questions?

