Executive most of their time, efforts and resources

Executive summary

It is estimated that water takes up more than two thirds of the total earth’s surface. This means that land occupies less than one third of the surface.

Arguably, water is the most essential resource in the world. With it, plants as well as wildlife survive. In addition, its use in facilitating success in man’s activities is great.

However, as the population across the world continues to grow exponentially, human beings are putting the water bodies under immense pressure. In essence, the activities of over six billion people in the world are threatening the survival and quality of water found in the oceans, lakes and other inland water catchment areas. Water pollution is a human problem that is constantly threatening the lives and livelihoods of many people around the world. Rapid population growths accompanied by increased industrial and technological development have significantly contributed to the pollution of the available water bodies.

With the world’s population hitting a record high of over eight billion occupants, the popular belief that the oceans were too big to be polluted is arguably disputable considering the recent events and human activities that have greatly contributed to the pollution of our oceans as well as other water bodies. In as much as the ocean waters cannot be consumed directly by human beings, the waters provide a home for many a fish species and marine life which are facing extinction due to pollution. This statement leads us to the most crucial questions. What is ocean pollution? How does it happen? What are the effects of ocean pollution to man and the marine life?

What solutions can be used to address this issue? And what recommendations can be implemented to supplement the solutions in finding lasting resolves to this issue? Over the years, researchers have dedicated most of their time, efforts and resources to find answers to these questions.

This study shall review relevant literature and present an informative report on how ocean pollution has over the decades affected human and marine life. The main focus shall be on the effects of this type of water pollution to the fishing industry.

Introduction

In the wake of the past century, man began to acknowledge the fragile balance that existed between him and the environment. In the course of the previous two centuries, man’s industrialization efforts offset the balance that had been maintained between him and the climatic conditions that prevailed. Detrimental practices such as deforestation, air and water pollution began to rise and consequently posed a threat to mankind’s own survival. These malevolent practices could chiefly be attributed to the rise in the global population accompanied by rapid technological advancement which was characterized by all manner of pollution. The consequences that have risen as a result of neglecting to take care of the environment have now become a reality to the whole of mankind. This status quo has forced environmental issues to take a center stage in man’s life as can be exhibited by the recently held Climate Change Conference in Copenhagen.

Nations have come together and put a valuable effort to restore, maintain and manage their respective eco systems. In light of the importance with which environmental conservation is regarded, this research shall explore in detail the various aspects that impact our oceans negatively. A brief history of ocean pollution shall be presented and the causes and effects of ocean pollution addressed. Viable solutions to this problem shall be discussed and supplementary suggestions as to how best the problem can be mitigated shall also be recommended.

To this end, an informative discussion on this issue shall be presented with all the while giving an overview on how ocean pollution has affected life in the fishing industry.

What is ocean pollution?

As Ostopowich (2010) explains, ocean pollution often refers to a situation whereby one or more contaminants build up in the oceans to an extent that they cause problems to both people and marine life that depends on the oceans for survival. Basically, ocean pollution is primarily man-made and can therefore be defined as the degradation of quality of oceanic water due to excess human activities (Ostopowich, 2010). Water is a very unique element.

It has various characteristics that help it clean of any impurities that it comes in contact with through diffusion, filtration, evaporation and chemical breakdown of contaminant to an extent that they cannot be harmful. With this in mind, the question that is left wanting is: considering these unique characteristics of water, why is ocean pollution so rife today? Goel (2006) claims that rapid population growth which led to increased industrialization,

globalization and the need for more room for expansion is to blame. Despite the fact that water is self healing, the process requires a lot of time. However, due to increased human activities, the oceans are under constant pressure and are overly charged with the duty of diffusing and decontaminating toxic substances that result from man's industrial efforts (Kumar, 2004). As such, the ocean's capability to handle waste has been greatly overwhelmed leading to the now visible oceanic pollution.

Problem statement

The fishing industry is a very important sector of many economies across the world. Its role in socioeconomic growth cannot be understated. However, in the past few decades, a series of unfortunate events and issues have attacked this once so successful sector.

Among the primary problems affecting this industry is ocean pollution. Man's ambitious nature accompanied by globalization has led to the rapid expansion of the industrial, technological and agricultural sectors in an unprecedented rate. These advancements though important to man's survival have affected the environment and various ecosystems detrimentally. Toxic wastes, excessive CO2 emissions and chemical substances emanating from man's activities have found their way into the oceans and other water sources (Calhoun, 2005).

Consequently, they have affected the aquatic life by either killing the animals and plants that depend on the waters or disrupting their life and reproductive cycles. To this effect, the number of harvestable species has

decreased significantly thereby threatening the survival and successful continuation of the fishing industry.

Purpose statement

The aim of this study shall be to evaluate the extent to which ocean pollution has affected the fishing industry. To achieve this, pollution as a whole shall be defined and described.

The various types of water pollution shall be addressed and the causes of pollution shall also be presented. There after, a discussion pertaining to the effects of these pollutants shall be presented and viable solutions to the pollution problem highlighted. All this shall aim at providing detailed explanations as to how various pollutions interlink and affect aquatic life and subsequently, the fishing industry.

Brief history of ocean pollution

Pollution has been in existence since the wake of time.

Every human activity no matter how minute has a direct effect on the environment. As mentioned earlier, water takes up a significant percentage of the earth’s surface. Bocknek (2004) states that in the earlier centuries, mans activities were restricted to the land and rarely did they come into contact with the water bodies which were primarily used as a source of food and a medium for transportation. Unknown to him, early man was eco friendly. The materials and machinery used did little damage to the oceans and could easily be reversed. It should be noted that pollution is all about quantities. However, at the dawn of the industrialization era, man’s activities in search for civilization increased significantly. This accompanied by the

rapid population growth and technological advancements started to exert an unprecedented amounts of pressure on the waters.

Today, man’s activities in terms of transportation, trade, business and discharging of toxic substances depend on the oceans in one way or the other. The use of machineries to promote efficiency and boost productivity has only made the situation worse. The only surprise is that despite the numerous warnings and signs provided by nature, man still persists on with more aggression. To this effect, ocean pollution today has increased by more than 15 times of what it used to be less than a century ago.

Problems in the global fishing industry

The fishing industry has been noted to generate an income of over $70 billion dollar.

USA International Business Publications (2009) state that the fishing industry employs more than one million people in terms of fishermen, crew members and fish traders. In total, the fishing industry harbors more than 37, 000 industrial ships and an estimated 12 million small-boat fishermen contribute to a significant amount of fish products available in the markets today. These small-boat fishermen are highly valuable because their collective annual harvest is equivalent to that yielded by the industrial ships (World Bank, 2003). Water pollution has however led to a situation whereby the annual harvest of fish from the industry has been constantly decreasing over the years.

With this in mind, it is safe to say that the existence and survival of this multibillion industry lies on very shaky grounds due to the increased

pollution of the water bodies. A recent example of the adverse effects that pollution have on marine life is the over spill of oil within the Gulf Coast that completely blanketed the ocean for a considerable amount of time. This incidence is just one among many other forms of water pollution that have in the recent past affected the livelihoods and lives of the people, plants and animals that depend on the waters for survival. Ostopowich (2010) states that the Gulf Coast is one of the richest region in the fishing industry as it has a wide variety of fish, shrimps and oysters that are exported all over the world. The spill drifted all the way to the Mississippi Delta that is almost five miles away from Gulf.

Speculations have it that the adverse effects of the spill will continue to be felt for years to come. Oil spills are dangerous because they blanket the water surface thereby making it difficult for sun rays to penetrate. In addition, oil spills inhibit the exchange of oxygen or carbon dioxide which is essential to the survival cycle of marine life. According to Bocknek (2004), exposure of fish eggs and fingerlings to oil spills and other pollutants has detrimental long term effects on them. Whenever fish sense a change in their environment, they often opt to migrate in search of the optimum conditions. Consequently, this disrupts their life and breeding cycles. This unwarranted migration has led to the death of many fish mainly due to infections, being preyed upon and abandonment of eggs which die off due to lack of a favorable environment for breeding.

Due to this sad state of affairs, fishermen are forced to overfish from the little that is left. This in turn does not give the remaining fish a chance to repopulate thereby leading to the current situation whereby the demand of

fish in the global market far outweighs the supply. Fish larvae are highly affected by water pollutants and experience deformities and some times end up dying at a very young age. What should be noted in this case is that fish larvae play a pivotal role in maintaining the balance between plant and animal life in the water bodies. As Goel (2006) states, they are consumed by other fish and they in turn consume much of the bacteria that if left unchecked may have negative effects on the water bodies. With this disruption of their life cycle, the fish population is greatly reduced and the life of the already existing species is under constant threat of extinction. On the same note, Arber (2001) states that fish can be displaced due to oil spills.

The author gives an example of the Atlantic bluefin tuna which gather in the gulf to reproduce before heading back to their original birth place. Consequently, this species of fish is forced to find new habitats which are often unknown to the fishermen depending on these fishes for their livelihood. USA International Business Publications (2009) support this statement by stating that fishermen rely on their expertise as well as the habitual traits of the fish for success.

They know where a particular species can be found and the best time to harvest the fish. However, these abrupt changes in fish behavior due to pollution have only made the life and work of the fishermen harder. In some occasions, the fish often eat floating plantations algae and bacteria from the sea surface. However, due to pollutants such as oil spills and chemical substances, the fish often end up getting contaminated.

This has been very problematic because fishermen are now required by law to have their harvest tested before sending the caught fish into the market. Considering that fish is perishable, the fishermen end up incurring extra costs in preservation and quality assurance processes. Waste disposal has been documented by Bocknek (2004)as a major hurdle in the fishing industry. Most human beings have a tendency of throwing their rubbish and dirt into the water bodies and drainage systems assuming that they will be drained away to a better place. Fishermen and other members of the shipping industry pollute the waters through the disposal of cargo waste, plastic as well as noise emanating from their ships and machineries.

The presence of such pollutants has serious impacts on the fish life and has contributed to the migration and death of many fishes. . Arber (2001), states that radioactive substances are not only harmful to human beings but also to fishes and marine life. Radioactive substances can be classified into three categories namely; high-level waste that are small volumes of highly active products from the processing of fuel, intermediates-level waste which are waste products that need continuous follow up and assessment but do not remove high levels of heat and finally, the low level waste which is water that is a little contaminated and can be dealt with without much precaution.

The author reiterates that the most common channels through which radioactive materials can access the body is through ingestion, breathing or absorption. These radioactive substances affect the fish, kills them leading to the decreased amounts of fish in the markets and oceans. Kumar (2004) suggests that in most occasions, fishes get contaminated indirectly. He explains that this happens when the food they eat is contaminated.

Radioactive materials as well as most metallic elements are absorbed by the algae, plants and other sources of food. As such, when the fish consume these foods, they end up absorbing the pollutants thereby getting contaminated. Continuous absorption of these substances contaminates the fish meat and at times may have serious health implications to the humans that enjoy eating fish. Today, due to excessive pollution, the quality of fish meat is under serious scrutiny and people opt for other forms of meat in fear for their health.

This accompanied by the ban on fishing due to pollution in some areas has greatly affected the lives of the fishermen and the whole fishing industry. Water pollution has also affected the reproduction cycles and systems of fish and other forms of marine life. This can be attributed to the fact that most of the pollutants affect the fish variably.

For example, Kumar (2004) states that radioactive and metallic elements if ingested over a long period of time may lead to sterility among the fish. The eggs need to be fertilized if more fingerlings are to be produced. However, if the reproductive capabilities of the fish are hampered, then the amount of fish will continue to decline.

In addition, unwanted mutations and general behavioral change has been observed within the fishes and the marine life due to excessive exposure to radioactive substances and other pollutants.

Types of ocean/water pollution

To further understand pollution, researchers have classified the types of pollution that affect the available water bodies. According to Burk (2005),

these classifications have been instrumental in determining the various causes and effects that can emanate from a specific type of water pollution and how best the problem can be addressed on a more specific level. Earth’s water resources are often perceived by many as the surface water seen as lakes, oceans, rivers and other water catchment areas. These are therefore called surface waters.

Burk (2005), states that the most obvious pollution affects these waters. He claims that they are obvious because the extent of pollution can readily be seen on the water surface. For example, oil spills can cover a large area of the waters and affect the life resources within that area, garbage and non-biodegradable substances disposed by man into the water bodies can be seen on the surface and have an adverse effect on the lives of the humans, animals, and plants that depend on the water bodies for survival. However, not all of the water sits on the surface. A great amount of water is hidden underground. Bocknek (2004) explains that water is transported underground from the oceans, lakes and rivers through rock structures called aquifers.

These aquifers contribute to a significant amount of clean water that we use in our homes. Nevertheless, underground water is polluted by the excessive chemicals that are used in the agricultural sector, and homes. For example, Kumar (2004) reiterates that the weed killers used by individuals to tend to their gardens often drain into the ground where they contaminate the underground waters.

The author states that in as much as this type of pollution is not visible, it still presents a serious threat to life resources. He further supports his statements by citing the Lowa study conducted in 1966 which indicated that over a half of the underground water in this region was contaminated by weed killers and other agrochemicals. How does this affect the oceans? The underground waters drain into the rivers which in turn often end up in the oceans and other water bodies. If such water constantly drains into these water bodies, they ultimately pollute the oceans over time thereby affecting the marine life therein. Other than these two types of pollution, there is also the point-source pollution and the nonpoint-source pollution.

According to Birch & Wachter (2008), point-source refers to the pollution that emanates from a direct and single source. Examples of this type of pollution include but are not limited to: direct pipes that discharge waste from factories into the oceans, oil spills from tankers and ocean-based oil rigs and runoff wash water from home based activities. As Smith et al assert, the chemicals used to wash the cars accompanied by the oil, gasoline and grease extracts that are removed during car washing presents potential environmental pollutants. The results compiled from the Residential carwash water monitoring study of Federal way support the findings of the Puget Sound Partnership 2008 Action Agenda.

The Action Agenda also points out that majority of the pollutants getting into the rivers, lakes and marine waters around Puget Sound came from various pathways. Surface water runoff was highlighted as the primary transportation route for the main contaminants. As documented in the final report, the most concentrated contaminants came from the developed lands

(residential and commercial estates). This study simply highlighted how the situation is thereby emphasizing on the need to take action in regards to car washing as a root cause of water pollution in this area.

Causes of ocean pollution

Ocean pollution does not necessarily need to be direct.

According to Miller & Spoolman (2008), experts on climate agree that there is need to mitigate climatic change so as to ensure that the adverse effects of climatic change do not become a reality. While there is no single solution to deal with this problem, one of the most effective means to achieve this is the taking of measures to diminish green house gases by lowering the consumption of fossil fuels (USA International Business Publications, 2009). This is because the gases emitted by fossil fuels are the major cause of global warming.

Developed countries make up the major consumers of fossil fuels with statistics from the National Energy Foundation stating that the US alone accounted for 26% of the total world consumption of coal, oil and natural gas as of 1999. From this figures, it is clear that the US is a key player in the emission of GHGs. As such, for any policy to be effective, it would be imperative that the US to be a participant. These gas emissions lead to atmospheric pollution which in turn contributes to acid rain. This type of pollution is wide spread and very problematic because if it is not mitigated at the source, the chain reaction that follows cannot be prevented or stopped. The acid rain pours into the oceans and contaminates the water body leading to the rapid growth of bacteria and kills aquatic life.

As Miller & Spoolman (2008) state, the fishing industry is failing not because of overfishing, but due to the increased water pollution that is prevalent in today's society. Harrison (2001), states that biodegradable waste contributes to a significant amount of water pollution. The author reiterates that these types of waste include wastes emanating from both humans and animals. When the biodegradable waste finds its way into the water bodies (oceans, lakes and rivers), they create organic carbon which is a source of energy for bacteria. Over time, carbon dioxide is formed from the organic carbons.

Harrison (2001), states that excessive carbon dioxide lead to air pollution and acid rains which are very problematic to contain and control. In addition, the author states that an increase in organic matter in the oceans leads to a situation where aerobic bacteria multiply faster. Since this type of bacteria are consume oxygen, the oxygen levels in the oceans decrease significantly and consequently, aquatic life is hampered and killed because marine life depends greatly on the oxygen in the water for survival. Another cause of ocean pollution is chemical substances and nutrients. According to Burk (2005), plant nutrients drains into the water through the sewer systems and runoffs. Phosphates and nitrates have been documented as the leading contaminants of water (Mooney et al, 2008).

In as much as these chemicals are natural, statistics presented by the EPA indicated that over 80% of nitrates and 75% of phosphates that are found in the waters are man-made. So, how do these chemicals cause pollution? Livingston (2005), states that a high concentration of these chemicals in the water leads to algal bloom. Algae smells and looks bad and at the same time, are a potential health hazard.

In addition, these chemicals have been known to affect marine life and lower the oxygen levels in the waterways. In addition, the author claims that nonylphenol surfactants have the ability to change the sex of fish and that the phosphates presents an environment where algae flourish. In the event that this happens, weeds and bacteria grow and spread faster.

Consequently, the decomposing plants consume most of the oxygen in the water thereby interrupting aquatic life, lessen aquatic biodiversity and even kill aquatic life. It should be noted that the process of plant decomposition (eutrophication) occurs over a lengthy period (thousands of years). The process enables the water body to enrich itself with nutrients which support marine life. However, pollution disrupts this process and makes it happen over 1, 000 times faster. This means that oxygen is consumed faster than expected leading to the death of aquatic life. Heat has also been documented as a major source of water pollution. The earth’s temperature is on the rise. As the earth is getter hotter and hotter, so does the water temperatures.

As the general water temperature increases, dissolved oxygen reduces significantly. Birch & Wachter (2008), state that thermal pollution can either be natural or man-made. Hot springs and geysers are example of natural causes while the dispensation of water that has been used to cool down machineries and power plants represent man-made pollution. According to Birch & Wachter (2008), aquatic life requires certain temperatures and levels of oxygen to thrive and survive.

As such, heat causes a serious problem to the lives of the plants and fish in the water and may lead to their deaths thereby reducing the available number to be fished or harvested. Another cause of water pollution is sediments. Sediments refer to the organic matter and solid minerals that are wash or blow into the water sources. McKinney (2007), states that sediment pollution is often very difficult to spot because it emanates from various sources. The author states that; “ Each year, water sources in the United States are polluted by over one billion tones of sediment (McKinney, 2007).” Though unknown to many, Sediment have been known to suffocate marine life and can cause water to be turbid. Turbid water is detrimental because it absorbs more solar radiation leading to thermal pollution.

Most of the toxic wastes that invade our environment are human-made. In most cases, these hazardous and toxic chemicals are not used in the right manner or disposed of correctly. Examples supporting this statement include point-source pollutants such as factory and cargo waste as well as oil spills from tankers and ocean based oil rigs. Point sources of chemical pollution include industrial discharges and oil spills.

As Alvord (2000) reiterates, home based practices involve the use of excessive water and chemicals. However, if the practices are not regulated, they lead to a situation where the water used ends up polluting the runoff and storm drains. This can in turn have negative environmental impacts on both the quality and quantity of water resources. The United States-based Natural Resources Defense Council (2000) equates the level of water pollution in urban and suburban storm water runoff to that experienced from sewage plants and large factories.

The council claims that the drainage systems and storm water runoffs collect the toxic waste and other pollutants that flow into them and discharge them into the water resources where they affect the fish and other marine life. They further emphasize that the toxic chemicals and pollutants left on roads, driveways, and gardens are deposited directly into local waterways without being treated Livingston (2005). This pollution can have negative effects on ecosystem functions and biological diversity, as well as social aspects such as public health, recreation, and general community well-being (Livingston, 2005). As such, the environmental issues caused by the increasing volumes of pollutants being flushed down our drains, creeks and rivers, into recreational waterways and the sea, have forced us to acknowledge the detrimental impacts of conventional urbanization practices and the need for change (Livingston, 2005).

Radioactive pollutants have also presented a serious threat to marine life and the fishing industry at large. They include wastes that emanate from health care facilities, industries and mines. In addition, Canter & Knox (1985), state that some radioactive pollutants such as radon are created naturally. These pollutants are very dangerous and hard to do away with because it takes a very long time for any form of radioactive pollutant to cease being effective. In regards to the topic under discussion, radioactive pollutants have led to the death of many sea animals as well as the disruption of their life and reproductive cycles. Consequently, the number of fish has declined thereby creating scarcity and other related problems in the fishing industry. Another source of water pollution has been noted to be pharmaceuticals and personal care products (PPCPs).

Products in this category include medicines, lotions, gels and soaps that people use to maintain their beauty and take care of their skins. As Brebbia et al (2006) state, only recently, has it been discovered that most of these products work as hormonal disrupters. The author explains that the synthetic hormones that are in these products impede the full functionality of natural hormones in animals, especially aquatic life. Like any other form of pollution, these products often drain into the water sources through the drainage system and when people go to swim and have fun in the ocean.

Solutions

In its bid to reduce the pollution levels, the government has put various strategies in place. A significant policy is that of Tax rebates which is offered to all industries that adopt eco friendly practices. This move by the government will reduce industrial emissions as well as the level of toxic wastes that get into our oceans by a wide margin since industrial fumes are some of the biggest causes of air pollution. In addition to this, all industries should be encouraged by law to plant trees which acts as carbon sinks thus reducing pollution levels. In so doing, the adverse effects that air pollution have on our oceans will greatly be reduced and aquatic life will be restored. Over the years, it has been suggested that new architectural designs can help retard global warming. As such, the government must enforce the set laws which stipulate that new industrial, commercial and residential houses should be built using materials compliant with the new environmental laws.

More effective and efficient water and waste treatment methods have also been developed and it is a prerequisite to have them installed before starting up any industry. Citizens are also encouraged to use the 3R’s

(reduce, reuse, recycle) model as part of their contribution towards a greener State. Mooney et al (2008) assert that individuals can do a lot on their own to reduce the carbon footprint.

Throughout the world, the level of electricity consumption is increasing every day. It is therefore important that they adjust their lifestyle if they are to meet the stipulated limits. This can be done by switching to less energy consuming light bulbs, using public means of transport as compared to personal vehicles, switching back to fans rather than using air conditioners, using LCD and plasma screens instead of tube televisions. To curb water pollution, dish washers can be employed instead of hand washing thereby reducing water wastage. Using the shower instead of the bath tub has been known to reduce Co2 emissions. In so doing, the level of pollution will have reduced significantly and the effects of these pollutants on our oceans will be minimal thereby giving the marine life a chance to repopulate. The industrial sector is notable the chief polluter in almost all countries.

As such, any change in this sector no matter how small can spell a big difference to the overall reduction of carbon emission. Shifting to more eco friendly equipments that use less fuel is one of the notable ways in which industries can make a difference. Industries that employ the use of boilers should install smoke density meters which check on the levels of smoke emitted into the air thereby creating a means through which these harmful emissions can be regulated (Mooney et al, 2008).

Implementation of a decentralization program can also help greatly reduce both vehicular and industrial pollution. This is because decentralization calls

for the spreading out of industries as opposed to having them concentrated in one area. On the same note, potentially pollutant industries such chemical plants, sawmills, ship repairing, cement manufacturing should be located to either the seaward side or offshore side of the island in order to reduce water pollution. In addition to the above measures, the government can also initiate tree planting program, encourage establishment of parks, offer funds to green groups and agencies which help find solutions to environmental issues. An increase in taxation on vehicles that are “ gas guzzlers” can also aid in the battle to reduce green house gases emissions. Brebbia et al (2006) reiterate that industrialization no matter how important posses a great threat to our environment if left unchecked. It is therefore in the best interest of everyone if the government adopts means to monitors the rates of industrialization and applies stringent rules and laws in matters concerning preservation of the environment.

Proponents of the Kyoto protocol are adamant in their stand that it is industrial pollutants that are responsible for the climatic havoc that is experienced. Their proposed solution is a reduction in emissions by the industries in accordance with the Kyoto policies. While there is truth in these assertions, the proponents fail to consider that there are many other means by which to curtail GHG emissions. This is a view which is also held by Burk (2005) who declares that there is not single formula for dealing with global warming and pollution.

The Kyoto Protocol’s overemphasis on industries as the major cause of pollution is the reason why the developing countries are omitted from the bid to alleviate the condition since they are deemed to be minor players in the

industrial field. The USA is the leading industrial power in the country and for this reason; proponents view the failure by the US to endorse the Kyoto protocol as a blow to the efforts of mitigating climate change. Hassan et al (2005) note that aside from the large scale efforts to limit CO2 emissions, individuals can do a lot on their own to reduce the carbon footprint. This is because the end consumer is the one who utilized electricity and drives vehicles that also contribute to GHG emissions. A change in the lifestyle of the individual can therefore make a big impact on the environment. The Kyoto protocol fails to take this into consideration the impact that citizens of developing countries can make to the climate change efforts.

China for example boasts of the world’s largest population. Neglecting to consider the impact that its citizens might have if they are forced to make changes that are healthy to the environment would be a faulty move. Adoption of the Kyoto protocols is therefore a viable solution since it will ensure that all countries play an equal role in safeguarding the environment against various pollutants that threaten aquatic life. The time and money spent by multinational corporations in lobbying for softer legislations on the use of CFCs would be better spent on research of cheap and safe alternatives. The belief that such alternatives would be too expensive is aimed at discoursing opponents on the use of CFCs. There are existing scientifically proven alternatives for CFCs but the big players have blatantly refused to embrace these choices.

According to Wood et al (2000), alternatives for some of the substances (e. g. Freon) that cause water pollutions have already been found. However, the authors point out that the prices of these substitutes may be slightly higher

than those of the original product. This is because technological innovations are allowing the recycling of chemicals removable from used up refrigeration units and air conditioners The shifts to these alternatives will save these industries millions of dollars in the future. It is a fact that consumers will have to deal with high initial costs of the new technology; it is also obvious that this cost would be minimal in comparison to earth without the protective cover or aquatic life. Effects of the use of CFCs not only affect the third world. The United States and China have not been spared with hurricanes and floods taking toll on these two nations respectively.

In addition, the significant drop in revenue from the fishing industry as well as the decline in the availability of fish indicates that something ought to be done to address this issue of pollution. It is good news to note that action is being taken to reduce the effects of CFCs, in both global and national fronts; each and every individual has a role to play in conserving the environment and reduce pollution. Miller & Spoolman (2008) state that consumers can form the first group of environmentalists by combating the use of these chemicals by shunning products composed of chlorine, phosphate, nitrate and nonylphenol surfactants compounds. Consumers should have their air conditioning hoses properly fitted and certified by qualified personnel to avoid leaks of CFCs into the atmosphere. Furthermore, they can take their governments to task on proper guidelines regarding the disposal of air conditioning and coolants. In real fact, the most important weapon we have as individuals is education. In so doing, pollution will decrease and marine life will have a fighting chance for survival and repopulation. Knowledge

based solutions to our problems are so far the best techniques Goudie (2006).

An informed society is likely to understand the consequences of its actions and as such use this knowledge to solve its challenges that it faces daily Individuals must raise their level of interest in environmental issues higher than it stands today. The fact is that few people know about pollution leave alone their knowledge on its effects is a grim statistic (Goudie, 2006). Furthermore, few people are aware of the role of the ozone layer, water basins and atmospheric soundness. In response to these sad realities, few people are thus aware of heath risks they are exposed to by the use of these chemicals.

Education and awareness still remain the central keys to a healthy future generation of our world (Harrison, 2001). The author suggests that human nature has a tendency to overlook the problems that do not affect an individual directly. Just relax and take a picture of the earth brown and withered, without the beauty of the green vegetation, and completely barren. This remains the future of our beloved planet Earth, completely brought to destruction by man- the most intelligent creature in existence. When that time comes, there will be no choice of repair.

Conclusion

The oceans and other water resources have over the years proved to be valuable sources of income, livelihood, food and transport to the human race.

However, man’s lack of concern for these resources is increasingly turning into a cause for worry. Over fishing and pollution brought about by man’s activity are affecting the quality of water in these sources all the while impacting negatively on the animal and plant life that depend on these waters for survival. The fishing industry has also learned the hard way that preservation of the water sources is the only key to success in this trade. Low quality fish as well as a decline in the annual volume of fish harvests have in the recent past characterized this once so successful industry. This study has in detail described the environmental situation that exists in our water sources. Pollution has been noted as a threat to existence and various aspects of pollution have been discussed. Examples of water pollutants such as oil spills, radioactive and chemical substances and industrial wastes have been documented as the leading sources of ocean pollution.

How these pollutants affect aquatic life has also been discussed and the ripple effects of the same to the fishing industry highlighted. While it has been observed that the many nations are indeed directing efforts to mitigate pollution by conforming to the required standards stipulated by the global community, there is still much more that can be done to even better the current scores. It has also been established that the vision for a greener environment can only be realized if the public and private sectors come and work together as a team.

Solutions and recommendations have also been made as to how the government and the citizens can contribute in this important task of reducing pollution in future. If implemented, these changes no matter how little will at the end make a vast difference in the lives of many people as

well as the ecological balance that supports such existence. It is therefore upon each person to foresee that they fulfill their roles in this quest in order to secure a greener and safer future not only for future generations, but also for the animal and plant life that depend on the ecosystems for survival.

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