TRAINING NOTES

MARINE ENVIRONMENT MANAGEMENT TRAINING

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What Is Environment?

The environment is something you are very familiar with. It's everything that makes up our surroundings and affects our ability to live on the earth—the air we breathe the water that covers most of the earth's surface, the plants and animals around us, and much more.

In recent years, scientists have been carefully examining the ways that people affect the environment. They have found that we are causing air pollution, deforestation, acid rain, and other problems that are dangerous both to the earth and to ourselves. These days, when you hear people talk about “the environment”, they are often referring to the overall condition of our planet, or how healthy it is.

The ocean is downstream of everything, so all of our actions, no matter where we live, effect the ocean and the marine life it holds. Those who live right on the coastline will have the most direct impact on the ocean, but even if you live far inland, there are many things you can do that will help marine life.

The environment means the surroundings, the conditions that surround us and affects us in many ways. It constitutes the A-biotic elements like air, water, soil, light, energy, humidity and temperature etc.

According to W.B. Sawyer, "Environment refers all the surroundings".

According to T. N. Khishoo "Environment is the sum total of the conditions that affect the development of life of all the organizations"

Types of Environment

Environment is broadly classified into natural environment, artificial environment, "biological environment and socioeconomic environment"

(i) Natural environment:

The natural component that surrounds us is natural environment. They are free gifts of nature. Such natural environment includes air, water, light, soil, forests, plants, and animals etc. all living being along with many are natural components of the ecosystem. The natural environment gets change of seasons.

(ii) Artificial environment:

These are human made. The objects of our surrounding which are manmade are artificial environment.

(iii) Biological environment:

The biological environments include all living organisms that surround us.

(iv) Socio-economic environment

The social institutions which build the capacity of and rules formulated, for the sure growth and development of man, community and culture. This called the socio-economic environment.

Importances of environment are as follows:

1. Environment or environmental study helps us to know about natural and artificial environmental and its elements.
2. It provides the knowledge why living beings exists on earth but not on other planets.
3. It reveals "how the organisms are structurally adopted and functionally adjusted to their physical environment.
4. It helps us to know the distribution and bad impacts of rapid growth of population.
5. It indicates how environment is polluted and affect badly to human existence.
6. It gives an idea about the cause of diseases, and its remedial measures.
7. It reveals the biological productivity of nature.
8. It suggests for various policies to implement for the improvement of environment and its proper management.

Causes and effects of coastal degradation

Definition

Degradation (from Latin: degradatio, literally — reduction), regression — the process of deterioration of characteristics of an object with time; moving back; gradual decline; decline in quality; breakdown of matter due to the impact of external forces in conformity with the laws of nature and time. Degradation is often referred to as the opposite of Progress.

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the extinction of

wildlife. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable or

Habitat Degradation is the diminishment (destruction leading to an end of something) of a habitats quality and its ability to support communities and their lives or

Environmental Degradation is the destruction of the Environment through human dangerous activities.

Causes of coastal Degradation

The rapid growth of the coastal urban centres in Kenya, and the fast development of the coastal tourism sector leading to the following main menace to the coastal environment;

1. Coastal tourism and Industrial development

The activities of tourists can affect the marine ecosystem directly, through boat and anchor damage to coral reefs, and indirectly by increasing demands for cleared land for development, collection of shells for souvenirs, seafood, and mangrove poles and coral lime for construction. The extraction of living corals, baked in kilns to produce lime, has also contributed to coastal habitat degradation

2. Excess amount of sediments

there are many large rivers along the coast of the eco-region carry vital nutrients and sediments that are important to plankton, mangroves and sea grass beds. These rivers connect the shoreline with the interior of the continent of Africa; thus activities hundreds of kilometers upstream can influence the coastal zone. During periods of severe floods the tremendous loads of sediment washed out to sea can overwhelm nearby coral reefs that require clean waters for their existence.

3. Climate change and its serious impacts

Changes to the coastlines caused by human activity have exacerbated the effects of climate change. Sea level is rising at about 1 millimeter per year, which, under normal circumstances, habitats can adapt to, but the loss of inshore coral reefs and coastal mangrove forests adds to the potential damage caused by sea level rise and coastal erosion. The result can be catastrophic. Already the loss of coastal land due to erosion is an ever-growing concern to developers and farmers.

4. Threats to marine animals

Marine mammals were hunted to the edge of extinction in the Indian Ocean before anyone realized that they were declining to such low numbers that their very existence was threatened. The more recent intensive collection of certain animals (e.g. sea-cucumbers) has caused local extinction along some areas of the coast.

Sharks and rays are extremely slow breeders, producing only a few juveniles each year. They too are being fished beyond their natural recovery rates, with the result that these days in the shallow waters of most of the region, sharks are very rarely observed. A few larger species, known to have been abundant one hundred years ago, are currently so rare that there is a very real possibility that they may completely vanish from the region

In many areas marine turtles continue to be caught and killed for meat. Five of the world's seven marine turtle species (Green, Hawksbill, Olive Ridley, Loggerhead and Leatherback), all of which are recognised as being in danger of extinction, nest on the beaches of the region. In many places their eggs are taken from their nesting sites which are also vulnerable to destruction from the construction of beach hotels, sand-mining and beach erosion.

5. Overexploitation of local fisheries

Fisheries are a vital employment activity to hundreds of thousands of families on the coast. At least as many again are involved in the post-harvest activities of marketing and processing. The products of the industry (fish, molluscs, shrimps and crabs) provide the main protein component of the diet of the majority of the coastal people and many more people inland (where dried or salted products are sold).

In Tanzania, for example, the estimated average consumption of seafood per person (9.4 kg/year) is greater than the combined consumption of meat and poultry. For the entire region at least 500 species of fish constitute the bulk of catches, yielding an estimated 200,000 tonnes each year.

Most of the catch is from fishers equipped with simple, artisanal gears such as hook and line, hand spears, woven fish traps and various types of nets. Total catches from Mozambique are about 115,000 tonnes, with between 90-95% being caught by about 80,000 artisanal fishers.

Other more industrialized fishing methods also exist, including motorised vessels equipped with trawl nets hauled by power winches. In Mozambique alone the industrial and semi-industrial fishing fleet exceeds 150 vessels, earning the economy over US$ 100 million per year, mostly through the export of shrimps. These trawlers are also active in Tanzania and Kenya, though not to the same scale as in Mozambique which has far greater areas around river mouths suitable for shrimps.

6. Destructive fishing practices

Over the last few decades destructive fishing methods, such as the use of dynamite and small-meshed nets, have destroyed seagrass beds and coral reefs. These practices still continue in many places despite being illegal in all countries. Preliminary research along the coast of Kenya and Tanzania indicates that human activities such as these have reduced fish catches from coral reefs by 30-40%.

Large proportions of the by-catch (e.g. non-commercial or unwanted species) of shrimp trawlers are juvenile fish. The loss of these immature individuals threatens future fishery resources. Offshore fishing grounds, some of the only areas on earth from where fish catches are increasing, are also open to plundering, often by industrial foreign fleets.

7. Demand for timber

Mangrove wood is extremely hard and insect-resistant. The harvesting of mangroves for timber and fuel, like basic fishing techniques, has been practised for thousands of years, with poles continuing to be exported from the region.

Reckless cutting of mangroves has cleared large areas of previously productive forest. Mangrove forests are also the first to be cleared for the construction of saltpans from where most of the region's much needed sea salt is produced. Additional pressure from tourism developers, coastal construction, farmers and the ever-growing need for fuel wood, further encourages large swathes of primary mangrove forest to be cut indiscriminately with little or none re-planted.

8. Pressure on other marine species

Seaweeds have recently become an important economic resource in Tanzania where they are farmed for export and processing into food additives. The seaweed is grown on lines attached to wooden stakes across the seabed of shallow lagoons. Other methods of farming marine organisms, known as mariculture, include the culture of shrimps and fish in coastal ponds, usually in mangrove areas. There are not many mariculture farms in the region at present.

However, investors and developers have started to persuade governments of the region of the financial benefits of such practices, which, if not sensibly developed, can adversely affect not only the forests, but also the many fisheries and people who depend on the productivity of the habitat.

9.Use in medical research

Recently medical research into fighting the various forms of cancer and other diseases which affect humans has begun focusing on the sea for possible cures derived from animals such as sponges, soft corals and tunicates. This kind of research, known as bio-prospecting, has started to explore the rich coral reefs of eastern Africa where these animals are found in abundance.

How to stop environmental degradation

By afforestation, reforestation, wise management of water, etc.

Afforestation is the establishment of a forest or stand of trees in an area where there was no forest. Reforestation is the reestablishment of forest cover, either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting). Many governments and non-governmental organizations directly engage in programs of *afforestation* to create forests, increase carbon capture and sequestration, and help to anthropogenically improve biodiversity

Afforestation is the process of establishing a forest on land that is not a forest, or has not been a forest for a long time by planting trees or their seeds. (It is different from reforestation which means planting trees again after they have been cut down.)
Afforestation is the process of planting trees in the environment.

The results are:

- they absorb carbon dioxide and help cut down the danger of global warming
- they help prevent erosion
- the beautify the environment
- they help prevent heavy storms

Afforestation is the opposite of deforestation. Deforestation is the clearing of forest. Afforestation is the regrowing of forest areas

Advantages:-
1. It Increases greenery
2. It reduces desertification.
3. It brings Rain in proper time.
4. It reduces the pollution level.
5. It minimizes the effect of drought and Global Warming.
6. It helps the factories to have a proper use of plant items without leaving a bad effect in the society and environment.
7. It minimizes the effect of soil erosion.
8. It helps to control Acid rain

Reforestation

Reforestation is the replanting of trees in forests to replace the ones that have been cut down. It also replaces trees that have been destroyed by fire

Reforestation is the natural or intentional restocking of existing forests and woodlands that have been depleted, usually through deforestation. Reforestation can be used to improve the quality of human life by soaking up pollution and dust from the air, rebuild natural habitats and ecosystems, mitigate global warming since forests facilitate biosequestration of atmospheric carbon dioxide, and harvest for resources, particularly timber.

The term *reforestation* is similar to afforestation, the process of restoring and recreating areas of woodlands or forests that may have existed long ago but were deforested or otherwise removed at some point in the past. Sometimes the term *re-afforestation* is used to distinguish

between the original forest cover and the later re-growth of forest to an area. Special tools, e.g. tree planting bar, are used to make planting of trees easier and faster

WHAT MARINE ENVIRONMENT IS.

The oceans, seas, bays, estuaries, and other major water bodies, including their surface interface and interaction, with the atmosphere and with the land seaward of the mean high water mark

Why are the Oceans Important?
We can make a long list of how the oceans and marine life are important to us. Did you know the Oceans cover greater than 70% of the earth's surface? They contain 99% of the living space on earth! Without this space for organisms to survive, there would be five fewer **phyla** of animals on the earth. Perhaps this is the most important reason to protect the oceans – to preserve the **biodiversity** of the Earth.

1. Biodiversity
Coral reefs, salt marshes, estuaries and mangrove and seagrass beds are just a few of the ocean environments which support a large number of different species of organisms – that is, have a high **biodiversity**. Estuaries are **brackish** water systems that empty their waters into the world's oceans, and support many, many fish and other organisms. Along with coral reefs, estuaries sustain 75 percent of all commercial fish and shellfish during some point of their life cycles! Spawning organisms make reefs and estuaries their home because anican find an abundance of food and excellent protection from predators. The fish, anemones, sea cucumbers and sea fans that populate the coral reefs all work together in symbiosis. In the estuary, the seagrasses provide protection to juveniles and food for herbivore.
Mangroves not only act as nurseries for commercially important marine species, they also act as a filtering system for coastal water. Seagrass beds, mangroves and coral reefs are crucial to providing protection against shoreline erosion and flooding.
The sandy shores are home to fiddler craps and burrowing worms, as well as a feeding ground for birds. Without coral reefs and estuaries, our oceans would lose many, many organisms that are important to both humans and other marine life.
2. Natural resources
The ocean floor habitat is not as well known as coral reefs or coastal areas, but it is very important to all the organisms that live on the bottom (**benthic organisms**), as well as commercially important as well. The continental shelves and ocean floor are home to many important minerals, including oil and natural gas. Natural gas and oil play a major role in meeting our energy needs.

3. Transportation
Not only are oceans important to sustain life, but also for moving materials that we use. More than 95 percent of U.S. foreign trade (by weight) passes through U.S. ports and harbors. Without commercial ships and barges, transportation of goods from place to place would be

much more difficult and expensive. Cities which have good natural harbors have always had an advantage, and even today are some of the largest cities in the world.

4. Climate and weather

Did you know warm ocean waters provide the energy to fuel storm systems that provide fresh water vital to land-dwelling organisms? The oceans interact with and affect global weather and climate. As the air passes over warm waters, it rises due to warming. As it cools, condensation of the water creates rainfall. If the air passes over cooler waters, it cools and sinks. Air moves from high to low pressure areas.
Warm air moves with the Gulf Stream toward northern Europe. Thus, the winters in Northern Europe are not intolerable. Though this is simplified, it is easy to see how the oceans are connected to climate and weather change.

5. Economy

The ocean is also vital to our economy. More than 66% of the world's population lives within 100 kilometers of the coastline. Real estate, recreation, ocean–related occupations, and other services associated with the ocean generate 54 billion dollars in goods and services per year. Revenue related to the ocean is generated through: kelp (emulsifying agent in food and pharmaceutical products), food, recreation (hook and line fishing, spearfishing, scuba, snorkeling, whale watching, etc.), mining (salt, oyster shells, jade, etc.), shipping and biomedical products.

Can you name others?
The ocean provides much more than seafood! Many of the foods and products that we eat, or use as medicine contain ingredients from the sea. Carrageenan, a compound found in red algae, is found in peanut butter and toothpaste. Compounds from ocean sponges and cartilage from sharks are being used in medication to help fight the battle against cancer. Great care is being taken in the research of marine-based drugs to prevent the depletion of important natural marine resources.
Furthermore, research is being conducted to synthesize artificial forms of marine compounds. Marine based drugs are vital because many infectious organisms have developed strains resistant to soil- and plant based drugs.

The importance of the ocean cannot be debated. It truly contains some of the planets most fascinating ecosystems.

WAYS TO HELP MARINE LIFE

There are ten ways to help our marine life. They include:-

1. **Eat Eco-Friendly Fish**

Our food choices have a huge impact on the environment - from the actual items we eat to the way they are harvested, processed, and shipped. Going vegan is better for the environment, but you can take small steps in the right direction by eating eco-friendly fish and eating local as much as possible. If you eat seafood, eat fish that is harvested in a sustainable way, which means eating species that that have a healthy population, and whose harvest minimizes bycatch and impacts on the environment.

2. **Limit Your Use of Plastics, Disposables and Single-Use Projects**

What is the problem? Plastic stays around for hundreds of years, can be a hazard to wildlife and leaches toxins into the environment. **The solution?** Stop using so much plastic. Buy things with less packaging, don't use disposable items and use reusable bags instead of plastic ones wherever possible.

3. **Stop the Problem of Ocean Acidification**

Global warming has been a hot topic in the ocean world, and it is because of ocean acidification, known as 'the other global warming problem.' **As the acidity of the oceans increases, it will have devastating impacts on marine life, including plankton, corals and shellfish, and the animals that eat them.**

But you can do something about this problem right now - reduce global warming by taking simple steps that will likely save money in the long run - drive less, walk more, use less electricity and water - you know the drill. Lessening your "carbon footprint" will help marine life miles from your home. The idea of an acidic ocean is scary, but we can bring the oceans to a more healthy state with some easy changes in our behavior.

4. **Be Energy-Efficient**

Along with the tip above, reduce your energy consumption and carbon output wherever possible. **This includes simple things like turning off the lights or TV when you're not in a room, and driving in a way that increases your fuel efficiency, because the less energy you use the less our climate heats up - then the ice won't melt."**

5. **Participate in a Cleanup**

Trash in the environment can be hazardous to marine life, and people too! Help clean up a local beach, park or roadway and pick up that litter before it gets into the marine environment. Even trash hundreds of miles from the ocean can eventually float or blow into the ocean. The International Coastal Cleanup is one way to get involved - that is a cleanup that occurs each September. You can also contact your local coastal zone management office or department of environmental protection to see if they organize any cleanups.

6. **Never Release Balloons**

Balloons may look pretty when you release them, but they are a danger to wildlife, who can swallow them accidentally, mistake them for food, or get tangled up in their strings. After your party, pop the balloons and throw them in the trash instead of releasing them.

7. **Dispose of Fishing Line Responsibly**

Monofilament fishing line takes about 600 years to degrade. If left in the ocean, it can provide an entangling web that threatens whales, pinnipeds and fish (including the fish people like to catch and eat). Never discard your fishing line into the water - dispose of it responsibly by recycling it if you can, or into the garbage.

8. **View Marine Life Responsibly**

If you're going to be viewing marine life, take steps to do so responsibly. Watch marine life from the shore by going tide pooling. Take steps to plan a whale watch, diving trip or other excursion with a responsible operator. Think twice about "swim with dolphins" programs, which may not be good for dolphins and could even be harmful to people.

9. **Volunteer or Work With Marine Life**

You live near the coast, volunteer opportunities may be easy to find. If not, you can volunteer on field expeditions and protection of endangered species such as turtles

10. **Buy Ocean-Friendly Gifts**

Give a gift that will help marine life. Memberships and honorary donations to non-profit organizations that protect marine life can be a great gift. How about a basket of environmentally-friendly bath or cleaning products, or a gift certificate for a whale watch or snorkeling trip? And when you wrap your gift - be creative and use something that can be re-used, like a beach towel, dish towel, basket or gift bag.

MARINE POLLUTION

Marine pollution occurs when harmful, or potentially harmful effects, can result from the entry into the ocean of chemicals, particles, industrial, agricultural and residential waste, noise, or the spread of invasive organisms. Most sources of marine pollution are land based. The pollution often comes from nonpoint sources such as agricultural runoff and wind blown debris and dust.

Many potentially toxic chemicals adhere to tiny particles which are then taken up by plankton and benthos animals, most of which are either deposit or filter feeders. In this way, the toxins

are concentrated upward within ocean food chains. Many particles combine chemically in a manner highly depletive of oxygen, causing estuaries to become anoxic.

When pesticides are incorporated into the marine ecosystem, they quickly become absorbed into marine food webs. Once in the food webs, these pesticides can cause mutations, as well as diseases, which can be harmful to humans as well as the entire food web.

Toxic metals can also be introduced into marine food webs. These can cause a change to tissue matter, biochemistry, behaviour, reproduction, and suppress growth in marine life. Also, many animal feeds have a high fish meal or fish hydrolysate content. In this way, marine toxins can be transferred to land animals, and appear later in meat and dairy products.

Pathways of pollution

Generally there are three main types of inputs of pollution into the ocean: direct discharge of waste into the oceans, runoff into the waters due to rain, and pollutants that are released from the atmosphere.

Pollution is often classed as point source or nonpoint source pollution. Point source pollution occurs when there is a single, identifiable, and localized source of the pollution. An example is directly discharging sewage and industrial waste into the ocean. Pollution such as this occurs particularly in developing nations. Nonpoint source pollution occurs when the pollution comes from ill-defined and diffuse sources. These can be difficult to regulate. Agricultural runoff and wind blown debris are prime examples.

Direct discharge

This happens when pollutants enter rivers and the sea directly from urban sewerage and industrial waste discharges, sometimes in the form of hazardous and toxic wastes.

Inland mining for copper, gold. etc., is another source of marine pollution. Most of the pollution is simply soil, which ends up in rivers flowing to the sea. However, some minerals discharged in the course of the mining can cause problems, such as copper, a common industrial pollutant, which can interfere with the life history and development of coral polyps. Mining has a poor environmental track record. Much of this pollution finishes up in the sea.

Land runoff

Surface runoff from farming, as well as urban runoff and runoff from the construction of roads, buildings, ports, channels, and harbors, can carry soil and particles laden with carbon, nitrogen, phosphorus, and minerals. This nutrient-rich water can cause fleshy algae and phytoplankton to thrive in coastal areas; known as algal blooms, which have the potential to create hypoxic conditions by using all available oxygen.

Polluted runoff from roads and highways can be a significant source of water pollution in coastal areas. About 75 percent of the toxic chemicals that flow into Puget Sound are carried by stormwater that runs off paved roads and driveways, rooftops, yards and other developed land.

Ship pollution

Ships can pollute waterways and oceans in many ways. Oil spills can have devastating effects. While being toxic to marine life, polycyclic aromatic hydrocarbons (PAHs), found in crude oil, are very difficult to clean up, and last for years in the sediment and marine environment.

Discharge of cargo residues from bulk carriers can pollute ports, waterways and oceans. In many instances vessels intentionally discharge illegal wastes despite foreign and domestic regulation prohibiting such actions. It has been estimated that container ships lose over 10,000 containers at sea each year (usually during storms). Ships also create noise pollution that disturbs natural wildlife, and water from ballast tanks can spread harmful algae and other invasive species.

Ballast water taken up at sea and released in port is a major source of unwanted exotic marine life.

Atmospheric pollution

Another pathway of pollution occurs through the atmosphere. Wind blown dust and debris, including plastic bags, are blown seaward from landfills and other areas.

Climate change is raising ocean temperatures and raising levels of carbon dioxide in the atmosphere. These rising levels of carbon dioxide are acidifying the oceans. This, in turn, is altering aquatic ecosystems and modifying fish distributions, with impacts on the sustainability of fisheries and the livelihoods of the communities that depend on them. Healthy ocean ecosystems are also important for the mitigation of climate change.

Deep sea mining

Deep sea mining is a relatively new mineral retrieval process that takes place on the ocean floor. Ocean mining sites are usually around large areas of polymetallic nodules or active and extinct hydrothermal vents at about 1,400 - 3,700 meters below the ocean's surface. However, experts are certain that removal of parts of the sea floor will result in disturbances to the benthic layer, increased toxicity of the water column and sediment plumes from tailings. Removing parts of the sea floor disturbs the habitat of benthic organisms, possibly, depending on the type of mining and location, causing permanent disturbances. Aside from direct impact of mining the area, leakage, spills and corrosion would alter the mining area's chemical makeup.

Types of pollution

Acidification

The oceans are normally a natural carbon sink, absorbing carbon dioxide from the atmosphere. Because the levels of atmospheric carbon dioxide are increasing, the oceans are becoming more acidic. The potential consequences of ocean acidification are not fully understood, but there are concerns that structures made of calcium carbonate may become vulnerable to dissolution, affecting corals and the ability of shellfish to form shells.

Oceans and coastal ecosystems play an important role in the global carbon cycle and have removed about 25% of the carbon dioxide emitted by human activities between 2000 and 2007 and about half the anthropogenic CO_2 released since the start of the industrial revolution. Rising ocean temperatures and ocean acidification means that the capacity of the ocean carbon sink will gradually get weaker, giving rise to global concerns.

Eutrophication

Eutrophication is an increase in chemical nutrients, typically compounds containing nitrogen or phosphorus, in an ecosystem. It can result in an increase in the ecosystem's primary productivity (excessive plant growth and decay), and further effects including lack of oxygen and severe reductions in water quality, fish, and other animal populations.

The biggest culprit are rivers that empty into the ocean, and with it the many chemicals used as ‘fertilizers in agriculture as well as waste from livestock and humans.

Plastic debris

Marine debris is mainly discarded human rubbish which floats on, or is suspended in the ocean. Discarded plastic bags, six pack rings and other forms of plastic waste which finish up in the ocean present dangers to wildlife and fisheries.[42] Aquatic life can be threatened through entanglement, suffocation, and ingestion.[43][44][45] Fishing nets, usually made of plastic, can be left or lost in the ocean by fishermen. Known as ghost nets, these entangle fish, dolphins, sea turtles, sharks, dugongs, crocodiles, seabirds, crabs, and other creatures, restricting movement, causing starvation, laceration and infection, and, in those that need to return to the surface to breathe, suffocation.

Toxins

Apart from plastics, there are particular problems with other toxins that do not disintegrate rapidly in the marine environment. Examples of persistent toxins are PCBs, DDT, pesticides, furans, dioxins, phenols and radioactive waste. Heavy metals are metallic chemical elements that have a relatively high density and are toxic or poisonous at low concentrations. Examples are mercury, lead, nickel, arsenic and cadmium. Such toxins can accumulate in the tissues of

many species of aquatic life in a process called bioaccumulation. They are also known to accumulate in benthic environments, such as estuaries and bay muds: a geological record of human activities of the last century.

Underwater noise

Marine life can be susceptible to noise or sound pollution from sources such as passing ships, oil exploration seismic surveys, and naval low-frequency active sonar. Sound travels more rapidly and over larger distances in the sea than in the atmosphere. Marine animals, such as cetaceans, often have weak eyesight, and live in a world largely defined by acoustic information. This applies also to many deeper sea fish, who live in a world of darkness. Between 1950 and 1975, ambient noise in the ocean increased by about ten decibels (that is a tenfold increase)

Noise also makes species communicate louder, which is called the Lombard vocal response. Whale songs are longer when submarine-detectors are on. If creatures don't "speak" loud enough, their voice can be masked by anthropogenic sounds. These unheard voices might be warnings, finding of prey, or preparations of net-bubbling. When one species begins speaking louder, it will mask other species voices, causing the whole ecosystem to eventually speak louder.

WAYS WE CAN PROTECT OUR MARINE ENVIRONMENT

1. Dive carefully with proper buoyancy control in fragile marine environment to protect the ecosystem. This is to make sure that you do not step on corals and other marine life on the seafloor.
2. Understand and respect underwater life. Basically we need to respect all living things, shouldn’t we?
3. Do not collect souvenirs. Consider photography instead. I have banned myself and my traveling partners from collecting corals and seashells on the beach. I also do not encourage the buying of corals, seashells and stuffed starfish for souvenirs from Gaya Street Sunday Market.
4. Obey all fish and game laws of the marine park. Basically all 10 ways stated here apply in.
5. Consider your impact on aquatic life through your interactions. Do not litter and feed fishes with unsuitable food items or provoke them as this may cause stress and harm to aquatic life form. Do not try to touch the fishes when you feed them foods.
6. Anchor your boats only on the mooring buoys found within the marine park. Do not anchor your vessels on the reefs. This is to prevent the anchor from damaging the corals and reefs.
7. Obtain diving orientation from a qualified local diving operator prior to dive. You can also choose to take PADI scuba diving courses. Not only you learn how to dive properly without bringing harmful damages to the marine environment, your safety underwater is also assured.

8. If you are snorkeling, make use of the rest floats provided to snorkellers for resting purposes and prevent tired snorkellers from stepping on corals. Do not attempt to step on the corals. Some of the edges are really sharp and you will get cuts on your feet!
9. Report environmental disturbances or destructions noted at your dive site to the nearest marine park stations.
10. Support the park activities which help to preserve our beautiful marine heritage.

INTRODUCTION TO HIV/AIDS

AIDS (Acquired Immuno- Deficiency Syndrome) is caused by HIV (Human immunodeficiency virus), which is spread through contact of bodily fluids. It is also present a virus in the infected cells.

It is a disease of the immune system. It starts to "break down" the immune system which leaves the body open to infection. It isn't the HIV/AIDS that kills you; it's the diseases you acquire from the lack of working immune system. The Common Cold can be lethal when you can't fight it.

It can be picked up from Breast Milk, Semen, Vaginal Fluids, Blood (Including Transfusions and Cuts) and the sharing of Hypodermic Needles.

The symptoms are different as well. Where as HIV causes symptoms similar to common infections, such as sores and muscle pains, AIDS causes symptoms similar to cancers and re-infections. Tumors begin to grow, and Meningitis, and Encephalitis, can occur.

It is one of the biggest dangers from the contact of bodily fluids, and is as high as 25% in some parts of the world (Africa, or even Asia).

However, it has lead to a large increase in safe sex since its discovery. In the last 20-30 years, the risk of acquiring immune problems has lead to less risk taking, especially in places with high infection rate. This could also be helping to stop the spread of other STDs.

What is AIDS?

It is Acquired
Immune
Deficiency
Syndrome

AIDS is an infectious disease spread by a virus. It is called syndrome because it consists of several signs and symptoms. The first cases of AIDS were diagnosed in 1981. Since then there

has been a rapid spread of the disease in North and South America, Europe and Africa. Cases are being reported from around the world, most countries now have people with AIDS, or infected with the virus.

What is HIV?

It is Human
Immune Deficiency
Virus

HIV is a retrovirus, a group of virus that is still largely unknown. HIV was first described in 1983 in Paris. It has had several names during its short history, but HIV has now been accepted internationally.
The virus enters the T-helper cells of the immune system. In the cells it destroys genetics material, and the damage is permanent. All body fluids contain T-helper cells. The concentration is high in BLOOD, SEMEN and VAGINAL SECRETION.

Who is a Carrier?
Anybody who has the virus is a carrier and can infect others. Very often the person does not know the she/he is a carrier. She/he has no symptoms of disease and the person who infected her/him may have had no symptoms, either.

A person can be a carrier unknowingly for many years before the virus has destroy so much of the immune system that she/he falls ill. Some months after the infection the body has produced anti-bodies to the virus. These can be detected by a special test.

How does the Virus Spread?
AIDS is spread when blood, semen or vaginal secretion of an infected person come in contact with the blood or mucous membranes of a healthy person.
The virus is not very active so the concentration of the virus in the fluid must be high to cause infection. Or the person must be exposed to infection several times. The virus is spread
- by sexual intercourse (homosexual or heterosexual), when one of the partner is infected
- by contaminated needles and syringes
- by transformation of infected blood
- by an infected mother to her unborn child

How is the Virus not Spread?
The virus is not spread through everyday social contact such as
- shaking hands
- living together
- playing together
- eating together

It is not spread by

- food
- water
- communion
- insects
- toilet seats

How to Prevent the Spread of AIDS?
There is no vaccine against AIDS. HEALTH EDUCATION is very important. Everybody should know how to protect themselves from infection, by living responsibly. The whole community should be involved.

Who should be Informed?
Everybody;
- Women
- Men
- School children

AIDS and Pregnancy
AIDS can be spread from the mother to her unborn child during pregnancy or delivery. A pregnancy might cause the onset of symptoms of AIDS. A woman who knows or suspect that she is an HIV-carrier should avoid becoming pregnant.
Some hospitals can make a test to find out if a person is infected. A woman who is unsure and wants a baby should try to have a test first, if she lives in an area with many persona with AIDS.
Does AIDS Spread through Breast-feeding?
The virus has been found in breast-milk in low concentrations. It is not yet known if the small amount of virus in the milk can infect the baby. Many women do not know if they are infected or not.
Since the risks of bottle-feeding are well-known, while the risks of breast-feeding by an infected mother remain unproven breast-feeding should always be encouraged.

AIDS and Immunizations
To immunize, syringes and needles are used. These can be a source of infection. Every child should be immunized with a sterile needle syringe. Make sure that they are boiled for 20minutes.
Where disposable needles are used, they should be put into a closed container and buried later. Blood should not be aspirated into the needle and syringe.
The risk of AIDS through immunization programmes is nil as long as needles and syringes are adequately sterilized.

What the HIV-carrier should know
Persons who suspect or know that they are HIV-carrier should:
Â· avoid being reinfected by the AIDS virus
Â· avoid spreading the infection by

- not having sexual intercourse or
- using a condom (remembering, though, that many countries have reported the condom to have a failure rate of at least 10%)
- washing their soiled linen or clothes themselves
- not given blood for transmission
Â· treat other infections as
- tuberculosis
- venereal disease etc.

How to Care for a Person with AIDS

Remember that these people are in need of social contact and support, just as we are. Their skin or breathing does not transmit the infection and they need physical and psychological closeness, as all of us do.

They may know they have a deadly disease, especially once they know the diagnosis. This can cause fear, anxiety and anger. Health personnel and relatives need to be prepared for this. People with AIDS need time and help to struggle with these feelings. They need somebody who is prepared to listen and support them. They need to be encouraged to continue to live and take part in daily activities, as much as they can.

Perhaps they want to talk to a pastor or counselor, or someone else, who can give them spiritual and emotional reassurance. The health worker should encourage this and help arrange it.

Self-care of Health Personnel

The risk of health personnel getting AIDS through their work is very low. It is important that health workers protect themselves from unnecessary exposure to infection. Handling instruments which have been in contact with infected blood should be done with care. If possible, gloves should be used, and then sterilized.

During operations extra long gloves or special arm covers of plastic might be needed, and then sterilized. There is no need to wear special coast, masks or gloves while being with the patient, giving nursing care.

Once the immune system weakens, a person infected with HIV can develop the following symptoms:

- Lack of energy
- Weight loss
- Frequent fevers and sweats
- Persistent or frequent yeast infections
- Persistent skin rashes or flaky skin
- Short-term memory loss

- Mouth, genital, or anal sores from herpes infections.

AIDS is the most advanced stage of HIV infection. The definition of AIDS includes all HIV-infected people who have fewer than 200 CD4+ cells per microliter of blood. The definition also includes 26 conditions that are common in advanced HIV disease but that rarely occur in healthy people. Most of these conditions are infections caused by bacteria, viruses, fungi, parasites, and other organisms. Opportunistic infections are common in people with AIDS. Nearly every organ system is affected. Some of the common symptoms include the following:

- Cough and shortness of breath
- Seizures and lack of coordination
- Difficult or painful swallowing
- Mental symptoms such as confusion and forgetfulness
- Severe and persistent diarrhea
- Fever
- Vision loss
- Nausea, abdominal cramps, and vomiting
- Weight loss and extreme fatigue
- Severe headaches with neck stiffness
- Coma

 People with AIDS are prone to develop various cancers