

FISHERY AND AQUACULTURE

Level – II

Based on July 2022, Version- I Occupational Standard



Module Title: Applying Emergency Procedures

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Introduction to the Module

This module covers the knowledge, skills and attitude required to identify emergencies risks and hazards, take mitigation measures and assess risk and hazards impact.

In each year, millions of people are injured in the workplace. One of the most difficult tasks facing employers is to identify the hazards associated with the products and equipment used by their employees. Such careful considerations will not only provide a safe work environment for the employee, but protect the employer as well, in that costs associated with workplace injuries (loss of productivity, worker's compensation) and litigation will be minimized.

DEFINITION OF TERMS

- **A hazard** is anything (e.g. a condition, situation, practice, or behavior) that has the potential to cause harm—including injury, disease, death, environmental or property and equipment damage.
- **Emergency Operating Procedures' (EOPs):-** relates to written documentation or instructions detailing all relevant steps and activities of a process or procedure. An EOP provides employees with a reference to emergency practices, activities or tasks.
- **Emergency:** incident involving serious harm to the health and wellbeing of one or people and/or localized damage or disruption of workplace or activities. Emergencies will usually involve external resources (e.g. police, fire, ambulance).
- **Emergency management:** - is a range of measures to manage risks to communities and the environment.
- **A workplace** is any land, premises, location or thing at, upon, in or near which a worker works.
- **Occupational Safety and Health (OHS):** also commonly referred to as; Occupational safety and health (OSH), occupational health, or workplace health and safety (WHS), is a multidisciplinary field concerned with the safety, health, and welfare of people at work. It protects workers by setting standards for the workplace. They provide guidelines for working with hazardous chemicals.

- **Risk assessment:** The process of evaluating the likelihood that a potential hazard will be realized and estimating the biological, social and/or economic consequences of its realization.
- **Risk management:** The seeking of means to reduce either the likelihood or the consequences of it going wrong.
- **Risk communication:** The process by which stakeholders are consulted, information and opinions gathered and risk analysis results and management measures communicated.
- **Employee:** means any person who is employed by or works for an employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of any employer or any other person.
- **Employer:** means any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him.
- **Hazard Identification** A stage in the Risk Assessment process where potential hazards are identified and recorded.
- **Hazard Analysis** A process by which the hazards facing a particular community, region or country are analyzed and assessed in terms of the threat/risk which they pose.
- **Evacuation** The process whereby people are directed away from an area where there is danger, whether immediate or anticipated.
- **Emergency Response** The short term measures taken to respond to situations which have occurred.
- **Casualty** Any person killed or injured during the event.
- A **workplace emergency** is an unforeseen situation that threatens your employees, customers, or the public; disrupts or shuts down your operations; or causes physical or environmental damage.

LG # 15

LO # 1- Identify emergencies risks

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Allocation of labor and financial resources
- Contingency plans and loss minimization strategies
- Type of risks and hazards
- Risk and hazard Presentation mechanisms
- Monitoring equipment storage
- Select personal protective equipment (PPE)

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Allocate labor and financial resources
- plan Contingency and loss minimization strategies
- Type of risks and hazards
- Risk and hazard Presentation mechanisms
- Monitor equipment storage
- Select personal protective equipment (PPE)

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet-1

1.1 Allocation of labor and financial resources

Fisheries management is a dynamic resource allocation process where ecological, economic and institutional resources of a fisheries exploitation system are distributed with value to the society as the overall goal.

The objective of fisheries management

Some of the most commonly declared objectives of fisheries management are:

- (i) Resource conservation;
- (ii) Food production;
- (iii) Generation of economic wealth;
- (iv) Generation of reasonable income for fishers;
- (v) Maintaining employment for fishers; and
- (vi) Maintaining the viability of fishing communities

Fisheries management aims to achieve the optimal and sustainable utilization of the fishery resource for the benefit of humankind whilst safeguarding the ecosystem. Modern fisheries management is based on scientific information that is used to develop the rules under which the fisheries operate.

Importance of management

The role of a manager is to provide common guidance and direction to the individual efforts for the fulfillment of organizational goals.

Increasing the efficiency: Management helps in increasing the efficiency of the business by increasing productivity through efficient **planning, organizing, controlling and directing**.

The principle behind community managed fisheries is hand over of the management of fisheries resources to community groups and they will manage the resources sustainably and equitably.

The benefits of this approach are obvious - it is pro-poor, equitable and sustainable.

- **Management Practices of fish farming**

- ✓ Ownership and usage of fishing nets
- ✓ Treatment of nets post harvesting
- ✓ Pond types and using appropriate methods
- ✓ Sharing of water source
- ✓ Flow of water monitoring controlling
- ✓ Fertilization of ponds
- ✓ Disposal of fish waste after on-farm slaughtering

- Problems that causes scarcity of fishery resources is includes:-

- ✓ The lack of availability of good-quality seed (fish seed).
- ✓ Destructive fishing. Siltation and pollution.
- ✓ Policy issues including the need for strong fisheries regulation and enforcement.
- ✓ Overfishing: This term refers to the practice of catching fish faster than they are able to reproduce.
- ✓ Damage to the ocean floor.
- ✓ Use of destructive and/or unsustainable fishing gear and practices;
- ✓ Pollution from coastal residents and small fishing vessels;
- ✓ Habitat destruction and pollution due to fish and
- ✓ Shrimp farming and Illegal fishing.

Possible solutions to challenges faced by the fishing industry management

- ✓ Ban Fishing Subsidies
- ✓ Adopt Rights-Based Fishery Management
- ✓ Apply Regulations on Fishing Nets
- ✓ Protect Essential Predator Species
- ✓ Increase Marine Protected Areas and Enhance Controls
- ✓ Require Traceability Standards
- ✓ Impose A Ban on Fishing in International Waters
- ✓ Reform, subsidies, and declaring certain areas of the sea off-limits to non-sustainable fishing

1.2. Contingency plans and loss minimization strategies

1.2.1. Contingency Planning

In the event of a listed disease outbreak it is essential that an Aquaculture Production Business (APB) has a contingency plan in place. In the event of the site testing positive for a listed disease there is no government compensation for the stocks that require culling.

All equipment and materials required for the disinfection must be supplied by the APB. The contingency plan aims to identify the methods, resources and materials required in the event of a listed disease outbreak.

Table 1.1. Contingency planning details

Contingency	Details
Contact FHI (fish health inspector) if listed disease is suspected.	Communicate immediately if listed disease is suspected or fish are not responding to treatment.
Stock isolation	No stocks will be moved on, off or within the site if listed disease is suspected unless under written authorization from the FHI.
Traceability of stocks & movement	All fish movements on & off site will be recorded in fish movement records using site codes, in a format prescribed by the FHI. This information to make available to the FHI as requested.
Personnel management	Only authorized personnel to access the site if a Listed disease is either suspected or confirmed.
Farm Equipment	No farming equipment to leave the site. Vehicles to be fully disinfected if required to leave site.
Water isolation	Detail where & how the water entering the site will be isolated/ stopped.
Site drainage	Detail how holding units will be drained if required. Include where the water will discharge.
Fish Disposal	Add details of the licensed category 2 waste removal company to be used in the event of listed disease occurrence capable of disposing the capacity of farm site.
Silt removal & disposal (if applicable)	Detail how sediment will be removed and where it will be dispersed or disposed of (All sediment is mixed with lime).
Pump/ equipment	Add contact details of pump suppliers in the local area

suppliers	
Disinfectant suppliers	Add contact details of suppliers of Calcium Hydroxide (hydrated lime) & Caustic Soda
Machinery suppliers	Identify machinery required during culling and disinfection and potential suppliers.

1.2.2 Loss minimization strategies

- Risk Limitation Measures

Once risks have been identified the APB biosecurity manager should decide on appropriate systems and procedures to control or reduce these risks. Such measures may include:

- ✓ Early identification of disease through regular stock inspections.
- ✓ Training staff to recognize clinical signs of disease and enable them to identify procedures that carry a risk of introducing or spreading disease.
- ✓ Ensure that fish husbandry is suitable for the species being held or cultivated.
- ✓ Limit APB access to authorized staff or approved visitors.
- ✓ Provide advice on biosecurity to visitors at fish farm sites and anglers at fishing lakes.
- ✓ Identify and set up zones within your APB, e.g. hatchery, Fishery Lake, packing and processing, parking, storage.
- ✓ Restrict access to these zones.
- ✓ Provide zone-specific protective clothing. Consider using colour-coded boots/overalls for particular zones.
- ✓ The use of suitable disinfectants and disinfection procedures for personal protective equipment and other equipment.
- ✓ Introduce disinfection protocols for site visitors (including delivery vehicles).

Monitoring the Plan

Once procedures and measures have been implemented it is essential to maintain a clear recording system for results of checks made and actions taken. Accurate recording will aid the biosecurity manager to make informed decisions and take appropriate actions when a disease or breach of biosecurity occurs. A comprehensive log or diary can be used to demonstrate to interested parties (customers, senior management, auditors, quality management and inspection

agencies) that a biosecurity measures plan is in operation. Examples of information to be recorded in the log are listed below and a template is included in this document.

- **Stock Health Inspections**

- ✓ Routine inspection of stock should be an essential activity on a fish farm or fish holding unit
- ✓ Keeping an inspection log is highly recommended. This should record numbers of sick and dead fish in the holding units, as well as other significant details relating to the health of the fish, such as feeding behavior and water quality parameters
- ✓ Establish a formal chain of reporting so that the biosecurity manager is quickly informed of any potential problems

- **Visitor Details**

- ✓ Keep a record of all visitors to the APB
- ✓ Ensure visitors are aware of the biosecurity measures that apply to them

- **Disinfection Procedures**

- ✓ Record dates of disinfectant solution replacements.
- ✓ Disinfectant solutions need to be replaced before they lose efficacy

- **Other Useful Bio security Information to be recorded**

- ✓ Movements on and off site: a condition of authorization requires records to be kept for movements of fish on and off an APB.
- ✓ Movements within the site: apart from the basic on/off movements, it may be appropriate to keep more detailed records of how fish batches may have been mixed and moved within a site.
- ✓ Maintaining treatment records is a requirement under the Veterinary Medicines Regulations.
- ✓ Details of significant weather conditions, e.g. electrical storms or flooding
- ✓ Details of water quality parameters, e.g. Dissolved Oxygen and water temperature.

1.3. Type of risks and hazards

Hazards in the Workplace

There is no substitute for caution and common sense. A safe job is no accident; it takes work to make the job safe. Each person working must do what it takes to keep the job safe. Any type of job- whether industrial or manual, has a number of potential safety hazards. These hazards need not result in anyone being injured.

Learning to work safely with these hazards is as important as learning to be a skilled worker. You must approach new jobs with your safety in mind. Your safety is your own responsibility, and you must take that responsibility. Some hazards will create an injury and illness right away. Other hazards may not cause an injury or illness until much later in life. For this reason, workers should take all hazards seriously, even if they do not immediately experience problems. A hazard is something that has the potential to cause harm. A risk is the likelihood that the hazard will actually cause harm under prevailing conditions.

Environmental Hazards

1. Physical Hazards.

Hazards due to the transfer of energy between an object and a worker includes:-

- Excessive Noise
- Inadequate Illumination
- Extreme Temperature
- Extreme Pressure
- Vibration
- Cluttered Area
- Radiation
- Inadequate Ventilation
- Ignorance or carelessness of the worker



Figure 1.1. Cluttered area

2. Chemical Hazard.

Hazards arise from inhaling chemical agents in the form of vapors, gases, dusts, fumes, mists, or by skin contact with these materials.

- Mists- Fine particles of a liquid float in air
- Gases- Substances in gaseous state but are always airborne at room temperature.
- Vapors- Results when substances that are liquids at room temperature evaporate.

- Dusts- Solid harmful substances are ground, cut or crushed by mechanical actions.
- Fumes- Gas is condensed in air, chemically changed and becomes fine solid particles which float in air.



Figure 1. 2. Chemical agents

Four Possible Routes of Entry of Chemical Hazards

- I. Inhalation. Breathing in toxics is the most common and dangerous route.
- II. Ingestion. Toxics enter through the gastrointestinal tract.
- III. Absorption. Toxics pass through skin into the bloodstream.
- IV. Injection. Toxics may be injected into the body (needles, etc.)- the least common, yet most direct route of entry

3. Biological Hazards.

Hazards are caused by living organisms which include insects, molds, fungi, viruses, and bacterial contamination; from defects in sanitation and housekeeping procedures, such as in the provision of potable water, removal of industrial waste and sewage, food handling and personal cleanliness.



Figure 1.3. Biological Hazards

Agents of Biological Hazards

- Bacteria – simple, one-celled organisms that may or may not be harmful.
- Viruses – organisms that depend on a host cell for development or reproduction.
- Fungi – may be small or large parasitic organisms growing in a living or dead plant animal matter.
- Rickettsia – rod-shaped microorganisms that are smaller than bacteria and depend on a host for development or reproduction. Microorganisms transmitted by fleas, ticks, and lice.

4. Ergonomic Hazards.

Hazards are commonly seen in the workplaces which are improperly designed tools or work areas, improper lifting or reaching, poor visual conditions or repeated motions in an awkward position that may be responsible for fatigue, stress and strain and may lead to accidents in the occupational environment.

Effects of Ergonomic Hazards

- low productivity
- high rate of errors
- material wastage and equipment

Health Problems caused by Ergonomics

- | | |
|-----------------------------|----------------------------|
| i. musculoskeletal problems | iii. visual problems |
| ii. vascular problems | iv. hearing problems |
| v. skin problem | vi. psychological problems |



Figure 1.4. Ergonomic Hazards

1.4. Risk and hazard Presentation mechanisms

There are many hazards involved in a workplace. In order to assess and manage any potential risks you should carry out a risk assessment.

For example:

- Risks caused by workplace equipment - cutting equipment, forklift trucks, equipment using heat or bright light. Your risk assessment needs to assess the likelihood of such hazards occurring. Look at risks which occur not just during the normal operation of the equipment but also during installation, maintenance, repairs, breakdowns and servicing.
- Risks requiring the use of personal protective equipment.
- Risks from computer workstations - physical layout, job being done, posture, rest breaks etc.
- Risks likely to cause upper limb disorders (ULDs).
- Risks when working at height - falls from height, falling objects.
- Risks of confined spaces - under the Confined spaces Regulations, you must carry out a risk assessment; assess the level of risk posed and decide whether you need to take steps to manage these risks, including putting emergency arrangements in place.

When you identify a problem, you must take steps to minimize the risk to employees. For example:

- ensure the correct equipment is used for the job
- provide personal protective equipment for employees
- plan any work to minimize risks identified
- use appropriate warning signs
- provide appropriate training and guidelines to employees
- maintain and check equipment regularly

1.5. Monitoring equipment storage

Storage monitoring offers a solution for evaluating storage infrastructure in real time. An effective storage monitoring solution allows administrators to monitor, diagnose, and repair issues that arise.

Storage performance monitoring tools provide notifications and alerting when a slowdown happens, and are capable of tracking performance metrics across all storage arrays to assist with monitoring and diagnosis.

Storage monitoring can help evaluate:

- Storage capacity needs to ensure adequate resources for optimal performance.
- The health and performance of device ports, LUNs (logic unit numbers), controllers, physical disks and disk groups.
- The density of I/O (input/output) per second traffic on disk groups.
- Slowdowns occurring on physical disks during read/write actions.
- If the disk array has a queue of requests waiting processing.

Materials stored and used on fish processing sites have the potential to impact human health and the environment.

The most significant of these materials are likely to be:

- Caustic soda
- Bleaches and cleaning fluids;
- Oils and greases;
- Fuels (particularly in instances where transportation fleets are based at the facility).

You must ensure work equipment is safe under the provision and use of work equipment regulation. In particular equipment must be:

- suitable for the job it's being used for
- maintained to keep it safe at all times
- inspected at suitable intervals if wear and tear might compromise safety
- inspected before first use if the equipment's safety depends on installation conditions
- assessed for levels of noise and vibration transmitted to operators and drivers and others

1.6. Select personal protective equipment

Proper use of personal protective equipment

The primary approach in any safety effort is to maintain or change the physical environment so that accidents cannot occur. However, it is necessary for economic reasons or in temporary or

changing conditions to safeguard personnel by equipping them individually with specialized personal protective equipment (PPE).

Although the use of PPE is an important consideration in the development of a safety and health program, it should not be used permanently instead of engineering out or otherwise maintaining a safe and healthy work environment. In general, government regulations list the use of PPE as a case of last resort. Analyze accident situations to determine whether PPE can prevent a recurrence. When work conditions cannot be made safer, clearly PPE is necessary.

Proper training

To obtain the worker's complete compliance with the requirements to wear the PPE, the following factors must be considered:

1. The extent to which the personnel who must wear the equipment understand its necessity
2. The ease and comfort with which it can be worn with a minimum of interference with normal procedures
3. The available economic, social, and disciplinary sanctions which can be used to influence the attitudes of the workers

Personal protective equipment

PPE or Personal Protective Equipment is any clothing, equipment or substance designed to protect a person from risks of injury or illness.







PPE may include:






- Ear muffs and ear plugs
- Respirators
- Eye and face protection such as goggles
- Safety helmets and sun hats
- Gloves and safety boots
- Clothing, such as aprons, uniforms, vests, life jackets



Figure 1.5. How to wear PPE

Table 1.2. Function of some PPEs

No.	PPE type	Function	Figure/image
1.	Ear Protector	<ul style="list-style-type: none"> To protect the ears from too much noise in the workplace. The designed is to fully cover the ears 	
2.	Earplugs	<ul style="list-style-type: none"> Earplugs are used to protect the ears from too much noise in the workplace. 	
3.	Face Shield	<ul style="list-style-type: none"> Best for general protection of the face. Commonly worn under a welding helmet. 	
4.	Safety Goggles	<ul style="list-style-type: none"> To protect the eyes from dust and particles 	
5.	Respirators	<ul style="list-style-type: none"> Respirators used to filter dust and other particles from the air (Lung Protection). 	
6.	Gloves	<ul style="list-style-type: none"> It is the most common type of PPE used. It can to protect the hands from heat, spatter, dirt or radiations. 	

7.	Safety Shoes	<ul style="list-style-type: none"> Are made of leather designed purposively to protect the toe from falling objects. 	
8.	Leather Apron	<ul style="list-style-type: none"> Is made of chrome leather and provides a welder with complete protection from sparks and hot metal from his chest to mid-calf. 	
9.	Helmet	<ul style="list-style-type: none"> Safety hats (head Protection) should be kept free of abrasions, scrapes and nicks and should not be deliberately dropped, thrown or otherwise abused because they will lose their protective qualities. 	
10.	Overalls	<ul style="list-style-type: none"> Use overalls to protect the body from damage due to hazardous chemicals. 	
11.	Life jacket	<ul style="list-style-type: none"> Help to prevent drowning 	

BCF
Life Jackets (PFDs) For Sale ...

Self-check - 1	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test I: Short Answer Questions

1. List important materials necessary during apply emergency works.
2. Write types of hazards in short.
3. List methods of risk minimization strategies

LG #16 LO#2-Take risk and hazards mitigation measures.

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Prioritizing risks and hazards
- Testing Contingency plans and loss minimization strategies
- Risk mitigation measures
- Handling of Stock and asset
- Occupational health and safety requirements.
- Way of communication

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Prioritize risks and hazards
- Test Contingency plans and loss minimization strategies
- Risk mitigation measures
- Handle of Stock and asset
- Occupational health and safety requirements.
- Way of communication

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
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Information Sheet- 2

2.1. Prioritizing risks and hazards

A hazard is what exists at an incident; a risk is the result of actions by personnel at the incident. Hazards are things in the environment that can cause harm to people or equipment; risks are the chances that people take in relationship to hazards. A hazard is what exists at an incident site. A risk is the result of actions by personnel at the incident site. Hazards are things in the environment that can cause harm to people or equipment. Risks are the chances that people take in relationship to hazards.

- The Safety Officer's role is to:
 - ✓ Identify and prevent unsafe acts by checking, testing, and observing for safe operations
 - ✓ Ensure that safe procedures exist, create specific safety measures, and monitor to ensure that safe procedures are being followed
- Three steps in risk management:-
 - ✓ Identify hazards and risks
 - ✓ Prioritize hazards and risks
 - ✓ Mitigate hazards and risks to reduce the potential for harm to people and property

2.1.1. Risk Management Concepts

All projects have hazards connected with them. Even clerical work has hazards (for example, the financial impact of documentation errors, budgetary impacts). Identified hazards can be controlled or mitigated. Thinking about hazards is more than academic; it must lead to action to help keep people safe. It is not possible to identify and control all hazards because there is never enough time or resources. The Industrial Manufacturing Technician (IMT's) job is to address the most important hazards. This is why prioritization is key:-

- The incident must balance the risks and the benefits of taking them
- Some hazards are worse than others
- Priority for monitoring and mitigation should be given to the “killer” items

The project must balance the risks and the benefits. Ultimately, this is the call of the Incident

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Commander. A risk may be accepted when the benefits outweigh the potential costs. Risk a lot to save lives, risk a little to save property, and risk nothing when there is no benefit. Sometimes, doing nothing is the best option (for example, some hazardous materials operations are not worth undertaking). “Killer” items are the most important priorities.



Figure 2.1. Priority Flood Operations

Unimproved helistops are an example of a “killer” item that is a hazard that the Safety Officer can and should mitigate.

- Sometimes this becomes a necessary risk, or a risk worth taking
- Take action to make an unsafe operation as safe as possible



Figure 2.2. Priority Flood Operations



Figure 2.3. Priority Flood Operations

Operations undertaken in a confined space are always a serious risk that must be monitored closely.

2.1.2. Hazard and Risk Prioritization

Several hazard and risk prioritization methods are presented here, but a Safety Officer may use any logical process. There are as many hazard and risk prioritization methods that the Safety Officer can use. This course cannot teach exactly how to prioritize hazards and risks or give a checklist for every case. The Safety Officer does not have to choose use any of these methods; just use some logical process so that you can explain your decision to personnel, the Incident Commander, or after-action investigators. You can use multiple processes in the course of an incident or even combine them.

- Most hazard analysis procedures look at the same three elements:-
 - ✓ Probability
 - ✓ Magnitude
 - ✓ Preventability

If you walk past a hazard, you have accepted it! You may not have time to do anything about it, but make the decision to do something else more pressing, not a decision not to act.

- Methods for prioritizing hazards:-
 - ✓ The Priority Cross
 - ✓ The Priority Cube
 - ✓ The Priority Ladder
 - ✓ Risk Assessment Code (RAC)
 - ✓ Training, knowledge, experience
 - ✓ Training, knowledge, and experience
 - ✓ Any logical method can be used.

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Table 2.1. The Priority Cross

		Great Loss Potential?	
		YES	NO
Preventable?	YES	1	2
	NO	3	4

1 = highest priority 4 = lowest priority

With regard to prioritizing, we will use a flood as an example:

Increased traffic as people evacuate:

- This could potentially be a great loss, but this is unlikely; so “no” moves you to the right side of the cross
- This is pretty easily monitored and prevented by using defined routes for evacuation and responders, a traffic plan, and law enforcement direction; so “yes” moves you to the top line

This item is priority level 2.

Flooded roadways:

- This could potentially be a great loss for responders who try to drive through water
- The loss is easily prevented by monitoring and using roadblocks and defined routes

A great loss that is easily prevented makes this item priority level 1.

Chemical fire:

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- This is potentially a great loss
- Hazardous materials operations can be monitored but not really mitigated

This item is priority level 3.

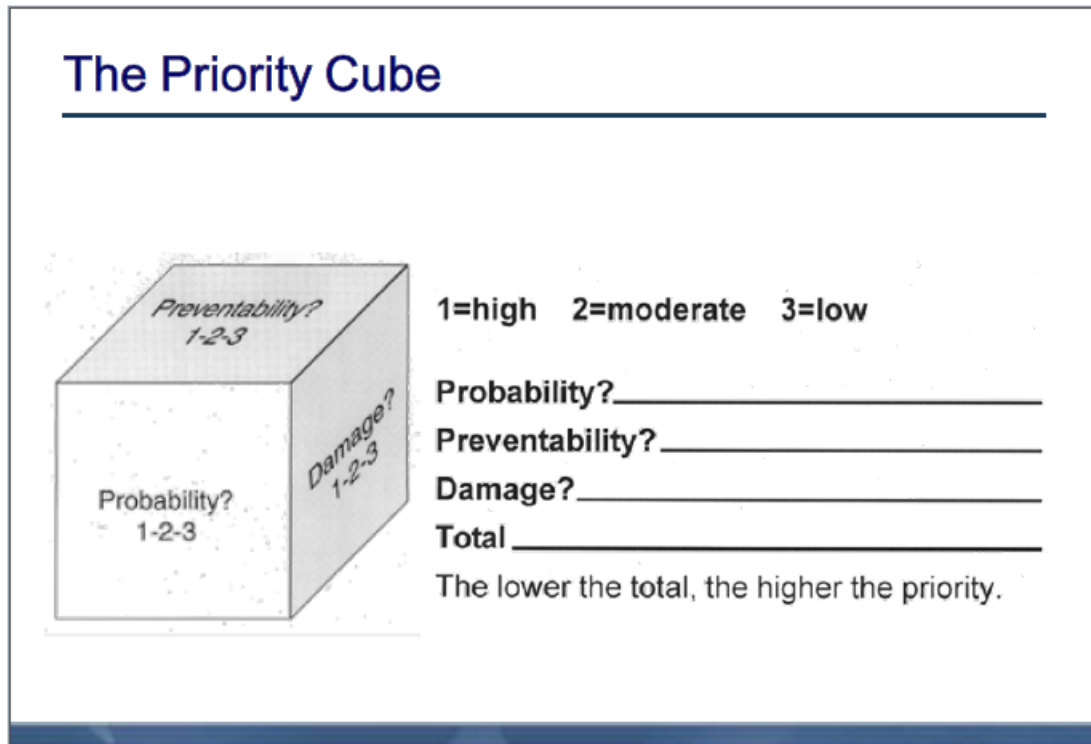


Figure 2.4. Priority Flood Operations

Using a flood as an example:

Increased traffic as people evacuate:

- Probability: High, 1
- Preventability (easy to mitigate; can control traffic even if you can't stop the flood): High, 1
- Damage: Low, 3

Total score: 5, moderate priority

Flooded roadways:

- Probability: High, 1
- Preventability (can block the roads even if you can't stop the flood): High, 1
- Damage (major problem if responders try to cross flooded roads): High, 1

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Total score: 3, high priority

Chemical fire:

- Probability (during a flood): Low, 3
- Preventability (you may or may not be able to predict this, so this may not be possible): 2, moderate
- Damage: Extremely high, 1

Total score: 6, so this is your lowest priority of the three. Time is better spent mitigating likely and preventable hazards than worrying about unlikely hazards that you can't do much to make safe.

Table 2.2. The priority ladder

The Priority Ladder				
High Risk Operations	Lacking in Training and Experience?	Fatigue?	Great Loss Potential	Priority Ranking
YES NO	YES NO	YES NO	YES NO	
X Start Here				1
				2
				3
				4
				5

Using a flood as an example:

The safety officer needs to know the training, experience, and level of rest (or fatigue) of the personnel involved in order to rank priorities. To demonstrate the Priority Ladder, we will walk through the same flood example. Assume that you are dealing with experienced law enforcement personnel who start with adequate rest, but will become fatigued as the incident wears on (and as

you move through the three sample hazards).

Increased traffic as people evacuates (any operation regarding the evacuation of civilians):

- Is it high risk?
✓ No
- Personnel lacking in training or experience?
✓ Law enforcement personnel are probably used to working near people and would be executing the evacuation, so they probably are trained
- Fatigued?
✓ Not at the outset of the incident
- Great loss potential?
✓ No

Result: Line 5, lowest priority

Flooded roads (crossing flooded roads):

- High risk?
✓ Yes, can lose control of vehicle
- Lacking in training or experience?
✓ Yes, no one drives through water often
- Fatigued?
✓ Not yet
- Great loss potential?
✓ Yes

Result: Line 2, relatively high priority

Chemical fire:

- High risk?
✓ Always
- Trained and experienced?
✓ Probably not for law enforcement because HAZMAT is usually a fire department responsibility (however, they would be experienced with regard to site control)
- Fatigued?
✓ Yes, by this point using our assumptions
- Great loss potential?
✓ Yes

Result: Line 1, highest priority

Table 2.3. Risk assessment code

Risk Assessment Code					
Hazard Severity		Mishap Probability →			
		A	B	C	D
<u>I</u> = Catastrophic	I	1	1	2	3
<u>II</u> = Critical	II	1	2	3	4
<u>III</u> = Marginal	III	2	3	4	5
<u>IV</u> = Negligible	IV	3	4	5	5

Results:
 1 = Critical 2 = Serious 3 = Moderate 4 = Minor 5 = Negligible

A = likely to occur immediately or within a short period
 B = probably will occur in time
 C = may occur in time
 D = unlikely to occur

Using a flood as an example:

Increased traffic as people evacuate:

- Mishap probability is moderate
- ✓ While increased traffic is likely, it won't always result in an accident; however it may occur in time: C
- Hazard severity is marginal
- ✓ III (it could be negligible, IV)

Result: Column C and row III meet in a cell with a value of 4, minor priority (not a big deal with regard to incident safety).

Flooded roadways:

- An accident involving flooded roadways isn't guaranteed; however, it probably will occur in time: B
- Hazard severity is critical, II, because serious damage can occur, but it is not catastrophic

Result: The intersection is 2, serious priority.

Chemical fire:

- Mishap probability is unlikely to occur, D, because chemical fires can happen during a flood but are not expected to occur
- Hazard severity is catastrophic: I

Result: The intersection is 3, moderate priority.

Chemical fire:

- Mishap probability is unlikely to occur, D, because chemical fires can happen during a flood but are not expected to occur
- Hazard severity is catastrophic: I

Result: The intersection is 3, moderate priority.

Table 2.4. Methods for prioritizing hazards summary

Hazard	Method			
	<u>Cross</u>	<u>Cube</u>	<u>Ladder</u>	<u>RAC</u>
Scale (highest to lowest priority)	1 to 4	3 to 9	1 to 5	1 to 5
Traffic	2	5	5	4
Flooded Road	1	3	2	2
Chemical Fire	3	6	1	3

Different methods will result in different solutions. You need to understand the biases of the method that you choose and be prepared for the results. Use whatever method makes the most sense to you.

The Safety Officer can change the methods for different situations, for example:

- Use the Priority Ladder or Priority Cross for a quick assessment, but the RAC or Priority Cube for pre-planning
- Use the Priority Ladder when you have specific factors in mind
- Use the Priority Cross or RAC when you are determining which hazards and risks

should be monitored closely, but are not dealing with preventability

- Use the Priority Cross when you can mitigate some, but not all, of the hazards and risks, and need to decide where to focus your resources

Training, Knowledge, Experience

This is the simplest method for prioritizing hazards because it means you have internalized the process and are able to do it instinctively. The Safety Officer should not rely on any particular method as a crutch, but should learn from his or her experiences and rely on training, knowledge, and experience.

2.2. Testing Contingency plans and loss minimization strategies

Workplaces need a plan for emergencies that can have a wider impact. Special procedures are needed for emergencies such as serious injuries, explosion, flood, poisoning, electrocution, fire, release of radioactivity and chemical spills.

Quick and effective action may help to ease the situation and reduce the consequences. However, in emergencies people are more likely to respond reliably if they:

- are well trained and competent
- take part in regular and realistic practice
- have clearly agreed, recorded and rehearsed plans, actions and responsibilities

Write an emergency plan if a major incident at your workplace could involve risks to the public, rescuing employees or co-ordinating emergency services.

Where you share your workplace with another employer you should consider whether your emergency plans and procedures should be co-ordinated.

Points to include in emergency procedures

- Consider what might happen and how the alarm will be raised. Don't forget night and shift working, weekends and times when the premises are closed, eg holidays
- Plan what to do, including how to call the emergency services. Help them by clearly marking your premises from the road. Consider drawing up a simple plan showing the location of hazardous items

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- If you have 25 tonnes or more of dangerous substances, you must notify the fire and rescue service and put up warning signs
- Decide where to go to reach a place of safety or to get rescue equipment. You must provide suitable forms of emergency lighting
- You must make sure there are enough emergency exits for everyone to escape quickly, and keep emergency doors and escape routes unobstructed and clearly marked
- Nominate competent people to take control (a competent person is someone with the necessary skills, knowledge and experience to manage health and safety)
- Decide which other key people you need, such as a nominated incident controller, someone who is able to provide technical and other site-specific information if necessary, or first-aiders
- Plan essential actions such as emergency plant shutdown, isolation or making processes safe. Clearly identify important items like shut-off valves and electrical isolators etc
- You must train everyone in emergency procedures. Don't forget the needs of people with disabilities and vulnerable workers
- Work should not resume after an emergency if a serious danger remains. If you have any doubts ask for assistance from the emergency services.

2.3. Risk mitigation measures

The Incident Management Team must take prompt action to correct hazards and implement protective measures. Most corrective actions will fall into one of the following categories:

- Design Out: Change the design of equipment to eliminate the hazard (for example, add better sound mufflers to minimize noise damage), or change a process so that you can work around the hazard
- Safety Devices: Personal protective equipment, guard, etc.
- Warning Devices: Signage, alarm, traffic lighting, traffic cones, etc.
- Special Procedures: Have a backer when moving equipment backwards
- Barrier Tape: Keeps responders out of unsafe areas

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Ways to Prevent an Accident

Along with mitigation, there are many other ways to prevent an accident.

- Direct interventions include setting up guidelines and policies around the incident, such as a Traffic Plan. The Ground Support Unit can set up one-way roads, incident speed limit signs, and traffic controllers at key points to ensure safety.
- Indirection interventions include bulletin boards, briefings, Safety Messages, and personal contacts. Preventing an accident may be as simple as warning people about a hazard. All personnel should be informed of hazards and mitigation efforts at the incident site.



Figure 2.4. Accident event

- Barrier tape is one of the most effective methods for keeping responders out of unsafe areas.
- Identify the Safety Officer. If incident personnel see the Safety Officer, they may be more likely to bring information to him or her.
- **Structure Fire**
 - ✓ What hazards and risks do you see here?
 - ✓ How could they be mitigated?



Figure 2.4. Fire emergency

The Safety Officer may find that one particular part of an operation has more risks and hazards than can be mitigated. The Safety Officer should ask the Operations Section if there is another way to accomplish the operation. If corrective actions will not reduce the hazard, two other options remain:

- Reduce exposure:
 - ✓ Use smaller crews to subject fewer responders to a risk or hazard
 - ✓ Limit the amount of time that responders spend in operations (for example, when working with hazardous materials or in extreme temperatures)
 - ✓ Increase shielding and protection to the highest levels
 - ✓ Use the most experienced, best trained, and best equipped crews

Reduce Exposure

For example:

Use proper Personal Protective Equipment



Figure 2.5. Methods of reducing emergency exposure

- Avoidance:
 - ✓ Find something else to do or another way to do the job
 - ✓ There are times when it's OK to say "NO" to an assignment

There are times when it's OK to say "No" to an assignment. A responder who takes an action that he or she feels is unsafe is a safety risk.

Ultimately, everyone is their own Safety Officer and cannot be forced to undertake an action that they believe to be unsafe. When a responder believes that the operation will result in certain harm, he or she has the right to refuse the risk.

The job of responders is to accept risk and operate where their safety is not guaranteed. There are times when a responder will take a risk to complete the operation, for example, to save lives. The right to refuse a risk does not mean that the responder must refuse a risk.

The Safety Officer (along with the individual's Supervisor) is responsible for listening to the explanation from anyone who refuses a risk. There are several possible outcomes:

- The operation may simply be unsafe and should be stopped

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- A simple modification could satisfy the concerns of the individual
- There may be a better way to accomplish the objective
- A different responder may be better trained for the operation
- The individual may not understand the reason that the Supervisor accepted the risk and may agree to the risk if he or she is given more information

Supervisors need to be willing to listen to the concerns of responders and to their suggested alternatives. The responders who take the risks may be the most knowledgeable about how safe an action really is.

2.4. Handling of Stock and asset

Good fish stock handling refers to the practices that are used by the fisher-folk after receiving their fish products at the fishing villages/camps and landing site. The fisher-folk wash their fish product to remove mud, sand and debris. In addition, the fisher-folk sorted/graded according to species or sizes, prior to fish processing. Hence fish processing will determine the quality of the final fish products. The recommended good practices of fish handling during fishing and processing are as follow:

- Control the temperature of the fish
- Avoid mishandling of fish
- Cool the fish as quick as possible by any convenient methods
- Fish caught at different time, have to be kept apart since they will be at different stage of spoilage
- Small fishes have to be kept separate from large fishes, as they tend to spoil more rapidly than the latter
- Soft-bellied fishes are to be kept separately, if the guts are being removed or the belly has burst, the body cavity has to be washed to remove any traces of the gut.
- The container used for the transportation of fish should be clean after every use.
- Fish handlers at every processing stage should learn about and adopt good hygiene practices.

Assets are resources that a company uses to run a business, manufacture items or otherwise create value. Assets include the equipment, fixtures and furniture that an organization owns or leases and intellectual property like patents.

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Asset management is responsible for overseeing items a company uses to operate. Asset management tracks equipment, vehicles, computers, devices, fixtures, furniture and essential documents.

Asset management traces the complete life cycle of an asset, from when a company buys it until its disposal. Each asset has a unique ID and an owner who maintains it.

- The benefits of asset management include:
 - ✓ Reducing duplicate purchases
 - ✓ Reducing the frequency of asset audits
 - ✓ Increasing awareness of lost items
 - ✓ Improving tracking of important documents for legal or regulatory compliance
 - ✓ Enhancing quality control and quality assurance (QA)
 - ✓ Reducing costs through regular repair and maintenance checks
 - ✓ Minimizing equipment downtime because the system prompts users to order parts before scheduled maintenance
 - ✓ Reduces labor costs because employees always have the resources they need, when they need them
 - ✓ Limits downtime

2.5. Occupational health and safety requirements.

Occupational health and safety is the discipline concerned with preserving and protecting human resources in the workplace. Occupational health and safety is a multi-disciplinary field, covering issues related to law, medicine, technology, economics and industry specific concerns. The core occupational health and safety principles put forth by the ILO are as follows:

- All workers have rights. Workers, as well as employees and government, must ensure that these rights are protected and foster decent conditions of labour. As the International Labour Conference stated in 1984:
 - ✓ Work should take place in a safe healthy environment;
 - ✓ Conditions of work should be consistent with workers' well-being and human dignity;
 - ✓ Work should offer real possibilities for personal achievement, self-fulfillment and service society.
- Occupational health and safety policies must be established. Such policies must be implemented at both the governmental and enterprise levels. They must be effectively communicated to all parties concerned.

- There is a need for consultation with the social partners (that is, employers and workers) and other stakeholders. This should be done during the formulation, implementation and review of such policies.
- Prevention and protection must be the aim of occupational health and safety programmes and policies. Efforts must be focused on primary prevention at the workplace level. Workplaces and working environment should be planned and designed to be safe and healthy.
- Information is vital for the development and implementation of effective programmes and policies. The collection and dissemination of accurate information on hazards and hazardous materials, surveillance of workplaces, monitoring of compliance with policies and good practices, and other related activities are central to the establishment and the enforcement of effective policies.
- Health promotion is a central element of occupational health practice. Efforts must be made to enhance workers' physical, mental and social well-being.
- Occupational health services covering all workers should be established. Ideally all workers in all categories of economic activity should have access to such services, which aim to protect and promote workers' health and improve working conditions.
- Compensation, rehabilitation and curative services must be made available to workers who suffer occupational injuries, accidents and work related diseases. Action must be taken to minimize the consequences of occupational hazards.
- Education and training are vital components of safe, healthy working environments. Workers and employers must be made aware of the importance and the means of establishing safe working procedures. Trainers must be trained in areas of special relevance to different industries, which have specific OHS concerns.
- Workers, employers and competent authorities have certain responsibilities, duties and obligations. For example, workers must follow established safety procedures; employers must provide safe workplaces and ensure access to first aid; and the competent authorities must devise, communicate and periodically review and update occupational health and safety policies.
- Policies must be enforced. A system of inspection must be in place to secure compliance with occupational health and safety and other labour legislation.

In general Occupational health and safety requirements include:-

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- Codes of practice
- Rules and Regulations
- Guidance notes which may apply in a jurisdiction
- Enterprise-specific occupational health and safety procedures,
- Policies or standards

2.6. Way of communication

Emergency plans should be communicated to anyone within your building as well as local authorities. Sharing plans in advance will help ensure smooth execution in an emergency situation. Your security team will most likely have a relationship with local emergency services and can serve as a liaison.

The importance of mission-critical communication systems speaks for itself. When faced with risky situations such as fire, EMS and emergency response, traditional telecommunication networks may end up, an auxiliary two-way radio communication system can play its role in emergency communication security, not only providing voice transmission, but also transmitting mission-critical information such as video and GPS positioning, as well as supporting command and dispatch management, thus enhancing the efficiency of emergency management and personal safety.

Tools and methods for emergency communications include:

- In-person events—briefings and public meetings.
- Print media
- newspapers and magazines.
- Broadcast media
- television and radio.

Text message services like Twitter, automatic telephone services like "Reverse 911," and the common town siren systems that are used to warn people about tornadoes and other problems, are all examples of emergency notification systems.

An emergency communications plan (EC plan) is a document that provides guidelines, contact information and procedures for how information should be shared during all phases of an unexpected occurrence that requires immediate action. A strong EC plan provides step-by-step instructions for how to deal with a crisis.

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Self-Check – 2	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test II: Short Answer Questions

1. What are the three steps in risk management?
2. List five Methods for prioritizing hazards.
3. Mention three elements of hazard analysis procedures.

Operation Sheet - 2

- **Techniques of risk management:-**

- a. Materials tools, and equipment's

- ✓ All necessary PPE
- ✓ Note book

- b. Procedures

- ✓ Identify hazards and risks
- ✓ Prioritize hazards and risks
- ✓ Mitigate hazards and risks to reduce the potential for harm to people and property

LAP Test-1

Performance Test

Name..... ID.....

Date.....

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **2 hour**. The project is expected from each student to do it.

Task 1: Manage risk and hazards in work place

LG # 17

LO # 3 - Complete works

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Cleaning, repairing and storing Equipment
- Replacing Lost stock and assets
- Reporting organized document

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Clean, repair and store equipment
- Replace Lost stock and assets
- Report organized document

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet- 3

3.1. Cleaning, repairing and storing equipment

- **Cleaning**

Cleaning is the complete removal of food soil using appropriate detergent chemicals under recommended conditions. It is important that personnel involved have a working understanding of the nature of the different types of food soil and the chemistry of its removal.

Cleanliness is important in any workplace – so it is essential manufacturers make factory cleaning a fundamental part of their daily operation. However, having the best hygiene in your plant requires more than the occasional clean: you need to set up a culture of cleanliness within your business that allows for time to carry out cleaning and understanding best hygiene practice.

Ensuring the cleanliness of your factory takes time and effort, but doing so will benefit your business, your employees and your customers. Our guide covers everything you need to know about factory cleaning, including what processes you should undertake and why it's so important.



Fig 4.1. Cleaning machine

Importance of cleaning materials and equipment's

There are many reasons why having a high level of cleanliness in your factory is important. We've listed them below so you can see why investing in effective cleaning procedures is so worthwhile for your business.

- **It allows you to meet industry regulations**

Manufacturing businesses are subject to variety of regulations designed to keep employees and customers safe. There are a number of laws in place to encourage employers to undertake specific practices to meet health and safety standards – and to avoid the consequences of non-compliance in the forms of fines and court cases.

- **It increases your factory productivity**

A clean factory is a factory that allows your workforce to do their job properly. The goal of any company should be to have a factory that is well-organized, easy to use and promotes a good working environment. Workers should be able to find what they need easily and quickly, so that they are able to do their job without issue.

- **It's better for your customers**

While rules are in place to protect your workforce, there are also regulations in place for your customers. These hygiene regulations need to be met when it comes to the product you are making, so that your consumers can be assured they are buying safely.

In this regard, good factory hygiene might mean storing your materials properly and ensuring all machines are clean, so that the final product can be delivered to the consumer without any risk of contamination or harm to them. Ensuring excellent hygiene will also drive the quality of your output, allowing you to better meet customer expectations and keep them satisfied. With changing consumer demands following the coronavirus pandemic and a focus on cleanliness, this is key in the current climate.

By employing good factory cleaning practices, you can benefit your customers and continue to operate as a trusted business.

- **It keeps your production line running effectively**

Efficient factory cleaning should include the regular cleaning of your production line in its entirety: the machines within it and the materials going through it. A clean production line should eliminate the risk of malfunction and breaks within the line, so you can allow your production to continue smoothly.

- **Repairing**

Repair means responding to the breakdown of equipment and undertaking work to correct the problem in order to return the equipment to a working condition. Before equipment can be repaired, you need to be aware that there is a problem. Repairs are restoration work for when an asset breaks, gets damaged, or stops working.

Maintenance refers to routine activities and/or corrective or preventive repair done on assets to prevent damage and prolong the life expectancy.

It helps companies maintain their resources while controlling time and costs to ensure maximum efficiency of the manufacturing process, the utilities and related facilities. It is a tool that helps to secure a reliable and satisfactory quality of the production, safety for employees and protection for the environment.

The Maintenance Function of repairing includes:-

- To maintain.
- Keep in existing condition.
- Preserve, protect.
- Keep from failure or decline.



Fig 4.2. Repairing fish nets

- **Storing**

Store all tools and equipment in their designated places. Put frequently used items in conveniently accessible locations. Gather and secure electrical cords to prevent entanglement or snagging. A failure by cleaning employees to follow storage practices increases the risk to the health and safety of the cleaners as well as other parties. Improper storage can also result in costly claims and damage to property and equipment.

In order to work safely, cleaners must understand best practice when it comes to storing the equipment and materials that they use every day. Safe storage of cleaning equipment and materials will also prevent access and egress hazards to clients or the public. For instance, blocked entryways which prevent others using the location from entering or exiting.

Proper storage of cleaned equipment

- Proper Storage and Handling: Proper storage and handling of cleaned and sanitized equipment and utensils is very important to prevent recontamination prior to use.
- Cleaned and sanitized equipment and utensils must be: Stored in clean surface and Handled to minimize contamination of food contact surface.
- Proper stacking of all utensils and equipment's
- Stacking and Storing of spices, herbs and other condiments
- Storage of bottled and canned food/fish feed or other condiments
- Storage of equipment's, tools, utensils and other implements



Fig 4.3. Proper storage

Methods to store cleaning products safely

- Store the cleaning items in a clean space.
- Store the cleaning products in a well-ventilated area to prevent fumes from spreading to other areas.
- Do not store alkaline and basic chemicals near each other.

- Store items at the appropriate height for safety.

3.2. Replacing lost stock and assets

- **Stock concept in fisheries**

Use of the term fish stock usually implies that the particular population is more or less isolated from other stocks of the same species and hence self-sustaining. In a particular fishery, the fish stock may be one or several species of fish.

Depletion of fish stock was defined as a reduction, through overfishing, in the level of abundance of the exploitable segment of a stock that prevents the realization of the maximum productive capacity.

- **Addressing depletion of fishing stocks**

The best solution to the problem of declining fisheries is to rebuild overexploited stocks and ecosystems through relieving fishing pressure, improving gear selectivity and fishing exploitation patterns, protecting habitat and making a wise and generous use of protected areas and no-take zones.

- **Purpose of fish stock assessment**

A stock assessment is the process of collecting, analyzing, and reporting demographic information to determine changes in the abundance of fishery stocks in response to fishing and, to the extent possible, predict future trends of stock abundance

- **Major threats to fish stocks**

Illegal, unreported and unregulated fishing is also a major contributor to declining fish stocks and marine habitat destruction. The global consequences of overfishing have been the focus of much scrutiny in recent years by scientists, economists and policy makers and this important work continues.

- **Method to prevent loss of stock**

A stop-loss order is an order placed with a broker to buy or sell a specific stock once the stock reaches a certain price. A stop-loss is designed to limit an investor's loss on a security position.

For example, setting a stop-loss order for 10% below the price at which you bought the stock will limit your loss to 10%.

- **Methods used to conserve fish stocks**

This report therefore recommends reducing catches, limiting fishing zones and periods, tightening up technical rules relating to fishing vessels and methods, avoiding by-catches and discards, developing aquaculture, increasing checks and penalties, and promoting the training and retraining of fishermen.

- **Methods conserving fish stock by restocking**

These interventions are 'restocking', which involves releasing cultured juveniles to restore spawning biomass to levels where the fishery can once again support regular harvests, and 'stock enhancement', which involves release of cultured juveniles to overcome recruitment limitation.

- **The most important method of fish preservation**

Top quality fresh fish are essential for fish preservation. Of all flesh foods, fish is the most susceptible to tissue decomposition, development of rancidity and microbial spoilage.

The four most popular methods of fish preservation are

- Freezing,**
- Canning**
- Smoking and**
- Pickling.**

- **Some solutions to the issue of fish depletion**

- | | |
|-------------------------|--------------------------------|
| ✓ Avoid overfishing. | ✓ Limit wild fish use as feed. |
| ✓ Consider climate. | ✓ Manage pollution & disease. |
| ✓ Improve traceability. | ✓ Preserve habitats. |
| ✓ Limit by catch. | ✓ Prevent farmed fish escapes. |

3.3. Reporting organized document

Reporting of work outcome started from recording. As a fish farmer, your main objective is to earn money by selling fish at a profit. To understand why you are getting good or poor results, you will need to keep complete and accurate records of everything that goes on at your farm.

As a commercial fish farmer, your main objective is to earn money by selling fish at a profit. To understand why you are getting good or poor results, and more importantly whether or not you are making a profit, you will need to keep complete and accurate records of everything that goes on at your farm.

I. Record

Records are sets of information that have been systematically and carefully collected and appropriately stored for a specific purpose. To be able to run any economic enterprise successfully, carefully thought out and properly collected records are a must. Comprehensive record keeping will assist both in tracking farm activities and expenses and in assessing the level of investment, the motivation of the investor, and the management skills of the farmer.

II. Importance of record keeping

Maintaining good records helps you with the following:

- Tracking the activities of your enterprise
- Tracking the expenses of the enterprise
- Monitoring the performance of the enterprise
- Evaluating the performance and operations of the enterprise
- Making decisions about improving operations
- Keeping institutional memory of the enterprise

Good records will, for example:

- Be useful in projection of expected production
- Help in determining the amount of inputs required for specific ponds at various stages of fish production
- Help determine the expected harvesting time
- Determine the economic health of the enterprise



Fig 4.4. Record book

Important aquaculture parameters for record keeping

- Pond identity
- Total area under culture
- Fish species stocked
- Sources of seed
- Stocking densities and time
- Kinds, quantities, and costs of inputs
- Daily events
- Fish production in amounts and values
- Production of other farm crops and their values

III. Classification of fish farming records

Fish farming records can be classified into:

- Fish farming biological management records, e.g.:
 - ✓ Specific pond production (quantity and value), by species
 - ✓ Stocking details for each pond (species and numbers)
 - ✓ Harvest details for each pond (species, numbers, and weights)
- Financial management records such as:
 - ✓ Purchase of inputs, including quantities and costs
 - ✓ Records of input usage, e.g., feeds and labour
 - ✓ Costs of labour, including the type and duration
 - ✓ Costs of new construction or repairs
 - ✓ Salaries, both in cash and in kind
 - ✓ Sales records, including what was sold, quantities, and prices
 - ✓ Inventory of equipment
 - ✓ Costs of renting or hiring equipment, machinery, services, etc.

Self-Check – 3

Written test

Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test I: Short Answer Questions

1. Write important aquaculture parameters for record keeping?
2. List the importance of record keeping?
3. Write the function of repairing/maintenance?

Reference Materials

Books:

Fish Processing Sub-sectoral Environmental and Social Guideline August 2009

International Finance Corporation (IFC) 2007, Environment, Health & Safety Guidelines. Fish Processing, April 2007.

Scott Macdonald, 2022. Safe storage of cleaning equipment and materials, Human Focus Internation.

Silvestre, G. and D. Pauly, 1997. Management of Tropical Coastal Fisheries in Asia: an Overview of Key Challenges and Opportunities. pp. 8-25.

Web address

International Labor Organization, Safety and health of meat, poultry and fish processing workers, (access date, Jan, 23, 2023)

<http://www.ilo.org/public/english/dialogue/sector/papers/fishsafe/safety5.htm> (access date, Jan, 23, 2023)

<https://www.msema.org/wp-content/uploads/2018/10/Unit-05.pdf> (access date January 22, 2023)

<https://www.centraleyes.com/glossary/risk-prioritization/> (access date January 22, 2023).

http://www.who.int/topics/occupational_health/en/ (accesses date January 24, 2023).

<https://thepeopleindairy.org.au/preparing-for-emergencies/> (Access date 25/11/22).

<https://www.monash.edu/ohs/info-docs/ergonomics/manual-handling> (Access date 25/11/22).

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