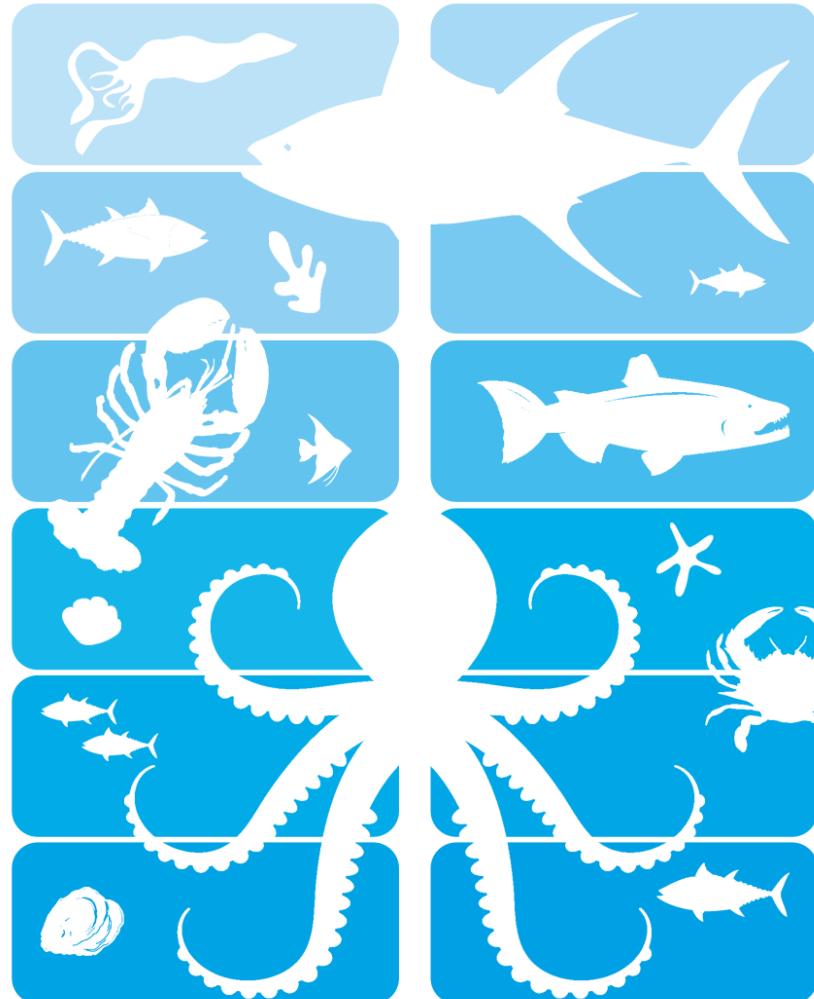
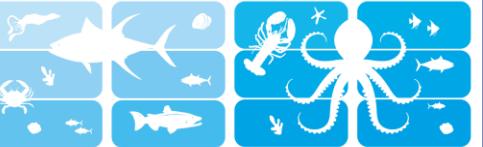




Food and Agriculture  
Organization of the  
United Nations



TRAINING ON THE  
IMPLEMENTATION OF  
**HACCP**  
FOR FISHERIES AND AQUACULTURE



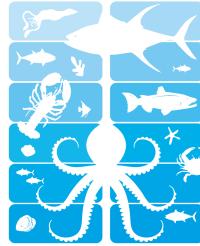
# PREREQUISITE PROGRAMME

Esther Garrido Gamarro

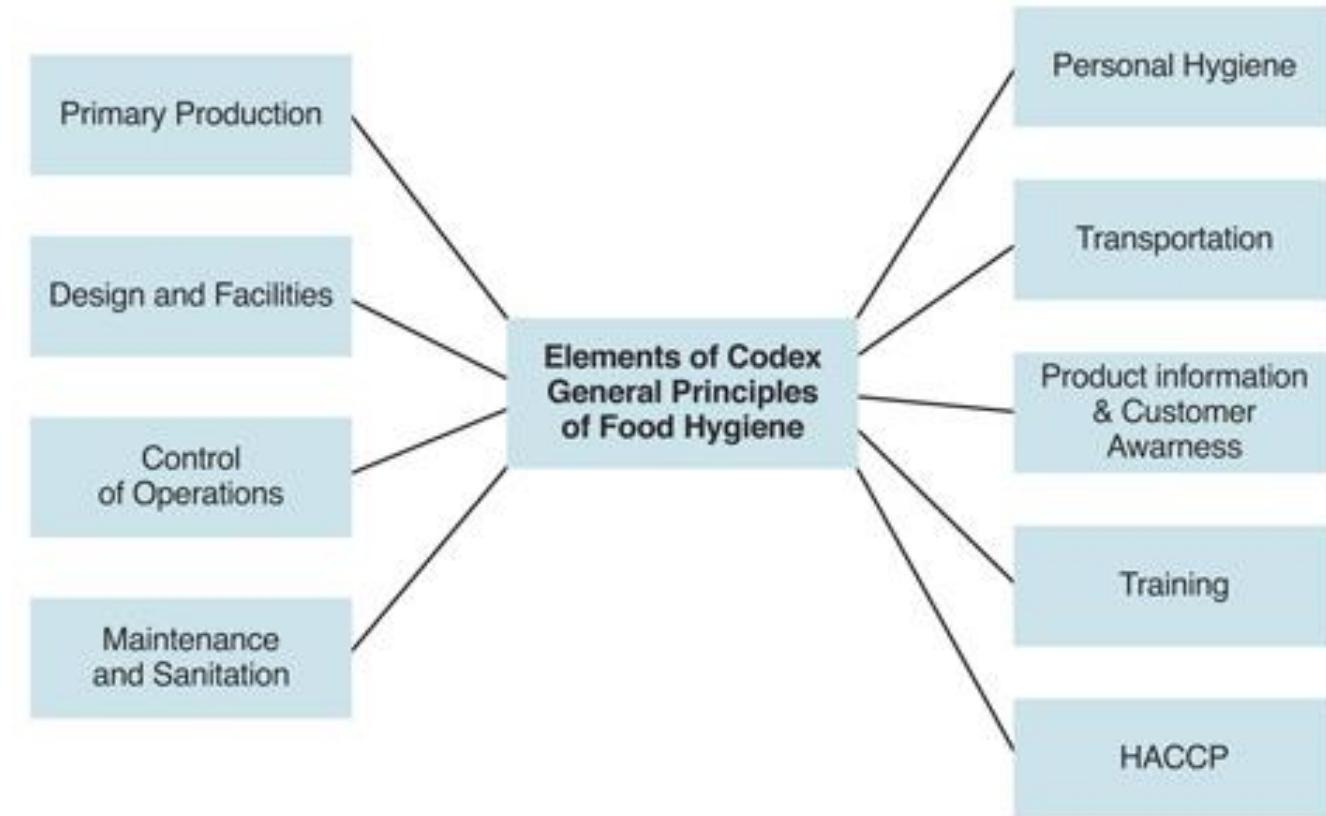
*Fishery Officer*

*Food Safety and Quality – Food and Agriculture Organization of the UN*

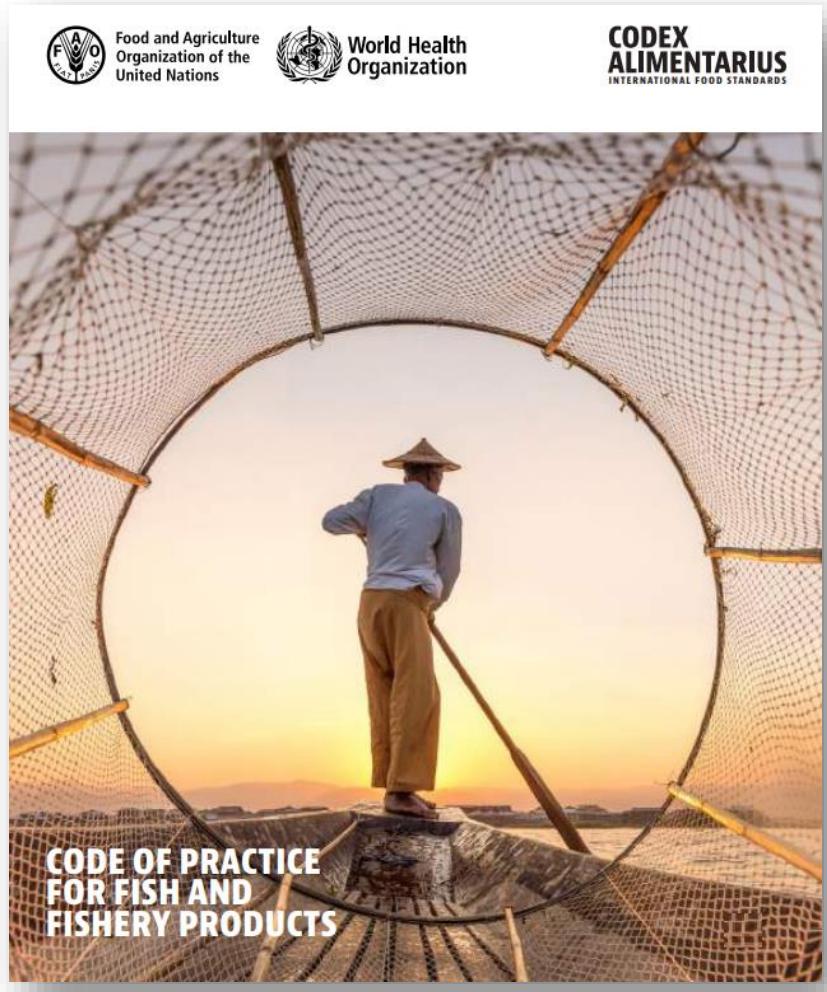
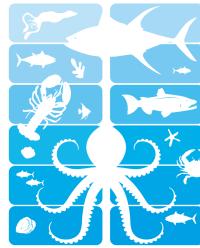
# PREREQUISITE PROGRAMME (PRP)



Prior to the application of HACCP to any segment of the product processing chain, that segment must be supported by prerequisite programmes based on good hygienic practices (GHP)

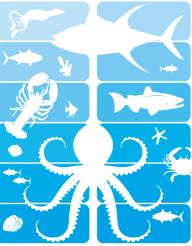


# PRP HELPS CONTROLLING

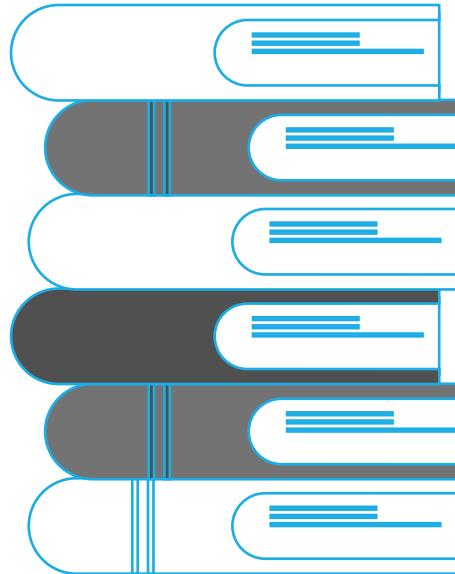


- I. The probability to introduce safety hazards in a food product through the work environment.
- II. Biological, chemical and physical contamination, including cross-contamination between products.
- III. The levels of risk related to food safety in the product and the environment in which it is made.

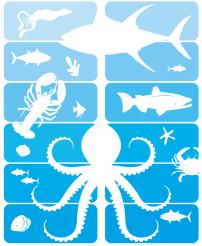
# PRP- REQUIREMENTS



- Legal and regulatory requirements (national and international);
- Client requirements;
- Recognized guidelines; and
- The principles and codes of practice of the Codex Alimentarius Commission.

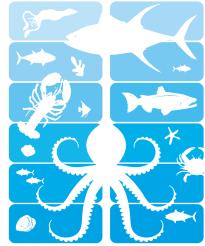


# ASPECTS TO BE INCLUDED IN THE PRP



- 1) Fishing and harvesting vessels design and construction;
- 2) Facility design and construction;
- 3) Design and construction of equipment and utensils;
- 4) Hygiene control programme;
- 5) Personal hygiene and health;
- 6) Transportation;
- 7) Product tracing and recall procedures;
- 8) Training.

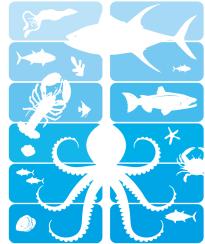
# FISHING AND HARVESTING VESSELS DESIGN AND CONSTRUCTION



- Vessels should be constructed to minimize sharp inside corners and projections to avoid dirt accumulation.
- Construction should facilitate ample drainage.
- A supply of clean water or potable water at adequate pressure. Non-potable water lines should be marked.
- Surfaces in handling areas should be non-toxic, smooth, impervious and in sound condition.
- Objectionable substances, which could include bilge water, smoke, fuel oil, grease, drainage and other solid or semi-solid wastes, should not contaminate the fish.
- Use of ice or refrigeration when possible.



# FISHING AND HARVESTING VESSELS DESIGN AND CONSTRUCTION



- Use of ice or refrigeration when possible.
- Maintain a 1kg fish to 1kg ice ratio
- Ice should be made from drinking quality (potable) water
- Store ice in clean boxes or bags
- Procure ice from a government-approved provider
- If water is mixed with ice, make sure only clean water is used
- Use clean, well made insulated boxes
- Place a layer of ice on the bottom of the box and then layers of fish and ice

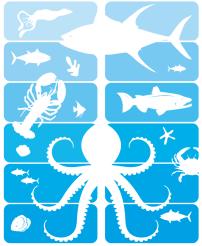


[Link to the FAO guide: Take care of your catch \(fao.org\)](#)

[Link to FAO Fisheries technical paper: The use of ice on small fishing vessels \(fao.org\)](#)

# FISHING AND HARVESTING VESSELS

## DESIGN AND CONSTRUCTION

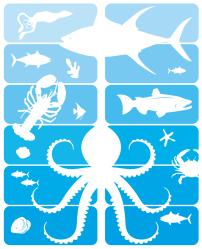


- When products are harvested and are transported live, seines, nets and traps must ensure minimum damage.
- The sorting, grading and transport should be rapid and not cause mechanical damage.
- Overcrowding should be avoided and factors such as  $\text{CO}_2$ ,  $\text{O}_2$ ,  $T^\circ$ , nitrogenous wastes monitored.



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# FISHING AND HARVESTING VESSELS DESIGN AND CONSTRUCTION

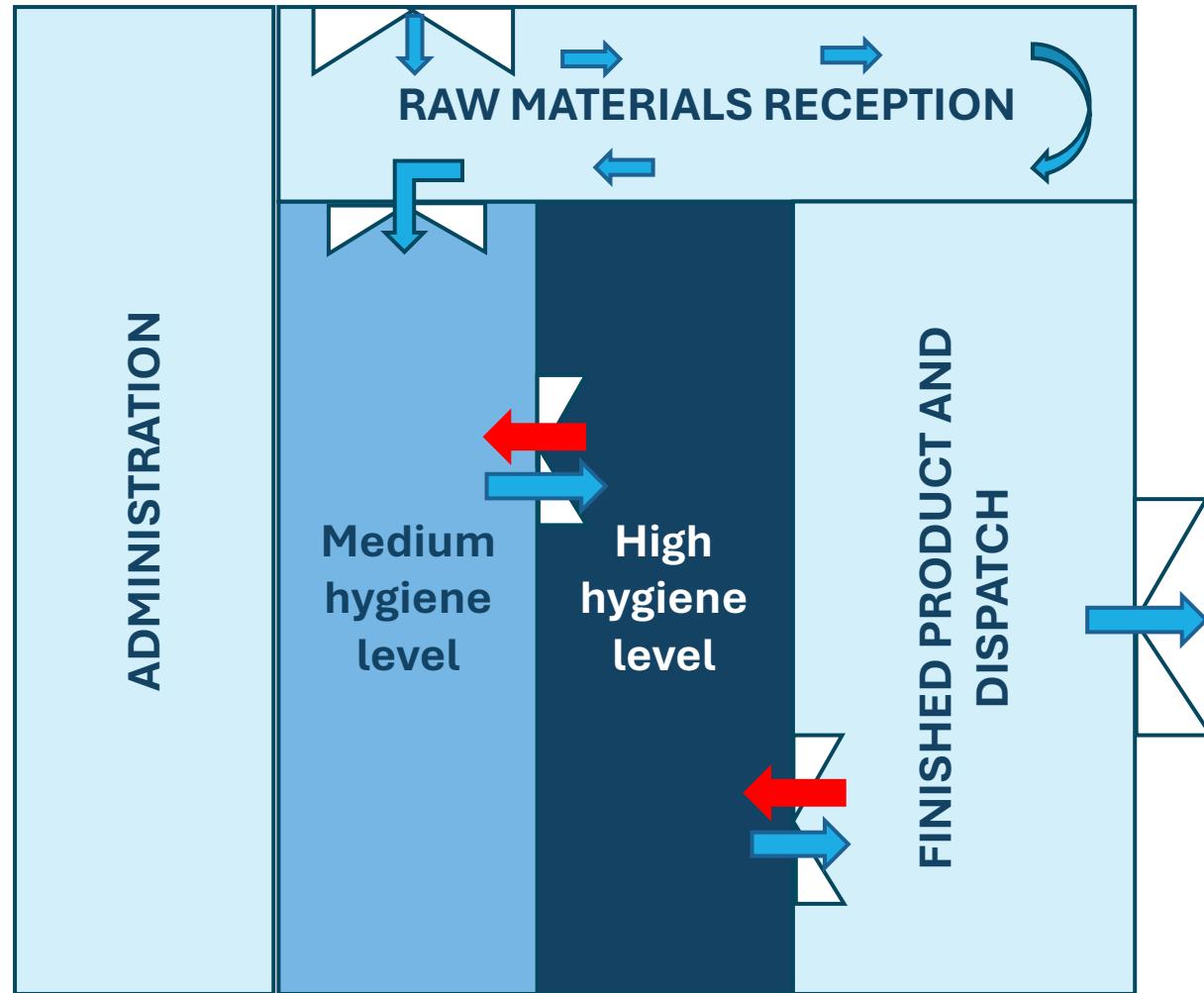
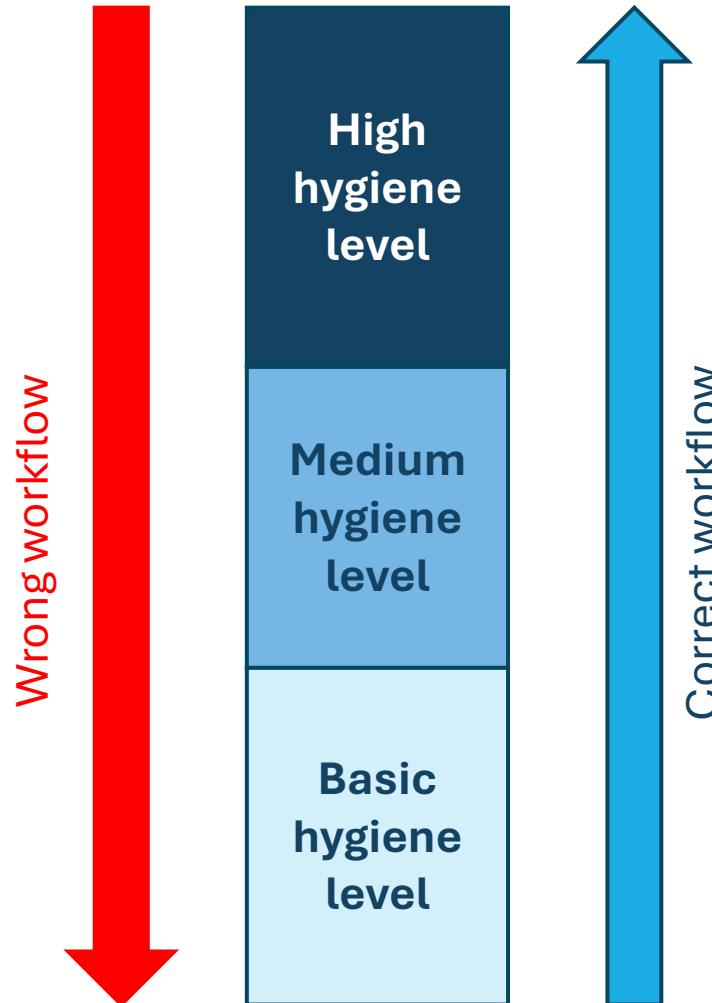
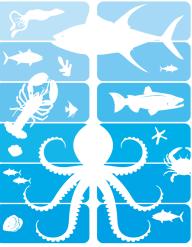


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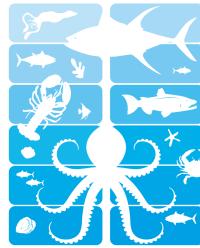


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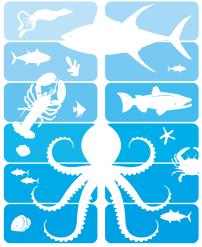
# FACILITY DESIGN AND CONSTRUCTION



HYGIENE LEVEL	RISK OF CONTAMINATING FOOD	PRODUCTION STEP	DESIGN rules
<b>HIGHEST</b> (addition to the rules for medium risk zone) <ul style="list-style-type: none"> <li>-Access only with protective clothing, ---No jewels allowed hair covered, handwashing and disinfecting upon each entry, boot dips</li> <li>-cleaning and disinfection prior to start a new process</li> <li>-Stringent controls of cleaning and disinfection</li> <li>-Access only for specially training personnel required for the process</li> </ul>	High Final product is unprotected and apart from packaging will not undergo any hazard eliminating step	Final unpacked product	Stringent (addition to the rules for medium hygiene zone) <ul style="list-style-type: none"> <li>-No wooden pallets, cardboard</li> <li>-Air flow out of the area (i.e. higher pressure inside this zone)</li> </ul>
<b>MEDIUM</b> <ul style="list-style-type: none"> <li>-Access only to personnel trained according to hygiene requirements</li> <li>-No jewels allowed, hair covered, protective clothing required</li> </ul> Frequent cleaning and stringent controls of cleaning Handwashing according to personal hygiene rules	High Avoid contamination of raw materials and/or packaging materials	Preparation of raw materials Storage of unpacked raw materials, ingredients and opened packaging materials	No hiding spaces for pests, no cracks in the walls or floors, effective draining, rounded corners
<b>STANDARD</b> No ill personnel, handwashing requirements after use of the toilet No pets Access to anyone allowed on premises	Low No unpacked raw materials, opened packaging or unpacked final product in this area	No processing steps. Areas reserved for office work, delivery, storage...	Special arrangement of equipment for easy access and cleaning

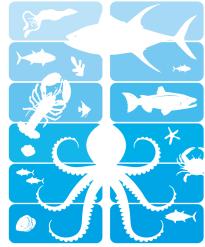


# FACILITY DESIGN AND CONSTRUCTION



Build walls or install visible demarcation lines to protect areas of higher hygiene

# FACILITY DESIGN AND CONSTRUCTION

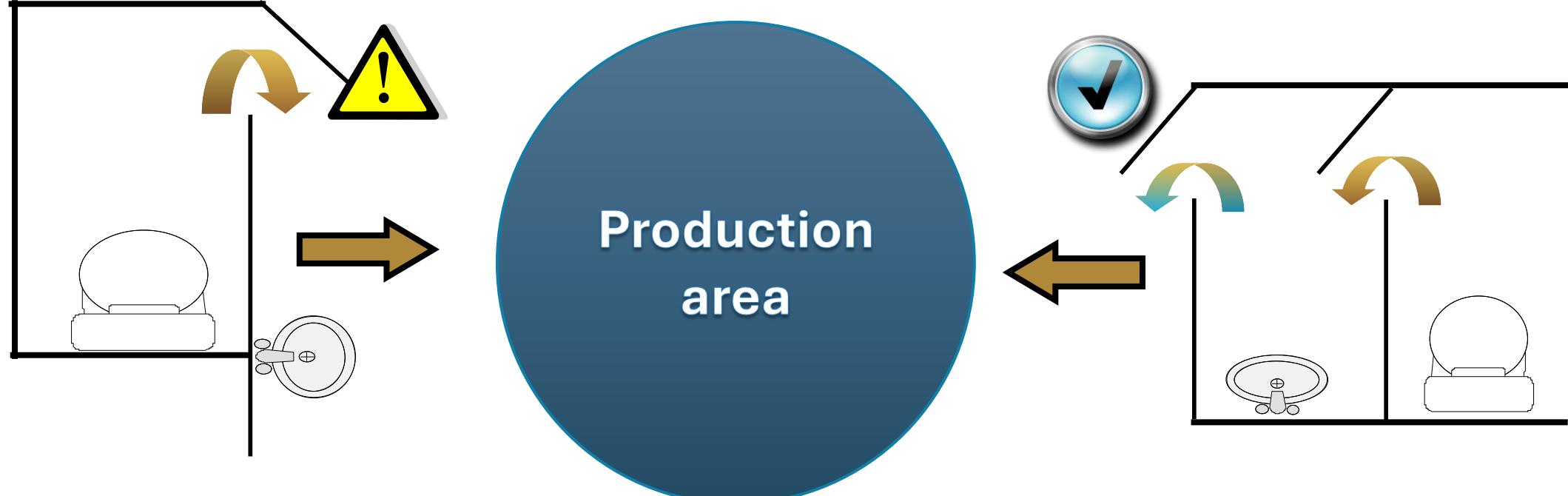
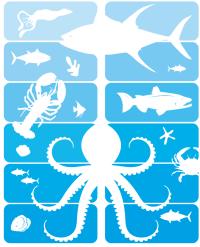


Floors should allow adequate drainage.

- Avoid corners or surface materials that are difficult cleaning and disinfection.
- Avoid porous materials for floors, walls, ceilings and doors.

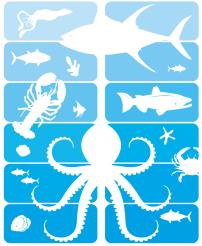
Windows should be easy to clean and fitted with removable and cleanable insect proof screens.

# FACILITY DESIGN AND CONSTRUCTION



**Toilets should not directly open into food production areas**

# FACILITY DESIGN AND CONSTRUCTION



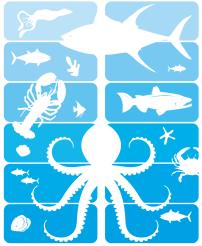
Adequate lighting should be provided to all work surfaces.



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Ceiling lights should be covered or otherwise suitably protected to prevent contamination by glass or other materials.

# FACILITY DESIGN AND CONSTRUCTION



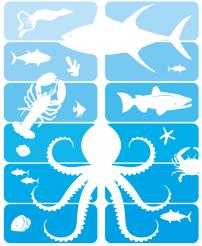
## **Facilities should be provided for:**

1. the handling and washing of products and have an adequate supply of cold potable.
2. washing and disinfecting equipment.
3. the storage and/or production of ice.

- Ventilation should be sufficient to remove excess steam, smoke and objectionable odours.
- Cross-contamination through aerosols should be avoided.



# DESIGN AND CONSTRUCTION: EQUIPMENT AND UTENSILS



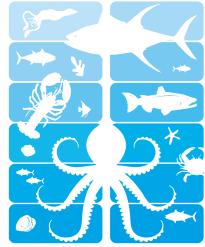
## Badly designed equipment cannot be cleaned

Equipment should be durable and movable and/or capable of being disassembled to allow for maintenance, cleaning, disinfection and monitoring.

Working surfaces that come into direct contact with fish, should be in sound condition, durable and easy to maintain. They should be made of smooth, non-absorbent and non-toxic materials, and inert to fish, detergents and disinfectants under normal operating conditions.



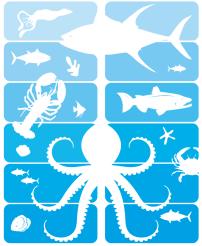
# HYGIENE CONTROL PROGRAMME



## **Actions should be implemented to:**

- protect the fisheries and aquaculture products from contamination;
- prevent build up of waste and debris;
- dispose of any rejected material in a hygienic manner;
- monitor personal hygiene and health standards;
- monitor the pest control programme;
- monitor cleaning and disinfecting programmes;
- monitor the quality and safety of water and ice supplies; and
- prevent the buildup of waste and debris.

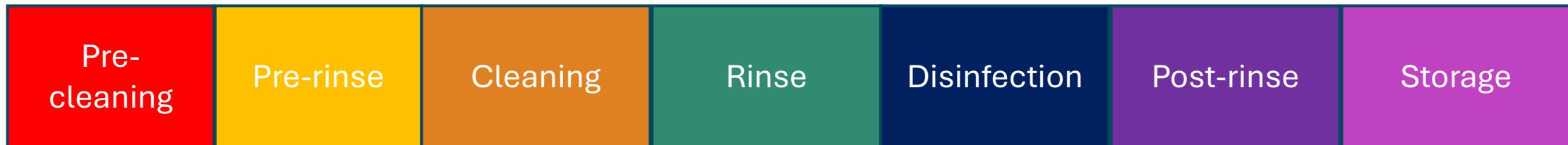
# HYGIENE CONTROL PROGRAMME



## Cleaning and disinfection

A permanent cleaning and disinfection schedule should be drawn up

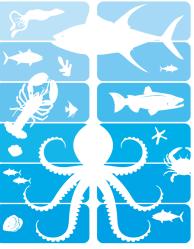
A typical cleaning and disinfecting process may involve seven steps:



A trained individual should be designated as responsible for the sanitation of the facility and the equipment.

**Check of the efficiency of the cleaning!**

# HYGIENE CONTROL PROGRAMME



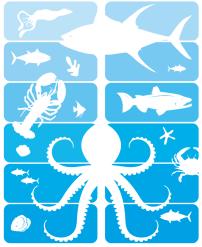
## Maintenance of premises, equipment and utensils

Buildings, materials, utensils and all equipment in the establishment – including drainage systems – should be maintained in a good state (clean and in good repair).

Procedures for the maintenance, repair, adjustment and calibration of apparatus should be established. For each item of equipment, these procedures should specify the methods used, the persons in charge of their application, and their frequency.

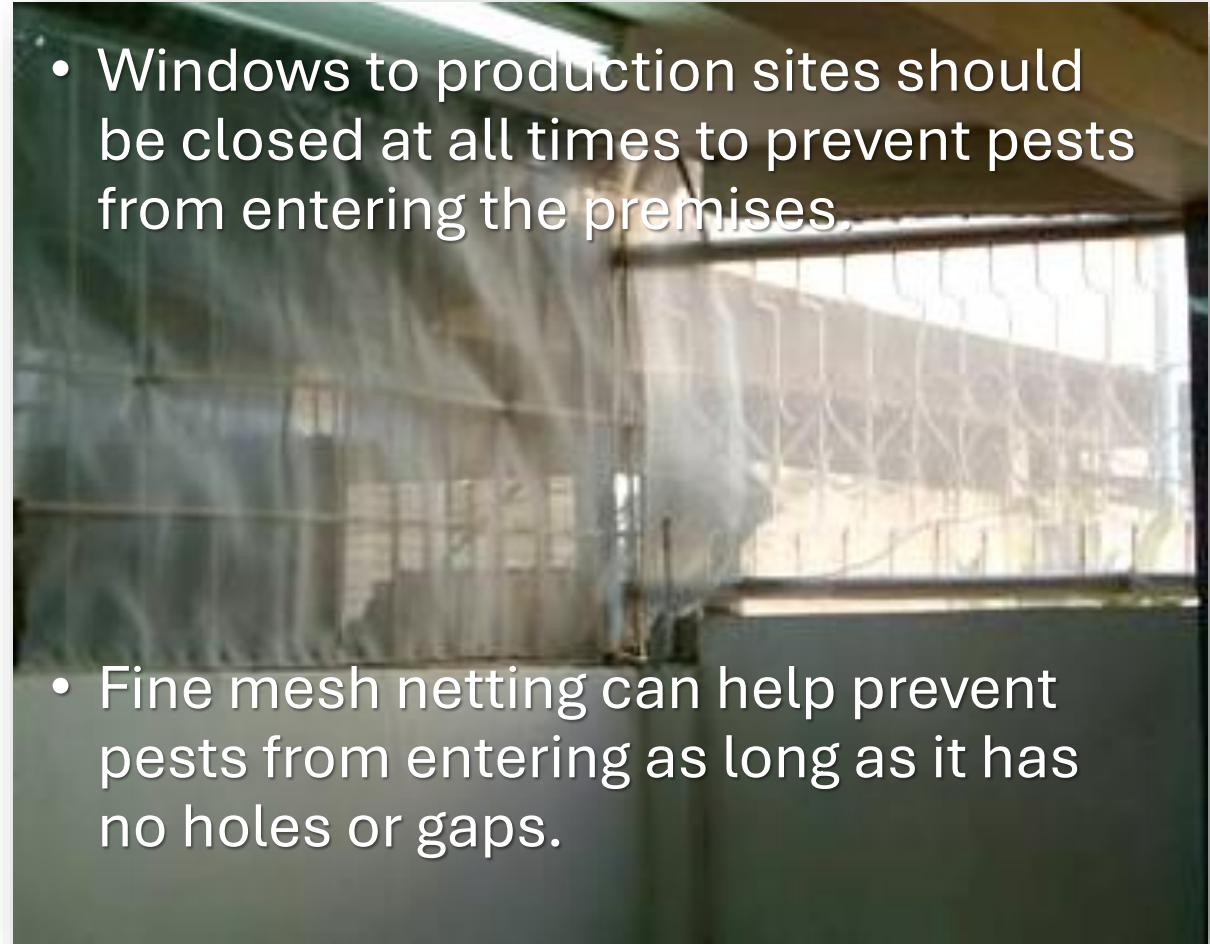


# HYGIENE CONTROL PROGRAMME



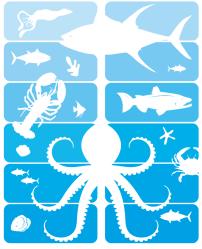
## Pest control programme

- Good hygienic practices should be employed to avoid creating an environment conducive to pests.
- Pest control programmes could include preventing access, eliminating harbourage and infestations, and establishing monitoring detection and eradication systems.
- Physical, chemical and biological agents should be properly applied by appropriately qualified personnel.



- Windows to production sites should be closed at all times to prevent pests from entering the premises.
- Fine mesh netting can help prevent pests from entering as long as it has no holes or gaps.

# HYGIENE CONTROL PROGRAMME



## Monitor the quality and safety of water and ice supplies

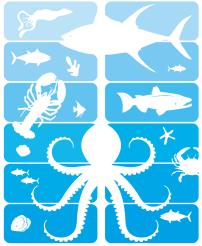
Non-potable water  
is a serious threat  
to food safety



The chemical  
composition of  
water needs to be  
controlled!

An adequate supply of potable water and ice is vital for food safety

# HYGIENE CONTROL PROGRAMME

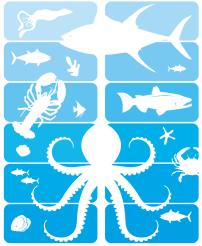


## Waste management

- Offal and other waste materials should be removed from the premises of a processing facility or vessel on a regular basis.
- Facilities for the containment of offal and waste material should be properly maintained.



# PERSONAL HYGIENE AND HEALTH

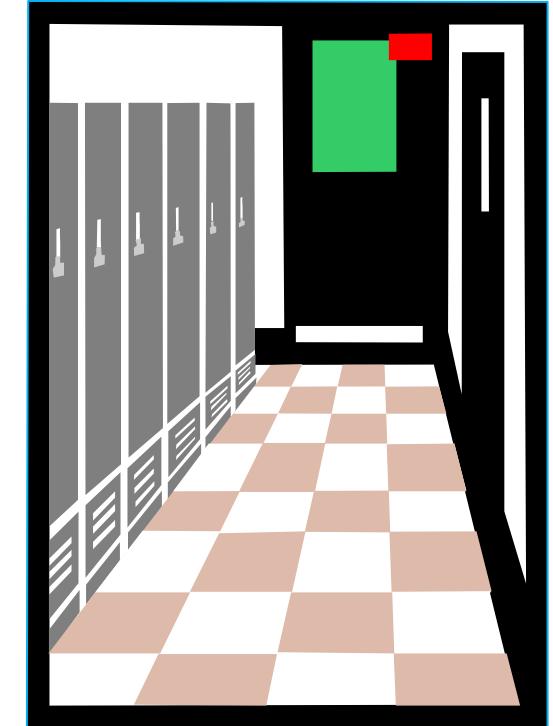


**Appropriate degree of personal hygiene must be maintained in order to avoid contamination.**

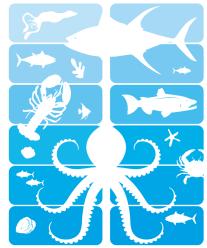
**Adequate facilities support hygienic behaviour.**

## **Staff must have:**

- toilets,
- changing rooms,
- strategically placed hand-washing stations,
- enough space to store personal items, and
- somewhere outside the areas of higher hygiene to eat and drink.



# PERSONAL HYGIENE AND HEALTH



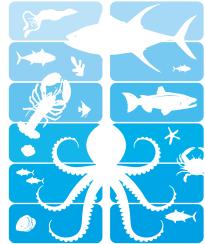
## Facilities should include:

Adequate means for hygienically washing and drying hands.



Toilet facilities that encourage personal hygiene must be clean and enable the correct washing of hands which requires clean running water, soap and a means to dry hands.

# PERSONAL HYGIENE AND HEALTH



Hand washing should be carried out by all personnel working in a processing area:

- at the start of fish handling activities and upon reentering a processing area;
- immediately after using the toilet.

## How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

⌚ Duration of the entire procedure: 40-60 seconds



Wet hands with water;



Apply enough soap to cover all hand surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Rinse hands with water;



Dry hands thoroughly with a single use towel;

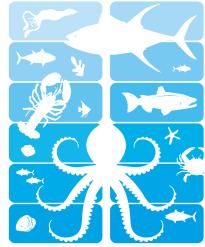


Use towel to turn off faucet;



Your hands are now safe.

# PERSONAL HYGIENE AND HEALTH

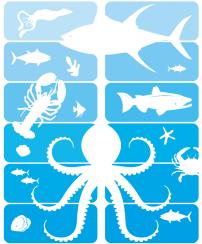


No person who is known to be suffering from, or who is a carrier of, any communicable disease or has an infected wound or open lesion should be engaged in preparation, handling or transportation.



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# PERSONAL HYGIENE AND HEALTH

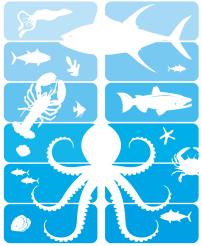


**The following should not be permitted in handling and processing areas:**

- smoking;
- spitting;
- chewing or eating;
- sneezing or coughing over unprotected food;
- use of personal effects, such as jewellery, watches or pins.



# PERSONAL HYGIENE AND HEALTH



- Where necessary, adequate and appropriate protective clothing, head coverings and footwear should be worn.
- All persons working in a facility should maintain a high degree of personal cleanliness and should take all necessary precautions to prevent contamination.

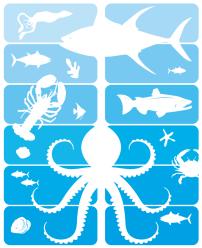


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# TRANSPORTATION

## Vehicles should be designed and constructed:

- to provide the fish or shellfish with protection against contamination, exposure to extreme temperatures and the drying effects of the sun or wind; and
- to permit the free flow of chilled air around the load when fitted with mechanical refrigeration means.

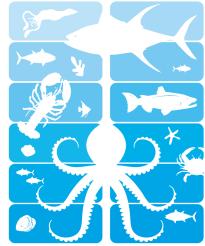


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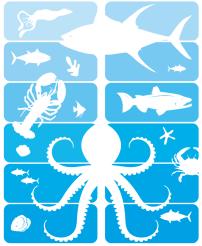
# PRODUCT TRACING AND RECALL PROCEDURES



- A system for recall of product is a necessary because no process is fail-safe.
- Product tracing, which includes lot identification, is essential to an effective recall procedure.
- Records of processing, production and distribution should be kept and retained for a period that exceeds the shelf-life of the product.

**Recalled products should be held under supervision until they are destroyed, used for purposes other than human consumption or reprocessed to ensure their safety**

# TRAINING



Managers should also arrange for adequate and periodic training of relevant employees in the facility.

**How frequent?**  
Bimonthly refreshment training



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Thank you

